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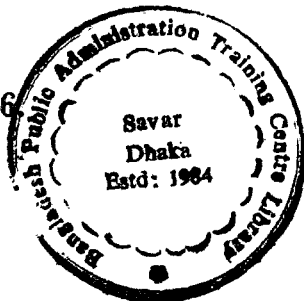


TAKEN BEFORE THE

ROYAL COMMISSION ON AGRICULTURE.

Thursday, November 11th, 1926

BANGALORE.



PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE,
K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E.,
C.B.

Sir JAMES MACKENNA, Kt., C.I.E.,
I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja Sri KRISHNA CHANDRA GAJA-
PATI NARAYANA DEO of Parlaki-
medi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT.

Mr. J. A. MADAN, I.C.S. } (*Joint Secretaries.*)
Mr. F. W. H. SMITH. }

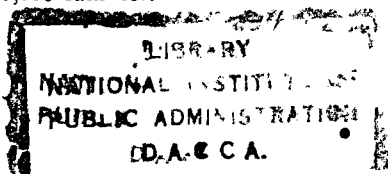
14 AUG 2006

**Mr. N. RAMA RAO, Superintendent, Sericultural Department,
Mysore Government.**

**Memorandum of work done in the Department of Sericulture in Mysore up
to the present time.**

Extent and distribution of the industry.—Mysore is admirably fitted by soil, climate and local conditions for silk production. The industry is at present practised over about a third of the area of the State, to the south of a line joining Chintamani, Sidlaghatta, Chikballapur, Kunigal, Mandya and Nanjangud, and is slowly spreading northwards. The sericulture of Kollegal Taluk (Madras Presidency) is a continuation and organic part of the Mysore system. There is practically no part of the State where climatic conditions do not admit of extension of the industry; the only limiting factor seems to be economic. The total area under mulberry is about 50,000 acres, the value of silk produced is over a crore of rupees, and the industry in its various branches supports about 200,000 families.

Mr. N. Rama Rao.



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Mysore has a distinct race of silk-worm which is polivoltine, and spins a greenish cocoon yielding a beautifully lustrous silk of excellent natural quality. The Mysore worm is hardy and highly resistant to disease, but is slow in arriving at maturity and a poor producer of silk in proportion to the food consumed as compared with univoltine and bivoltine races. It is however one of the best polivoltine worms in existence.

Position of sericulture in Mysore industries.—Sericulture has an important place in the agricultural economy of the State. It employs that part of the labour of the home which is prevented by custom or feebleness from participating in the more strenuous work of the field, and it also employs that part of the time of the ryot which is left unfilled by the operation of the seasons. The utilisation of factors which would otherwise go to waste is wholly a gain, morally as well as materially, and one may claim for sericulture all that is claimed for spinning, with this addition, that it is more profitable, as it turns to account certain differential advantages of climate and natural conditions.

Nature of the industry.—The great bulk of Mysore sericulture is *subsidiary* to agriculture. It is practised by small agriculturists, who, as a rule, do not employ paid labour, nor devote exclusively to rearing either time or house-room or other resources. They generally grow their own food, and depend on the returns from sericulture for clothing and condiments, and for the little extras which brighten their lives. But it must be mentioned that in parts of the State, sericulture has established itself as a *main* industry in successful competition with other occupations. This state of things is to be found in almost all the silk-producing parts of the country, in the vicinity of large markets, such as Channapatna, Chikballapur, and Kollegal. In fact, in all important sericultural areas, there is a nucleus where sericulture is the principal industry. It may be noted that the same thing has occurred in Japan. This concentration seems to take place under the following conditions:—

- (1) The soil is more suited for mulberry than for other crops;
- (2) the population is much greater than the soil can support if used for food crops, and there is in consequence necessity for a quick-yielding money crop which can remunerate intensive application of labour;
- (3) vicinity of large towns or important weekly bazaars affords facility for selling silk and buying food-stuffs and clothing;
- (4) there are no competing industries which draw off labour.

Sericulture practised as a main industry is rather more sensitive to external conditions than the normal form and is therefore the first to suffer from unfavourable variations. This is due to the fact that the competition of other crops with mulberry and of other occupations with the rearing of silk-worms is never absent, and makes itself felt when, for some reason, sericulture begins to weaken.

Average returns from individual undertakings.—The Mysore rearer has, on the average, half an acre of mulberry, with which he rears six crops of silk-worms in the year. He loses or used to lose about two of these crops owing to bad seed or inadequate knowledge and resources, but is able notwithstanding to make a net gain of about one hundred rupees a year. The average duration of a crop from start to finish is about six weeks. Apart from its undoubted material advantages, the industry necessitates a certain amount of co-operation and evokes a mental alertness which is more akin to industrial than agricultural pursuits. A sericultural village has generally an air of life and prosperity all its own.

History of sericulture in Mysore.—In spite of obvious advantages, the story of Mysore sericulture is one of vicissitude. In 1866 it had almost died out owing to disease or deterioration of silk-worms, and was temporarily restored by the importation of Japanese seed. The root causes of decay however remained untouched, and one or two bad seasons upset this lightly built restoration. But the vitality due to favourable natural conditions enabled the industry to start with a new lease of life about 1890. It is significant

that in this revival the imported worm had disappeared, and the Mysore worm emerged triumphant. Once again the industry declined, till in 1914-15, it reached its lowest point, with an acreage under mulberry of not much over 25,000. As a result of vigorous State action, the decline has been arrested, and the growth natural to a healthy industry has been restored during the past ten years.

State action.—The efforts made to protect and develop sericulture are a measure of the growing recognition of its importance to the State. Not very long ago, the Education Department was entrusted with teaching sericulture through the agency of village schools—with no great success. The subject

Economic Conference.

was then taken up by the Economic Conference, and a few trained men were sent out for work to sericultural taluks. Each step rendered the scope for advance more obvious. In 1913, Signor W. Mari, an Italian Expert, was appointed to organise sericulture, but was able to remain only for a year, during which time he started a small farm at Channapatna, and made a beginning in the manufacture and issue of cellular seed. After Signor Mari's departure, the

Agricultural Committee.

work was continued and developed by the Agricultural Committee of the Economic Conference, which did much to popularise disease-free seed, and improve the methods of rearing. The causes of the decline of the industry were investigated, and remedies proposed. The Committee's labours at this critical period in the history of sericulture proved that the situation was not hopeless, and indicated the lines of useful action. In 1916, Signor Mari's services were engaged for a second time, and Mr. N. Rama Rao, an officer of the Mysore Civil Service, who was Secretary of the Agricultural Committee, was associated with him for sericultural work. Signor Mari was only able to draw up a scheme before failing health and the outbreak of the Great War compelled him to return to Italy. Mr. Rama Rao was then appointed Superintendent of Sericulture in addition to his duties as Secretary of the Agricultural

Organisation of Sericultural Department.

Committee. In 1920, the work had developed sufficiently to necessitate the organisation of a Sericultural Department, and the transfer of the whole-time services of Mr. Rama Rao as Superintendent. The new department was associated with the Department of Agriculture as a temporary measure. It secured and utilised to advantage the services of Mr. M. Yonemura, a highly qualified Japanese Expert, for scientific work, and of Miss E. Sato for reeling. Later on it was possible to replace them by members of the department's staff who returned from deputation with high technical training in Europe and Japan, or had been able to specialise by association with the Expert in scientific work.

Classification of work in the department.—The activities of the department have been based on a close analysis of the structure and requirements of the industry. Investigation placed it beyond doubt that the instability of Mysore sericulture in the past was due to one or more of the following causes:—

- (i) Bad or insufficient seed,
- (ii) faulty methods of rearing and reeling,
- (iii) bad methods of purchase and sale—resulting in “sweating” at each stage,
- (iv) want of economic stamina.

That this analysis is in the main correct seems borne out by the success of the action based upon it. The work of the department falls under the following heads:—

Education, Expansion, Improvement of seed-supply, Demonstration and advice—help in case of silk-worm diseases, Loans, Formation of co-operative societies, Establishment of filature and popularisation of Mysore silk, Improvement of reeling—machinery, and methods, Investigation of markets for silk.

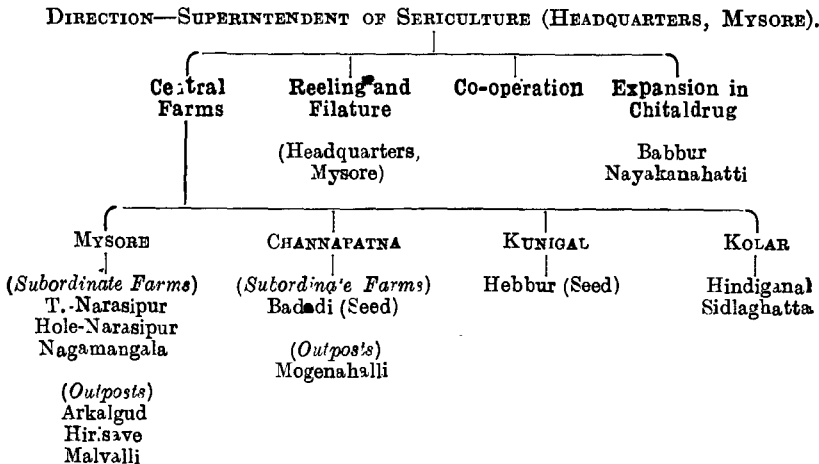
Organisation of the department.—The organisation of the department for working out these objects is as follows:—

The sericultural parts of the State are divided into four circles, each provided with a well-equipped central farm capable of attending to all the activities of the department in the area allotted to it. These central farms are in the charge of officers called Senior Inspectors, most of whom have high academical and technical qualifications. Each central farm controls a number of subordinate farms, located at strategic points so as to command the sericultural area. There are altogether ten such subordinate farms. Their function is to keep in close touch with the royts, to secure them their requirements in the way of mulberry cuttings, silk-worm seed, rearing and reeling appliances, and loans, and to advise and guide them, when necessary, to procure for them assistance, such as disinfection, etc., in case of silk-worm epidemics, and to render them generally all possible assistance in making the rearings a success.

In addition to the above, when work develops in a new area sufficiently to require continuous attention, outposts are established dependent on the nearest organised farm. These outposts are shifted from time to time according to requirement.

The improvement of reeling, and the filature constitute a separate section under an officer entitled Superintendent of Reeling and Filature, with headquarters at Mysore; and the formation and care of co-operative societies is treated as a special branch of work, and has a Senior Inspector with headquarters at Channapatna to look after it. The expansion in Chitaldrug district is in charge of an Inspector, who at present works in direct subordination to the Superintendent.

The following statement shows the organisation of the Sericultural Department:—



The total staff, exclusive of clerical, is—

- 6 Senior Inspectors—4 permanent, 2 temporary.
- 20 Inspectors—18 permanent, 2 temporary.
- 30 Operatives { 1st class 10.
 2nd class 20.

Mr. N. Rama Rao.

The work done by the department under the various heads of activity is summarised below :—

Education.—

<i>Year.</i>	<i>Education.</i>
1919-20	16 Long course students. 6 Short course students. 26 Panchamas.
1920-21	4 Higher course. 11 Lower course. 24 Short course. 33 Panchama students.
1921-22	10 Long course (mostly volunteers). 20 Short course. 11 Panchamas. 26 Students in Taluk Schools.
1922-23	8 Long course. 14 Short course.
1923-24	No regular course for want of funds. Yet 20 students in lower course and 3 in higher course were trained. 1 from Hyderabad. 2 from Coorg. Farm School trained 10 people.
1924-25	10 Higher course. 10 Lower course. 5 Short course in Mysore. 4 Short course in Channapatna. 6 Short course in Hole-Narasipur.
1925-26	77 Students including 22 in reeling.

Till last year an allotment was usually sanctioned for scholarships in the budget of the department, and it was possible to train men for recruitment. The District Boards have always been very generous in giving stipends to students from their districts, and have evinced great interest in the encouragement of the industry. Students trained by District Boards have invariably settled down on their own lands. It is getting increasingly difficult to find recruits for the department, for want of trained men, and owing to the very low rates of pay allowed to operatives.

Every farm of the department is a school for practical instruction, and profoundly influences rearing methods in the neighbourhood.

In co-operation with the District Board of Mysore, and the Education Department, sericulture has been introduced as an examination subject in two selected Middle Schools at Kuderu and Malayalli. The District Board of Hassan has also sanctioned the opening of a sericultural class on the same lines, at a place to be selected shortly.

Expansion.—Exact statistics of mulberry cultivation are not available. Our ideas of fluctuations in area have to be based on the figures in the Season and Crop Reports, supplemented by direct information and verified by first-hand general impressions. The export trade in silk* furnishes an index of the state of the industry, and the demand for mulberry cuttings and for seed cocoons furnishes another indication. There is no doubt that the industry has been growing by expansion to the north of the old frontier, and that a corresponding strengthening has been going on in the old areas. The years 1923-24 and 1924-25 were bad years, owing to scanty rain-fall and low prices, and in some places—specially where sericulture had become a main occupation—there was an immediate diminution in the area under mulberry. That

* See next page.

the industry did not suffer more severely is due partly to its natural robustness, and partly to the slowness with which causes react on a conservative population. There is however no doubt that to-day the industry has grown to nearly twice the size it was in 1914-15, and that deep-seated sources of danger have been eradicated. In estimating the scope for expansion, there is practically no part of the State where the climatic conditions are such as to preclude the industry; but regard must be had to the economic conditions favourable to its introduction. There are parts of the State where population is so sparse that agriculture and even domestic service are dependent on imported labour; introducing sericulture here is out of the question. There are other parts where wages are high owing to the existence of large centralised industries like mills, mining, factories, and workshops; and others again where there are already suitable subsidiary industries, which it would be inexpedient to disturb. Large sections or communities have religious or sentimental objections to one or more stages of the industry; and this prejudice, where it exists, opposes a fairly formidable barrier to expansion. Allowing for all this, there is no doubt that the sericulture of the State can be developed to about four times its present size, without interfering with any other avocation, but merely by utilising resources which now go to waste. The increased output could easily be absorbed by India, which at present imports about seven crores of rupees worth of silk and substitutes either as yarn or as fabrics. This forecast assumes, of course, that nothing will occur in the meantime to curtail the world's demand for natural silk, and that the distance between silk and rayon and other textiles will remain more or less what it is at present. This is by no means an improbable assumption. The relative position of natural silk and rayon will be referred to again later in the report.

Year.	* SILK EXPORT FROM MYSORE.				TOTAL IN LAKHS.
	SILK.		WASTE.		
	Mds.	Lakhs.	Mds.	Lakhs.	
1915-16	4,611	25.9	3,762	32	26.7
1916-17	4,622	30.7	4,000	3.3	34.0
1917-18	4,601	35.4	926	7	36.1
1918-19	6,591	50.9	2,978	2.6	53.5
1919-20	6,355	59.6	8,802	8.9	68.5
1920-21	3,621	37.2	6,710	6.9	44.1
1921-22	7,790	77.9	6,699	5.9	83.8
1922-23	7,506	83.5	5,110	4.1	87.6

Seed supply.—The development of this section of work furnishes a measure of the growth of the department in influence and usefulness. Ten years ago, the rearers could with difficulty be persuaded to take 200 layings a year. In 1925-26, we produced 401,056 layings in our grainages, and procured, through our selected rearers, the production of nearly 70 lakhs of seed cocoons raised with cellular seed; and yet only a part of the demand was met. To produce this

* See previous page.

quantity of disease-free seed, the grainages strained their resources to the utmost; and it is probable that the limit with our existing equipment has been reached. The demand is so strong that if we quadrupled our production we could hardly satisfy it. A feature of the present demand is the eagerness of the ryots for the new races. These new races and hybrids, which are a result of our experimental and breeding work, represent an increase in yield of nearly 40 per cent. and a curtailment of the period of rearing by 4 to 5 days in its most expensive part. To produce seed of these races on an adequate scale, it is necessary to have cold storage plant, with which the department has yet to be provided.

Some idea of the value of this branch of the department's work can be formed when it is said that whereas formerly 2 crops used to be lost out of every 5 owing to bad seed, failures from that cause are now comparatively infrequent in areas reached by our seed organisation.

A word of explanation is necessary about selected seed rearers. Since cellular seed is expensive, and its supply is very limited, it is necessary to supplement the work of the grainages—which turn out only cellular seed—by

Selected Seed Rearers.

a carefully planned and controlled co-operation of selected rearers in the recognised seed centres. The basis of selection is a good mulberry garden, a disinfestable rearing room, and skill and reputation on the part of the rearer. The selected seed-man has to bind himself to rear only cellular layings issued to him from the Government grainages, and to submit to supervision and control. He gets the cellular seed free of cost, his rearing room is disinfected, and he is placed in touch with the great body of rearers requiring seed cocoons. We have now 47 seed rearers in the far-famed seed centres of Bidadi, Kunigal, and Hebbur, capable of producing in the aggregate about 70 lakhs of seed cocoons. Mention must be made of a very notable piece of intensive seed work conducted last year at Mugur, one of the largest silk-worm rearing villages in the State. Three consecutive crops had failed owing to pebrine. The department organised a systematic disinfection of rearing houses, and supplied cellular layings to all rearers. Not a single crop failed.

The following figures show the growth of the seed work of the department:—

1919-20		180,297	D.F. layings distributed to ryots.
1920-21		277,862	D.F. layings were issued.
1921-22		326,193	D.F. layings and 27 lakhs of seed cocoons through Seed Cocoon Campaign.
1922-23		395,959	D.F. layings and 60 lakhs of seed cocoons.
1923-24		240,901	D.F. layings and 90 lakhs of seed cocoons and 9,000 D.F. layings of New Races. (Very unfavourable season.)
1924-25		390,168	D.F. layings (including 12,000 of New Races) and 70 lakhs of seed cocoons.
1925-26		401,056	D.F. layings and 68 lakhs of seed cocoons.

Demonstrations, improvement in rearing, treatment of silk-worm epidemics.—What with the improvement of the seed-supply, and what with the example and the educative influence of the farms, the Mysore ryot, especially in the vicinity of the department's institutions, now gets a yield which represents a substantial improvement over what he used to get in the past. Ten years ago 25 to 30 lbs. was considered a fair yield for a rearing with 100 layings; the present average is somewhere about 40 lbs. The record yield got anywhere was 89 lbs. for 100 layings of a F₁ hybrid, near Channapatna. The improvement consists in better spacing, a more suitable adaptation of food to stage of development, more efficient methods of cleaning, some attention to silk-worm hygiene, and greater care in mounting and harvesting. A very

large number of demonstrations accompanied with lantern lectures are held every year at important *jatras*, festivals, or other large gatherings of people with the help of the District Boards. Competitions are arranged between improved machinery and the old-time village appliances, and many a convert to rational sericulture has been secured. There were two large Sericultural Conferences at Channapatna and Mysore, held by the District Boards of Bangalore and Mysore, respectively, where a number of important resolutions were passed which are now under consideration. The District Board of Mysore, the premier silk-producing district of the State, co-operated very cordially with the department by giving sericulture a prominent place in all their Conferences and extending to it a very generous measure of encouragement and assistance.

Loans.—As has already been stated, the small rearer has not much economic stamina, and is frequently in need of loans for short terms. He was formerly at the mercy of small moneylenders who practically squeezed him dry; and when, as frequently happened, the moneylender was also a buyer of cocoons, the rearer rapidly lost freedom of sale, and fell into a position of dependence. There are two obvious remedies—State aid through *taccavi* loans, and the organisation of co-operative credit. Real co-operation suited to the industry is of slow growth, and as will be stated later, a sound and promising beginning has been made. Government have sanctioned a scheme of sericultural loans also; in practice, these loans at present provide for long term credit for capital expenditure, while short term loans are as a rule left to co-operative and private credit. Formerly the administration of these loans was entrusted concurrently to local revenue officers, and the Superintendent of Sericulture; the revised rules of 1925 vest this responsibility solely in the Sericultural Department. The following statement sets forth the amount of loans granted each year:—

Year.	No. of loans.	Amount. Rs.
1916-17	27	3,060
1917-18	11	920
1918-19	3	450
1919-20	4	950
1920-21	21	4,880
1921-22 } 1922-23 } 1923-24 }	Information not available. Loans were granted under old rules by Revenue Officers.	
1924-25	10	2,830
1925-26	39	7,450

Co-operation.—There is no doubt that sericulture offers an almost ideal field for co-operation, and yet strangely enough till last year there was not in existence a single sericulture co-operative society. One had been started by the Co-operative Department some years ago at Sidlaghatta, but it failed. It was obvious that existing types of society would not do, and that the industry required a distinctive type, combining short-term credit with supply of seed and appliances, technical guidance, and aid in marketing. The work of such a society is sericulture first, and co-operation afterwards; and close and constant technical direction is essential. A type of society suited to Mysore sericulture was worked out. Government approved of the scheme, and sanctioned a special Senior Inspector for working it. They placed a sum of Rs. 2,800 with the Registrar of Co-operative Societies for being advanced to sericultural societies. Ten societies were formed during the year in the following villages, which were prepared for the development by careful propaganda:—

- (1) Mangalwarpet, (2) Malurpatna, (3) Chakkere, (4) Mogenhalli, (5) Closepet, (6) Sidlaghatta. (7) Thimmasandra, (8) Kudlur, (9) Mugur, (10) Karohatti.

Most of these societies have started very well, and show great willingness and aptitude, but have more than justified the anticipation that close and constant technical guidance is vital, at least in the initial stages.

Filature, village and domestic reeling.—A small filature of 12 basins of the French type was installed in Mysore in 1922. The object was to train labour, experiment in reeling technique, test the reeling quality of cocoons, and familiarise the silk world with Mysore sericulture. This filature started with exporting silk to France and England, and is now devoting itself to the manufacture of high grade silk capable of utilisation in Indian weaving. It is slowly educating the Indian demand, and preparing the way for grading up the quality of Mysore silk as a whole. It would be very useful if the filature were supplemented by a small throwing mill and a weaving establishment. The filature is capable of producing about 300 lbs. of silk a month.

A filature, equipped also with a throwing plant, has been established by private enterprise at Bangalore.

Filatures have undoubtedly an important part to play in raising the industry by giving a lead in the improvement of reeling, and by preparing the way for superior silk by advertisement and securing a demand; yet the country's silk as a whole can only be benefited by gradually improving the equipment and methods of the village reelers.

Last year experiments were conducted with various types of domestic basin; demonstrations were organised on a large scale, and constructive criticism was invited from all eligible quarters. The result of the investigation may be summarised as below:—

- (1) It is essential to the development of Mysore sericulture and even to its stability, that the quality of the raw silk produced should be improved and made uniform, so as to extend the scope of its employment in manufactures. At present, its low quality confines it to a narrow and comparatively unremunerative market.
- (2) Conditions in Mysore make it imperative that this improvement must commence in the villages in close touch with the rearing industry; and it cannot be imposed from outside by the establishment of filatures. The improvement of raw silk is dependent on the improvement of cocoons by the provision of good seed and employment of better rearing methods on the one hand, and the introduction of more efficient reeling machinery on the other. In Mysore, reeling cannot, without disaster, be dissociated from seed production and rearing.
- (3) The reeling machinery should satisfy the following conditions:—
 - (a) It must possess all the essential working parts of the latest type of filature basin, which ensure proper size, strength and cohesion.
 - (b) It must be strong, simple in construction and capable of being attended to by the village smith with his ordinary resources.
 - (c) Its initial cost must be within the means of the average village family; its working should demand no special skill or expense, and it should exact no requirements in the way of furniture.
 - (d) It should be portable, and should lend itself to gradual expansion by the addition of fresh units, securing fresh economies with each expansion.
 - (e) While not inferior in efficiency to the best foreign basin, it should compare favourably with the village *charka* in cheapness of operation and adaptability to rural conditions.

It is obvious that (b), (c), (d), (e) put the foreign basins out of court at once. To satisfy these conditions, a basin was designed and patented under

the name of the "Mysore Domestic Basin." This basin can be worked either singly, or in combinations consisting of two or more. Probably five form the most advantageous combination, as they can be operated by a single turner. They have been successfully tested throughout the State, and have invariably elicited great interest and enthusiasm during demonstrations. Silk reeled with the domestic basin is nearly as good as filature silk, and fetches prices fully 30 per cent. higher than silk produced with the village *charka*.

Experiments.—Important experiments in silk-worm breeding are being conducted in the Central Farms at Mysore and Channapatna, covering practically the whole field of sericulture. In breeding, the main objects kept in view have been—

- (1) selective improvement of the Mysore race of silk-worms,
- (2) fixation of new races,
- (3) determination of the extent to which hybrid seed could be profitably issued for producing reeling cocoons,
- (4) rearing and acclimatisation of pure races for stock in the preparation of hybrid seed.

Besides the progress made towards the objective, the experiments were fruitful in results of great scientific interest. The experiments were only made possible by a free and successful employment—for the first time in India—of the artificial treatment of hibernating eggs so as to make them hatch like multivoltines.

The experimental breeding work disclosed some important facts. The limits of improvement by selection in the pure Mysore race itself are in sight: it is not possible to shorten the rearing period, or to secure a more profitable ratio between the yield of silk and the consumption of mulberry leaves. The experimental work has been rich in results of great value to the industry, but to take full advantage of them, it is necessary to have more grainage and rearing space, more staff, and facilities for controlling temperature. The rearers are anxious to rear the improved seed and seed of higher yielding races, but the department is not at present equipped to meet the demand.

Organisation.—Sericulture has its roots in the economic life of the country, and is necessary to its progress and happiness. Improvement of seed and technical methods would be barren of result without an organisation that secures to the workers the full benefits of their labour. No industry can prosper without a power of adaptation to changing conditions and without the capacity to assimilate new ideas. Its progress depends on the readiness with which it can benefit by the advance of knowledge, and this requires alertness and power of internal adjustment, or in other words, a broad-based organisation which can keep abreast of technical progress, and which can safeguard the industry by influencing production, and by securing an appropriate place in markets. The organisation (this is my personal opinion) must begin in the village, with a co-operative society or panchayat; the co-operative societies, panchayats and leading sericulturists of a taluk may form a Taluk Association, and the process of federation may rise through taluk and district, till it culminates in a Central Silk Association for the State, capable of representing the industry and looking after its interests. Steps are being taken, with the approval of Government, to form a Provincial Silk Association, which will probably have ramifications extending into taluks. It is necessary also to have a Conditioning House in the State.

Summary of past work.—The chief measures for which the department has been responsible are:—

- (1) Organisation of Government grainages.
- (2) Organisation of aided grainages.
- (3) System of selected rearers of seed cocoons.
- (4) Organisation of supply of mulberry cuttings to aid expansion.

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- (5) Organisation of practical instruction to new rearers and reelers.
- (6) Provision of sericultural loans.
- (7) Concessions for introducing sericulture in new areas and among the depressed classes.
- (8) Establishment of filature.
- (9) Designing new types of basin for Mysore conditions.
- (10) Establishing new races and breeds of silk-worm.
- (11) Organisation of co-operative societies.
- (12) Securing co-operation and assistance from Local Boards.
- (13) Investigation of South Indian markets.
- (14) Concessions for the formation of mulberry topes.
- (15) Introduction of sericultural instruction in two middle schools, in co-operation with the Education Department.

Programme of work for the future.—The programme of work for the future will not only have to maintain progress on the lines already established, but will have to provide for the following important developments:—

- (1) Establishment of cold storage plant in the Central Farms.
- (2) Investigation of the requirements of Indian silk manufacturers and adaptation of Mysore raw silk thereto.
- (3) Organisation of trade, and the establishment of suitable centres of distribution.
- (4) Standardisation of Mysore silk and establishment of a Conditioning House.
- (5) Formation of local silk associations which are in quick touch with all branches of the industry and their affiliation to a Central Provincial Silk Association.
- (6) Development of sericultural co-operation so as to embrace every part of the industry.
- (7) Legislative control of seed production and of epidemic diseases.
- (8) Protection for Mysore silk.

This work has been and is being done in Japan, and is equally necessary here. The work requires more staff and more equipment and is of a magnitude to tax the energies of the department for the next twenty years. Later on, it may be possible to transfer some of the functions to local bodies retaining only scientific work and control in the department.

Conclusion.—There is evidence of an essential change in the outlook of the Mysore silk industry. Till quite recently, we were in secure possession of the South Indian market which took our average saleable output, however coarse, provided only it was cheap. The combination of cheapness and badness held our industry in thrall, but kept it alive. Now, things are changing. Better reeled foreign silks, and artificial silk, and with its cheap glitter-irresistible to the untutored eye have invaded the traditional markets, and are fiercely competing with Mysore silk. One usually reads in foreign journals that artificial silk—or rayon as it is called—can never displace natural silk, and so on; and this is no doubt true, but with two important provisos—*viz.*, (1) the natural silk must be a high grade article, like what is imported into Europe and America, (2) the consumers must possess sufficient enlightenment to know what they are buying, and to know both what artificial silk is and what it is not. In India where much of the natural silk is reeled in a low grade, and where a large proportion of the consumers look upon rayon as a durable foreign silk possessing the advantage of cheapness, rayon *does displace, and is displacing* real silk. In the long run, a better knowledge of rayon may confine its employment within just bounds; but it is possible that this knowledge may come too late to save Mysore sericulture from irremediable injury. There is evidence that in Mysore, the very home of silk, a large proportion of the looms which formerly employed only real silk, now take rayon, and

that rayon fabrics are penetrating into middle class homes. Usually, bad seasons, by contracting the output of silk, raise its prices; but last year the industry suffered from the double evil of bad season and low prices. There seems to be no doubt that one of the causes of this abnormality is the increasing vogue of rayon. One has only to know that the imports of rayon into India have increased from 19·4 lakhs of rupees in value in 1922 to 204·25 lakhs of rupees in 1925 to realise the magnitude of this menace to our silk industry. The world's production of rayon in this period has grown from 79·3 million pounds to 185·5 million pounds; and much of the accumulated capital and disciplined skill of some of the most progressive countries in the world are devoting themselves to increase, improve and cheapen this product. With proper direction and improvement the natural silk industry ought to rise above the plane of direct conflict with this giant organisation by producing a high class fibre which supplies a distinctive demand which will not accept a substitute; but in a cottage industry practised by the ryot classes, adjustment to new conditions is a very slow process indeed, and in the meanwhile the industry itself may suffer lasting harm. Experience shows that our ryots are very tenacious of sericulture so long as any hope is left; but once they are driven from it, nothing will induce them to take it up again. In fact, the places where sericulture once existed but exists no more, seem blighted with a curse against its revival. The reason is, that each acre which goes out of mulberry is a loss in capital alone of over a hundred rupees, and the wrench in economic life resulting from the loss of an established occupation paralyses the spirit of enterprise. And this is a loss which falls on a specially poor, hardworking class of people.

There can be no doubt that our silk needs protection against foreign silk and more specially against rayon. This is not the place for discussion of the subject; it may suffice to say that the Board of Agriculture recorded it as their considered opinion that:—

“In view of the growing menace to the silk industry from the competition of foreign silks and silk goods on the one side, and of artificial silk and artificial silk goods on the other, it is essential that strong measures should be taken for the protection of the industry.”

Apart from this, it is equally essential that Mysore should produce cocoons at less cost by employing better seed and improved methods, produce better silks by employing more efficient and up-to-date machinery, and standardise production by adapting it carefully to markets. All this is necessary not only for improvement but for survival. A Silk Association with ramifications reaching out into taluks and centres of production, and a State Conditioning House seem absolutely essential to safety.

Oral Evidence.

9023. *The Chairman*: Mr. Rama Rao, you are Superintendent of Sericulture in the State of Mysore?—Yes.

9024. You have provided the Commission with a very interesting memorandum on the work done in the Department of Sericulture in Mysore. It is very complete, but there are a few questions which I should like to ask you. The first deals with co-operation. Have you had a long experience of the co-operative movement in Mysore State?—Yes.

9025. Are you a believer in co-operation in connection with sericulture?—I am a sincere believer in it. I think co-operation offers the only solution to most of our difficulties.

9026. On the credit side, does sericulture call for any capital on the part of the cultivator?—Practically no capital.

9027. So that, these co-operative societies have not dealt with credit to a great extent?—Not to any great extent. Sericulture is not a capitalist industry, that is what I mean when I say that sericulture calls for no capital; but the sericulturist is frequently in need of small sums of money, and that is where a co-operative society can come to his assistance.

9028. Would you let the Commission have some amplification of the statement on co-operation which begins on page 8 of the memorandum? Can you tell us the scope of these societies? What exactly they do for the sericulturist?—They practically help the sericulturist in every stage of his operations. They purchase seed for him; they find mulberry cuttings for him, because he has to plant mulberry before he does anything else; they find disease-free seed for him; they find technical guidance for him; they help him to market his produce; they lend him small sums of money when he is in need of such help, and if he wants to reel his cocoons they help him to do so.

9029. So that their credit work is really confined to the supply of seed and appliances on a credit basis, with an occasional advance of money if the sericulturist is in immediate difficulty?—That is so. It is essentially a short-term credit. The money is never lent out for longer than three months; the usual period is 45 days; but supposing that through no fault of his own the borrower is unable to repay the money within that term, they grant him one extension. The longest term for which money is left with any borrower is three months.

9030. Normally for only one crop?—That is the position, but if the crop is lost through no fault of the borrower, he gets time until the next crop is ready.

9031. I want you to give the Commission, if you will, a picture of how you go about establishing a co-operative organisation in a village which is taking up sericulture for the first time. Where do you get your expert advice from?—It is very difficult to get a village to take up sericulture for the first time. A co-operative society can only be started in a village where sericulture has been established for sometime. You must have a sufficient number of people practising the industry, and even then there is difficulty in starting a co-operative society. Though sericulturists are used to practical co-operation, the name sometimes calls up to them associations of co-operative societies that have failed, and that kind of thing. We have to convince them that they have been co-operating with one another, without knowing it, that they have got common aims which can best be met by common action; and then we have to get together a number of people who can work together and start a co-operative society. It is very difficult to start a co-operative society and I would not start one in a village where sericulture is new.

Mr. N. Rama Rao.

9032. I am concerned to discover from you, if I can, who it is that provides the technical advice, which is one of the services, according to this memorandum, which the co-operative society renders to its members?—The Sericulture Department provides it. A Sericulture Society is started by the Sericulture Department, in consultation with the Department of Co-operation, and the technical advice is furnished by the Sericulture Department to start with. But the sericulture co-operative society is also requested to depute some intelligent member to undergo training in the nearest Government farm.

9033. What is the system of management of these societies?—The financial side of the management is done by the Registrar of Co-operative Societies, that is, the officer in charge of the Co-operative Department, and the technical operations are supervised by the Sericulture Department.

9034. So that members of the society do not manage the society?—It is the guidance that I am speaking about. All that the members can do they are encouraged to do, but there is a good deal that they cannot do in the present state of things, and there we come to their assistance and do that for them. *

9035. How old is the oldest successful society that is working at the moment?—It is about 18 months old.

9036. Do you look forward to the day when these societies will be able to provide themselves with efficient management and also provide themselves with technical advice?—I am confident they will be able to do it after some experience is gained, but it takes time; I think it will take five years.

9037. Would you care to give the Commission the total figure, in your budget on account of sericulture?—I can give the figure approximately; we spend altogether about Rs. 85,000 on the average and we get back some of it in the way of returns.

9038. How much do you get back?—About Rs. 10,000.

9039. So that you have a net average expenditure of about Rs. 75,000?—Yes; the figures are approximate.

9040. What is the total population interested in sericulture?—200,000 families.

9041. *Dr. Hyder*: In these two memoranda at one place you say 200,000 families and in another you say 200,000 people. Which is correct?—The second memorandum† is not mine.

9042. Which one is yours?—The big one.

9043. *The Chairman*: And that is the correct one, is it?—Yes.

9044. *Dr. Hyder*: What proportion of your population would those 200,000 families comprise?—It would be about one-eighth of our total population.

9045. *The Chairman*: Can you estimate the total value of the industry to the people themselves?—Yes, I would estimate it at over a crore of rupees, and that is a conservative estimate.

9046. Have you considered the possibility of the extension of this industry to areas in British India not at present engaged in sericulture?—No.

9047. Do you know the conditions of the industry in British India?—I know of the conditions in some parts of British India; I have seen something of the industry in Bengal, but not much. I know rather more about the industry in Kollegal in the Coimbatore district; that is practically a continuation of our sericultural area.

* Appendix I.

† Not printed. A memorandum on *the Silk Industry of Mysore* by Mr. F. L. Silva of the Bangalore Silk Filature. (Government Press, Bangalore, 1926.)

9048. Does the Bengal sericulturist use the same worm?—It is not the same worm. The usual worm reared in Bengal is smaller than the Mysore one; it spins a smaller, flimsier yellow cocoon; ours is light green; the Bengal one is called *Nistri*.

9049. Is the food-supply of the Mysore worm confined entirely to the mulberry?—Entirely.

9050. Is the mulberry crop liable to failure for any particular reasons?—There are a few minor pests, but there has not been any serious one, so far as I am aware. Generally, the difficulties experienced in mulberry cultivation are found to be connected with the water-logging of the soil or other causes.

9051. *Mr. Calvert*: Is it bush mulberry or tree mulberry that you cultivate in Mysore?—The distinction is merely cultural; there are mulberry trees also in Mysore, but our usual method of cultivation is bush, and even in bush mulberry there are two or three varieties of cultivation practised; the method adopted in each case depends on the amount of irrigation available.

9052. *The Chairman*: How long does a mulberry plantation, once planted, last?—The plantation is renewed once in 20 years. There is no need to do it, I think, with proper cultural methods, but we have no experience.

9053. Does the mulberry plantation represent an important capital from the sericulturist's angle?—Certainly; it takes about Rs. 100 to establish one acre of bush mulberry. It is not invested all at one time, but when mulberry has been established on about an acre of land, it represents about Rs. 100 of capital.

9054. Is the credit to carry the sericulturist over the earlier periods of his planting provided by the co-operative societies?—There are not enough co-operative societies to provide money to any appreciable extent.

9055. Do you aim at that?—No, I do not.* I think that the sericultural co-operative societies had better confine themselves to short-term credit for the periodical operations connected with the silk-worm rearing industry.

9056. Credit in connection with mulberry would require long-term credit?—Yes.

9057. In your view, is the competition of artificial silk with natural silk increasing?—I have made enquiries which tend to show that the competition of artificial silk is being felt, and it is bound to increase, but I think it is only a temporary phase.

9058. On what do you base that view?—On the fact that artificial silk can never for any length of time compete with real silk, because it has certain points of natural inferiority which cannot be overcome. For instance, it has got a lustre, which makes it easy to detect that it is not the real article but only an imitation; for another thing, it has not got the necessary tensile strength especially when moist, and it does not take certain dyes as well as natural silk does.

9059. The tensile strength of the artificial silk and the durability of the finished artificial fabric have improved a great deal of recent years, have they not?—They have improved a good deal, but they can never come up to that of real silk unless, probably a higher class of raw material is used than is employed at present, and that would raise the cost. The most important point in favour of artificial silk is that it satisfies certain tastes and that it is cheaper than silk. I would add there is a distinctive demand for natural silk which artificial silk can never supply. Artificial silk has certain points of inferiority which cannot be removed without raising the cost of production so much that the advantage of cheapness would disappear.

9060. How about the relative price of the fabrics in India to-day? Is there a wide gap in price between the real and the artificial?—The gap is very wide; I am speaking of the fabrics which our women wear; a good silk

fabric would cost Rs. 70 for a piece of 9 yards, whereas a fairly colourable imitation of a similar size would cost about Rs. 15.

9061. That is a very marked difference?—Yes, a very marked difference.

9062. Have you hopes of reducing the cost of production of the real silk?—I have.

9063. Do you think it might be possible to reduce it to an important extent?—I think so; I am hopeful that with better organisation, the improvement of our seed supply, and the improvement of our reeling, we might be able to reduce it by about 30 per cent.

9064. As much as that?—Yes; as much as that.

9065. That means reducing the mortality of the worm considerably; does it not?—Yes, and also increasing the silk content of the cocoons spun by the worm.

9066. Do the epidemic diseases, which do so much damage to the worm, come in cycles?—I have not noticed any periodicity about the occurrence of these epidemics but they are most severe when, for want of rain or other reasons, the supply of silk-worm food is scanty or of poor quality.

9067. Is it your view that your knowledge now enables you to keep in check the known diseases of the silk-worm?—It certainly does.

9068. I suppose that the business of sericulture is a tradition of long standing in certain communities in the State. Is it very difficult to persuade districts which have not been accustomed to the practice of sericulture to take it up?—I have noticed this about the extension of sericulture, that it generally extends by overflow; there is an area where sericulture is established and it spreads from that area.

9069. From village to village?—Yes, from village to village. You cannot easily plant a sericulture colony in a place where sericulture has not been carried on before; it is very difficult. Sericulture is slowly extending in Mysore, and it is extending from old areas to new ones. We made some efforts to introduce sericulture in places where conditions seemed suitable but where it had not been practised before; we are interesting people, but we do not succeed in making them take up the industry.

9070. You have never had a successful effort of that sort?—I would not say never; but it is very difficult work; we feel we had better devote our efforts to some more useful lines.

9071. Can you think of a case where you have introduced sericulture with success in a new area?—Yes; Chitaldrug.

9072. That is the only case?—Yes.

9073. How do you go about establishing these new communities?—I generally satisfy myself by experiment that the conditions there are suitable, I plant a small area with mulberry, and send down a man there with silk-worm seed; after he had reared them there through all the seasons of the year and I am satisfied with the results, I interest some influential local man to take up the industry. I tell him he cannot expect to get very rich himself immediately, but that he will be serving the community by showing them a way to some lucrative profession. Then, I help him; I give him the services of a trained operative from my department who works there a couple of seasons; and then the industry slowly spreads. I find in the beginning that I have to buy the rearer's cocoons; he does not know what to do with them. Generally I place him in touch with markets, I find a market for his silk, but later on he is able to do all this for himself, and then the business requires no more attention from me than only to see that the man gets good seed from time to time.

9074. Are you constantly training assistants who, in their turn, will be capable of going out and demonstrating?—Yes; I have been doing it.

9075. And I suppose you find it is very important that you should not advocate the taking up of sericulture in areas where it is not likely to be successful; you have to be very careful not to have a failure?—Yes.

9076. You experiment through one season before you make up your mind to recommend it?—I have sometimes experimented through more seasons than that; but one season is the minimum.

9077. In villages which have taken up sericulture on an important scale, how does the industry fit in with the normal business of the farmer?—It does not interfere with it at all; it only employs the spare resources of the farmer's home; that is to say, the time that would otherwise go to waste, the time during which the people would otherwise be idle.

9078. In your view it is an ideal spare-time occupation for cultivators in this country?—Yes.

9079. Can you say in your experience that the taking up of sericulture has not had a bad effect on the ordinary cultivation of the cultivator's farm?—Emphatically that has been my experience. Far from having a bad effect, it has improved the general cultivation also by placing the cultivator in possession of funds which otherwise he would not have commanded.

9080. And going about the country, do you think you notice that sericultural areas are better cultivated areas? Do you go so far as that?—Yes; the sericultural areas are generally more densely populated; they are better cultivated. I would not claim for sericulture the entire credit for the better cultivation; it might be because the land is more fertile and there are more people to work it; but I have found as a rule that sericultural areas are very well cultivated.

9081. On what sort of scale does the small cultivator proceed? What area of ground do you recommend him to plant with mulberry?—That would depend upon how many working people he has got at home, for that practically sets the limit to the extent to which an ordinary household can practise sericulture.

9082. What would an ordinary household consist of?—A husband, a wife, a grown-up son and two little children; such a household can manage about half an acre of mulberry.

9083. What would that half acre give them in terms of silk and value?—If it was good dry land, unirrigated land, what we call *koshki* in Mysore, it would give him Rs. 100 net profit.

9084. *Sir Thomas Middleton*: From which the cost of family labour would be deducted?—It would, for purposes of accountancy, but it costs him nothing because otherwise it would go to waste.

9085. *The Chairman*: It is a spare-time occupation, so that although for purposes of accountancy you would deduct the value of the labour, in fact it is a net gain?—It is a net gain.

9086. *The Raja of Parlakimedi*: What are the factors you take into consideration before introducing sericulture in a village?—I would see whether there was spare labour in the village; whether there was any subsidiary occupation which had already established itself there; I would take care that I do not disturb any occupations which have already been found suitable to the locality, and I would satisfy myself about the climatic conditions.

9087. So, you generally choose big villages densely populated?—It is not the population of the village I consider so much as the population of the locality.

9088. Do you have Taluk Development Associations under the Mysore Government? I see they are doing very useful work in other parts of India?—The local bodies have been doing very useful work in Mysore, and we receive a good deal of help from them. We have got the District Boards; we

used to have Taluk Boards formerly, but now we have village panchayats, the Taluk Boards having been abolished. The local bodies help us/

9089. Do they look into the question of providing agriculturists with home industries?—Yes; that is a very important item of work with them; the District Boards take a great deal of interest in that.

9090. Do they consult you constantly?—Yes; we are generally invited to attend their meetings and we are generally co-opted to the sub-committees which deal with economic questions.

9091. Whom do you hold responsible for seed distribution?—Ourselves.

9092. The department itself?—Yes.

9093. You do not entrust it to any village organisation?—Where co-operative societies exist, there are about eleven of them in existence now, we hand over the distribution of seed to them; otherwise our farms, of which there are a number distributed over the sericulture areas, are utilised as seed depôts. The farm officers go among the farmers, book indents for seed and send us a consolidated indent.

9094. *Mr. Calvert*: Who goes to the villages?—The people who manage our farms. There are a number of farms distributed over the State, and have got men in charge of them.

9095. Men in charge of the Government farms?—Yes.

9096. *The Raja of Parlakimedi*: What are the well-known subsidiary industries of the agriculturists in addition to this?—Rope-making, mat-weaving, carpentry, and in some places cattle-breeding.

9097. Of course sericulture does not interfere with any of these?—No.

9098. In dry land, what is the richest crop you can grow in these parts?—Mulberry.

9099. Do you not have ground-nut?—We do have ground-nut.

9100. Compared with sericulture, considering the expenditure and trouble which one has to undertake, how does it stand in yield?—It is nowhere near sericulture.

9101. Can you give a rough idea of the difference of percentage between the two?—I can give you very accurate figures about sericulture, but my impression about ground-nut cultivation may not be so accurate. The return from sericulture is about Rs. 200 an acre on dry land, provided the land is suitable; here ground-nut is not grown on dry land of the same quality as that on which mulberry is grown; I think the return from ground-nut is somewhere between Rs. 30 and Rs. 45 an acre.

9102. Does your department co-operate with the Agricultural Department?—My department is under the general control of the Director of Agriculture, and in regard to scientific work I get a good deal of co-operation from the Agricultural Department.

9103. You work in harmony with that department; you consult each other?—Absolutely.

9104. *Sir Henry Lawrence*: Are you still Secretary of the Agricultural Committee?—No.

9105. You were so?—I was so for two years.

9106. *The Raja of Parlakimedi*: Why do you not try castor as one of the crop useful for the worms to feed upon?—Mulberry silk-worms do not eat castor leaves.

9107. There is a variety in Bengal which does so?—Yes, the *Eri*.

9108. Do they not do well in this climate?—They do well but they are not as good value for the work done in rearing as the worms that feed on mulberry. They are not generally reared where mulberry silk worms can be reared.

9109. Even if you take away the leaves of castor the plant still bears fruit, so that the agriculturist will be getting a castor crop and he will be

~~benefited by sericulture also.~~ So, I think it is a thing which ought to be thought of. You have not considered that point?—I have certainly considered it. I have viewed it from this point of view; the limiting factor, as I have said, is the amount of spare labour available in the home, so that industry is the most suitable for the home which furnishes the best return for the labour; the rearing of the mulberry silk-worm is more profitable than the rearing of the *Eri* silk-worm. I tried *Eri* silk-worms when I was a revenue officer.

9110. You have actually experimented upon them?—Yes.

9111. *Sir James MacKenna*: Do you suffer a good deal from pebrine disease of silk-worms in Mysore?—Yes, we do suffer a good deal.

9112. Are you aware of the work done on that subject by Mr. Hutchinson at Pusa?—Yes.

9113. Did you consult him on the matter?—He had been invited by the Mysore Government at my instance.

9114. You are very optimistic about the possibility of artificial silk declining and natural silk again taking its place. Do you really believe that?—I did not put it in such general terms, or if I did, I did not express myself correctly. I did not say that artificial silk would decline; I said that artificial silk would cease to compete with natural silk, that is, natural silk would rise to a plane where it would avoid direct conflict with artificial silk; that is what I meant. Just now, the competition of artificial silk makes natural silk decline. I said this was a temporary phase of things.

9115. You think things will balance later on?—Yes; when the quality of our natural silk improves, artificial silk will not be able to compete.

9116. And the price comes down?—Yes, that would help.

9117. *Prof. Gangulee*: Do you know of any tract in Mysore where ordinary cultivation has been replaced by mulberry?—In every sericultural district there is a tract where silk-worm rearing has become the chief occupation and not merely a subsidiary occupation.

9118. There is that tendency?—It is not a general tendency; it depends on certain well-marked local conditions; if those conditions exist this thing happens; it begins as a tendency and finally it becomes an established fact, but it depends on the existence of certain conditions.

9119. Instead of growing a foodcrop, he would grow mulberry?—Yes, if the soil is more suitable for mulberry than for foodcrops.

9120. Is there not a great possibility of the expansion of the industry in Mysore?—I think so.

9121. Why do you not start sericulture in your Malnad tract?—Because there is not enough population there.

9122. Scarcity of population?—Yes; and I think in certain parts of the area the air is too moist.

9123. So that the pressure of the population on the land is a factor?—Yes, a very important factor; I would say probably the most important factor, after natural conditions.

9124. *Dr. Hyder*: Is not your Malnad tract devoted to other crops such as coffee and other more valuable crops? Is there enough land for mulberry cultivation?—There is enough land available for mulberry cultivation if the people want to take it up, for they have large areas of waste land.

9125. *The Raja of Parlakimedi*: Where you encourage sericulture in a village, do you see that that village reserves a certain area of land to grow their foodcrops?—I do not need to see it, for the ryot does it for himself. I tell him that sericulture is a good thing in the locality, and then I leave it to his good sense to see in what area he can afford to put in mulberry. We cannot interfere to any great extent with the operation of economic laws; he consults his own convenience; we merely tell him what is good.

9126. In course of time, there will be that trouble of meeting the demand for foodcrops?—It is possible to make too much of that difficulty. It is not as though we were in an isolated condition which compelled us to produce all our requirements ourselves. So long as we have the means to purchase foodstuffs we can always get them. The main thing is to produce the most valuable thing we can.

9127. You would depend upon importing?—Not importing from foreign countries; in India there are always places where foodstuffs can be had from.

9128. Importing from other parts of India?—Yes.

9129. *Prof. Gangulee*: Ten years ago this industry was declining?—Yes.

9130. You say in this memorandum that one of the reasons was the deterioration of silk-worm?—Yes.

9131. And you imported Japanese silk-worms, did you not?—Yes.

9132. Then you go on to say that this Japanese race of silk-worms was finally replaced by the indigenous race?—Yes.

9133. You now depend solely upon your indigenous races. Is that so?—Yes; of course we are conducting experiments to see whether it is possible to improve by cross-breeding, and we are also conducting experiments with pure foreign races.

9134. Have you tried any other races except the Japanese? Have you tried the French breed?—I have tried French seed; I have tried both French seed got from France and French seed got from Kashmir; I have tried Italian seed, Japanese seed, Chinese seed; I have also tried the Madagascar race and the *Nistri* breed.

9135. What is the result of those experiments?—The silk-worms thrive and I got cocoons; but I did not see any reason why any of these should displace the Mysore race.

9136. You say, "It is not possible to shorten the rearing period or to secure a more profitable ratio between the yield of silk and the consumption of mulberry leaves", and yet you maintain that the hybrid breeds would not be profitable?—For one thing, the chances of successfully rearing a brood of Mysore worms are infinitely greater than of successfully rearing foreign silk-worms here; it is easier to rear the former, and the incidence of disease is very much less; and for another thing, the multivoltine race has this advantage that it offers occupation to the workers all the year round, and there is no other silk-worm which is anywhere near as good as the Mysore race which offers the same advantage. That is a very important consideration with us.

9137. You have already referred to the fact that you have been greatly benefited by the research work done by Lefroy, and Hutchinson and other workers in British India?—It has increased our store of knowledge certainly.

9138. For your investigation did you seek assistance from them in any way?—So far as their researches related to conditions in Mysore, I asked them to advise me about the organisation of my grainages; I consulted Mr. Hutchinson in this matter.

9139. Did you ask him to test the purity of seed?—No; but we asked him to test the adequacy of our grainage technique; I wanted to see if other methods could be introduced for the purpose. He expressed the opinion that it was difficult to apply the Pasteur system of examination for pebrine to the case of multivoltine silk-worms; we are mainly concerned with multivoltine. When I read what he said I naturally grew very much concerned; so I requested him to come here and look at our grainages and see whether we were doing the work properly. I took him round, and he was satisfied with the technique.

9140. So the technique that you developed in Mysore was independent of any direct assistance from the researches of Mr. Hutchinson?—Yes, we had

a grainage technique independently of Mr. Hutchinson. He was satisfied with our technique in Mysore, and then he advised me to try a technique which he recommended. I tried that for sometime, and I found that it was not superior to the technique that we were already working, so far as practical results were concerned.

9141. You have a research staff here?—Yes, I have.

9142. With regard to sericultural education, you say that you have introduced this subject in selected middle schools in the State?—Yes.

9143. Is it compulsory?—No, it is an optional subject.

9144. Does it fit in well in the curriculum?—Yes. They have two other optional subjects; this makes a third; I have selected middle schools which are in the heart of the sericultural area, and this option benefits the children of parents who are practising sericulture.

9145. In middle schools?—Yes.

9146. Who teaches this subject of sericulture?—The teachers are nominated by me.

9147. Does this department work in consultation with the Education Department?—Yes. The scheme has been worked out in consultation with the Inspector-General of Education; I select the teachers and send up their names to the Inspector-General of Education, and he appoints them. Their technical work is supervised by me; they are treated for administrative purposes as part of the school staff.

9148. Could you give us an idea of the salary these sericulture teachers get?—Rs. 25 per month and, I might add, they deserve very much more.

9149. *The Raja of Parlakimedi*: They do not get any sort of allowance for taking up this duty? Does Government, in order to encourage the teaching of sericulture in schools, give any allowance to such teachers?—They are not being given any allowance so far; the experiment itself is new; Government are watching the results, I believe.

9150. Have you recommended the granting of such an allowance, or is it under your consideration?—This experiment is financed by the District Boards, and I am satisfied that they have given as big a salary as they can afford. The District Boards themselves have so many calls upon their purse.

9151. *Mr. Calvert*: In this printed note you have used to expressions, one of sericulture “supporting” families:—and another of sericulture being a “subsidiary industry”. To what extent is it subsidiary and to what extent is it a sole support?—I could not give you the proportion; but in the vicinity of large markets and in areas where conditions are specially suitable to sericulture, it is the sole occupation; and I have enumerated in my note the conditions which favour that concentration of the industry as a sole occupation. I think in the Mysore district about a fourth of the silk produced is produced by people who practise the industry as a sole occupation.

9152. And three-fourths is subsidiary?—Yes, in the Mysore district.

9153. Are there any caste restrictions with regard to people who go in for cocoon rearing?—No.

9154. Do all people take part in it?—Some communities have sentimental objections and, in places where the industry has not penetrated, everybody has sentimental objections to some extent; but it is easy to overestimate the influence of that prejudice.

9155. Your better class Hindu cultivators will go in for silk-worm rearing?—The disinclination does not proceed on any caste basis. There are some communities which have a religious horror of taking life, the Jains for instance. I have never tried to induce a Jain to take up sericulture because he cannot do it without losing caste. In other communities there is less difficulty.

9156. Now, these people who go in for sericulture as a subsidiary industry, are they tenants, small owners, medium owners, or big owners?—They are generally small holders of land either as owners or as tenants.

9157. Do tenants actually go in for sericulture?—Yes, the tenants here are in very many cases *kādim* tenants; generally the largest number of tenants are to be found in *inam* villages, and they have got a right of occupancy of land. Of course it requires some fixity of tenure to induce a man to put money into the soil; a tenant-at-will is not likely to plant the land with mulberry.

9158. The bigger owners do not go in for sericulture?—No.

9159. Are there any cases in which the bigger owners have grown mulberry for hire to tenants?—There have been a few cases but not many. The bigger owners generally are absentee landlords.

9160. I presume that the co-operative societies you have now, elect their own Chairmen and the committees?—Yes; they do.

9161. Their organisation is based on self-help?—Yes.

9162. The technical advice comes from outside?—Yes.

9163. Is the supervision of these societies done by yourself or by your staff?—By me and by my staff. I have got a man specially on this work.

9164. They are trained entomologists?—They are trained sericulturists; they have some knowledge of entomology, but they have specialised in sericulture.

9165. They know all about the silk-worm?—Yes.

9166. You are more or less under the Director of Agriculture?—Yes.

9167. But is there a separate Entomologist apart from yourself?—Yes, there is an Entomologist attached to the Department.

9168. For general work?—Yes.

9169. You are not under him?—No.

9170. Do the people who rear the worms do the reeling themselves?—Generally reeling is done by a different class of people.

9171. Do the co-operative societies so far extend only to the rearers, or are the reelers also in co-operative societies?—The rearers only, because the problem there is simpler.

9172. Is the reeling done at home or in factories?—It is sometimes done in the home; it is sometimes done also in what you may call a factory; there are a number of *charkas* set up in an open yard under the supervision of one man.

9173. Are the workers men or women?—They are generally men, but I have seen women doing the reeling also.

9174. Throughout the sericultural operation, the work is done chiefly by men and not by women?—I thought you referred to reeling, and I said by men generally. The rearing work is done by women and the reeling work mostly by men.

9175. Do the co-operative societies sell the cocoons?—They do.

9176. Do they do it by auction or what system?—Well, not exactly by auction. These co-operative societies at the time they distribute the seed to the members find out from the members whether they are going to sell the cocoons by themselves or whether they expect any assistance from the societies in the sale of the cocoons. Supposing the member wants the society's help, the society makes an estimate of the quantity of cocoons they have to find sale for, and they make a contract with the reelers; and as soon as the cocoons are ready they are made over to the reeler, who pays the market price for them.

9177. Do you find any difficulty in finding a sale for the cocoons?—Not recently.

Mr. N. Rama Rao.

should be prohibitive, for that would be starving our silk looms of their raw material. I would say it should be about enough to bring up the price of the imported material to the price of indigenous silk of similar quality.

9214. *Dr. Hyder*: Are you referring to silk yarn or silk piecegoods?—I am speaking of silk yarn.

9215. The duty on silk yarn is 15 per cent, while that on silk piecegoods is 30 per cent?—Yes.

9216. *Sir Henry Lawrence*: Do you ask for protection against both silk yarn and silk goods?—I am concerned mainly with silk yarn. I do not think that silk goods compete very seriously with the silk-weaving trade in India. But if it is considered necessary to raise the duty on silk goods also, correspondingly, I should have no objection.

9217. It is rather a question of what is your proposal?—My proposal is that raw silk here should be protected against raw silk coming in from outside India.

9218. Would you put on a duty of 100 per cent. or 200 per cent.? What is the amount that you have investigated and ascertained to be necessary?—I think about 25 per cent. would be a proper rate.

9219. You would raise it from 15 per cent to 25 per cent?—Yes.

9220. That would be sufficient protection for your industry?—I think so.

9221. Have you worked it out?—Yes, I have.

9222. Is the Mysore worm an indigenous worm?—It has become indigenous; I believe it came originally from China; there is a worm in China that is similar to the Mysore one. I got cocoons from Canton which were very similar to the Mysore cocoon.

9223. When did they come into Mysore? Hundreds of years ago?—About 100 years ago, I should think.

9224. *Dr. Hyder*: Was it not introduced by Hyder Ali and Tippoo Sultan?—That is the tradition, but I have recently had reason to doubt its correctness.

9225. Is not the silk industry chiefly in the hands of Mahommedans here?—A very large number of Mahommedans practise it, but I would not say it was chiefly in the hands of Mahommedans.

9226. *Sir Henry Lawrence*: You regard the Mysore silk-worm as the best in India?—The best multivoltine worm in India.

9227. I want to know whether it is considered better than the univoltine or polyvoltine?—It is the best worm in India.

9228. Is it suitable for other tracts than Mysore?—Yes.

9229. Is it suitable for the whole of India?—I do not know; I know that some very good crops have been taken with seed which I sent to the South of India, and which were reared under conditions very different from those which prevailed in Mysore; I know they have been tried in Bengal and reared very successfully; I do not know about other parts of India.

9230. Where has it been tried?—In Bengal, Cochin and Travancore it does very well.

9231. You do not know of any experiments that have been made with it in Bombay or the Central Provinces, or Upper India?—I do not know.

9232. Do you know if any experiments have been made in Kashmir?—I know that experiments have not been made in Kashmir.

9233. *Dr. Hyder*: Have you been supplying your seeds to Baluchistan?—No.

9234. *Sir Thomas Middleton*: In the statement which you have put in you say that the increase in the output of silk in the last eight years has been about 50 per cent. Is this increase mainly due to an extension of area, or mainly due to improved methods of cultivation?—It is largely due to exten-

sion of area, but it is also partly due to better seed and better rearing methods.

9235. In the same period the receipts from silk exported from Mysore have increased from 27 lakhs to 87 lakhs. What proportion of that increased receipt is likely to have reached the producer of silk?—I have said that the rearer gets only a very small share of the profits of the silk industry.

9236. You cannot give us any idea as to what percentage of the increase he is getting?—I have not worked it out. I could give you the figure if I had time.

9237. You think it is going mainly to the weaver?—It is going to a number of persons who have not earned it, to the man who lends money to the rearer, to the man who reels the cocoon, to the *sowcar* who buys the silk from the small rearer, and a good deal of it goes to the broker.

9238. Between 27 and 87 lakhs there is a good deal of money to be accounted for, and one would hope that some of it, at least, reaches the producer?—Naturally, otherwise there would be no expansion of mulberry cultivation.

9239. You have told us already that about one-fourth of the industry is a whole-time industry, and about three-fourths is part-time. What is your policy? Are you aiming at extending the part-time industry or the whole-time? Which would you like to see developed?—The part-time industry.

9240. Do you regard the whole-time industry as a somewhat risky one?—Yes, there are risks, unless the conditions are absolutely favourable. I have said in my note that it is more susceptible to variations in conditions than the part-time industry.

9241. In your memorandum I notice a statement new to us, that the students trained have invariably settled down on their own lands?—Yes.

9242. That is your experience here?—Yes, that has been my experience. I find it difficult to get recruits from among the trained people, because they prefer to do business on their own account.

9243. That seems to indicate that silk culture is fairly profitable?—It is, certainly.

9244. At any rate, it pays better than Rs. 25 per month as a teacher; is that the inference?—It very largely depends on the person.

9245. *The Chairman*: You gave us an estimate of the net profit per acre of silk-worm rearing as a part-time occupation. Can you give us an equivalent estimate of its net profit per acre as a whole-time industry?—More capital comes into the business when it is a whole-time industry. The profit depends upon whether the mulberry is grown as an irrigated crop or as a dry crop. I would put the figures at about one and a half times the return from sericulture practised as a part-time industry.

9246. Is that deducting the value of the labour of the family carrying on the industry?—Yes; where it is practised as a whole-time occupation I would deduct all that in working out the net result.

9247. The increase being due to the fact that it becomes a 12 months' occupation instead of an occupation carried on during the slack seasons so far as agriculture is concerned?—That is so; it becomes the sole occupation of the entire family, and the cultivator puts his other resources into it also.

9248. How many crops does the part-time man produce?—There is no difference in the number of crops; the only difference is in the volume.*

9249. *Mr. Calvert*: Are the reelers separate from the rearers?—Yes.

9250. Could you give us any indication of the amount of wages earned by a reeler?—There are two kinds of people employed in reeling; one is the man who actually feeds the threads, that is the reeler. There has also got to be a turner; the turner is paid about 3 annas per day; it is generally a

* See Appendix II.

boy, and I have also seen women employed in that work; it is not very strenuous work. The man who feeds the cocoons or the reeler, I mean, gets 8 to 10 annas a day of 9 hours' work.

9251. *Professor Gangulee*: Most of the silk is exported from Mysore to British India, not overseas?—Yes.

9252. What percentage of it is consumed in the State itself?—About 30 per cent., of the silk produced in the State is consumed in the State.

9253. Is it converted into silk-cloth?—Yes.

9254. And 60 per cent goes out?—It goes to South India.

9255. Not to any other part?—Mostly to Southern India.

9256. If the silk trade is a profitable one, you anticipate a time when this 60 per cent will also be consumed in the State?—I should not like the State to use all the silk that it produces, for it is a poor State and silk is an article of luxury. I should like rich parts of India to buy our silk and send us the money.

9257. Is it likely to develop as a factory industry?—Rearing, no; reeling, to a certain extent.

9258. Reeling is done in Japan on a factory scale?—In Japan also a good deal of reeling is done in cottages.

9259. Silk-worm rearing is done in Japan in villages but reeling in factories, and Japan is competing with the whole world?—That is so.

9260. Do you find a tendency here for it to be put on a factory basis?—I see the tendency but as yet it is in its beginnings. We have evolved from the individual reeler with his single *charka* to 10 *charkas* working in the same place; of course, that requires a capitalist. Recently, we have had a filature started. I think it will have a great influence on the improvement of reeling, but our main problem is to see that cottage reeling will flourish.

9261. You stated in reply to Sir Henry Lawrence that some Brahmins had no objection to the rearing of silk-worms?—They have no objection to rearing.

9262. Do they object to killing?—They do object to killing.

9263. *Sir Henry Lawrence*: I do not quite understand that. What do the Brahmins object to?—Stifling the cocoons and killing the worms. They do not object to feeding them on mulberry leaves.

9264. *Professor Gangulee*: And then selling them to somebody?—Yes.

9265. Then the other people kill them?—Yes.

9266. *Sir Henry Lawrence*: But do they not object to the rearing of the silk-worms when they know that the worms are destined to be killed?—There are no very serious practical results from such objections, though they might possibly cause some qualms of conscience.

9267. How many acres are usually devoted to this industry by the man who adopts it as a full-time occupation?—All the land that he has got; generally about 4 acres.

9268. And on that land he gets one and a half times the profit of the man who carries it on as a part-time occupation?—Yes.

9269. When carried on as a whole-time occupation it yields Rs. 300 an acre?—Yes.

9270. So that he makes Rs. 1,200 from his 4 acres?—Yes.

9271. As net profit?—As net profit. I am not deducting the cost of living from that.

9272. That is not net profit?—It is not net profit; it is the profit of the business. Of course, that is what he keeps with himself; it does not include the cost of his household, and he also works at it. I have not included the cost of his household, but I have included the cost of the labour he employs, the manure that he uses, the appliances, the seed and that kind of thing.

9273. Do you include the man's own labour?—I have not included the labour of the family; it is the remuneration for the labour of the family in fact and the return from land combined.

9274. Is your comparison on all fours? As I understand, in the part-time industry you have excluded these charges but in the whole-time industry you have included them; is that so? I understood you to say that the part-time sericulturist makes Rs. 200 an acre?—In neither case did I include the cost of living of the family.

9275. *Dr. Hyder*: There is no exemption from land revenue on such crops as mulberry plantations?—No.

9276. All these mulberry plantations have to fear the assessment?—They have to pay the assessment fixed for the land.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Saturday, the 13th November, 1926, at Coimbatore.

[Extracts from Mr. N. Rama Rao's letter, dated Mysore, the 14th December, 1926.]

APPENDIX I.

I give below the work done by the Managing Committees of Sericultural Co-operative Societies (which are elected by the members), and the assistance rendered by Government Departments.

Work done by the Society's Committee.	Work done by Government Departments.
(i) They ascertain the requirements of members for seed, and send out agents for buying seed cocoons to seed centres, often at some distance.	(i) The Sericultural Department places them in touch with recognised seed cocoon rearers, and help them to secure good bargains.
(ii) They arrange for cellular examination of moths, so as to obtain disease-free eggs, doing such preliminary work as pairing and segregation in cellules.	(ii) The Sericultural Department sends down a man with a microscope for examination.
(iii) They hatch the eggs under the supervision of their most expert member and distribute young worms, after rearing through the first two stages.	(iii) The Sericultural Department disinfects the nursery.
(iv) They receive loan applications, investigate the <i>bona fides</i> of the applicant, and grant loans.	(iv) The Sericultural Department deputs a man to watch the rearings of the members, and give them advice.
(v) They grant time for repayment when necessary.	(v) The Co-operative Department audits their accounts.
(vi) They invite deposits, borrow money, and do such acts as may be necessary for providing themselves with funds.	(vi) The Co-operative Department lends them money out of an allotment made by Government for the purpose.
(vii) They obtain for members the advice and guidance of the department.	
(viii) They obtain for members mulberry leaves, or worms, as may be necessary whenever members have not enough or more than enough leaves for their rearings.	
(ix) They take the responsibility of marketing or reeling the cocoon crop of the members.	

It will be seen from the above that the Co-operative Societies manage their own affairs pretty completely, and that we do not spoil them with too much control.

Mr. N. Rama Rao.

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APPENDIX II.

The figures I gave regarding the profit from sericulture practised as a part-time industry, viz., Rs. 200 per acre per annum on dry land and Rs. 300 per acre per annum on irrigated land, are correct.

My view is that the income from sericulture as a whole-time industry is about one and a half times as much as that from the part-time industry—which is to say, that it is about Rs. 300 per acre per annum on dry land, and about Rs. 450 per acre per annum on irrigated land.

In arriving at the figures, I have deducted from the gross returns all items of money expenditure, such as cost of manure and seed, wages extra labour employed, and land revenue. I have not deducted the cost of the home-labour devoted to the industry. This, in the case of part-time sericulture, is labour most of which would otherwise go to waste for lack of employment; in the case of the whole-time industry, it is the whole of the labour of the family.

In the latter case, the return not only includes the results of the labour which would otherwise go unemployed, but also the wages which the adult males would have earned if they had not taken up sericulture as a main industry. It is to be noted that the whole-time worker also spends more money on cultivation.

I append a tabular statement (below) which I hope will be found to give clearly the details required by the Commission.

Statement showing the profit derived per acre, per annum, from Sericulture, practised as (1) a part-time industry, and (2) a whole-time industry.

PART-TIME.		WHOLE-TIME.	
Dry Land.	Irrigated Land.	Dry Land.	Irrigated Land.
4 to 5 crops are taken per year 3 crops each of 350 or 400 layings of eggs. 2 crops of 200 layings Total production—about 500 lbs. of cocoons (20 maunds of 25 lbs. each).	6 to 7 crops. Total quantity reared about 4,000 layings. Pruning after every 3 crops with manuring. Total production about 1,200 lbs. of cocoons (45 to 48 maunds).	4 to 5 crops are taken per year using about 2,500 layings (3 crops of about 650 layings each and 2 of about 500 together). Production 875 lbs. of cocoons.	6 to 7 crops. Total quantity reared about 4,000 to 4,200 layings. (2 crops of about 800 layings each and 1 of about 400 layings). Then pruning, digging and heavy manuring. Again a similar succession of crops. The 7th crop if any is much smaller about 200 layings). Production about 1,500 lbs. of cocoons. —Value Rs. 720.
Value Rs. 240	Value about . . Rs. 540	Value about . . Rs. 420	
<i>Expenditure.</i>	<i>Expenditure.</i>	<i>Expenditure.</i>	<i>Expenditure.</i>
	Rs.	Rs.	Rs.
(i) Manure—10 cart loads . .	8	30	60
(ii) Labour—			
Weeding	5	20	50
Gathering leaves	15	25	35
(iii) Seed	15	20	40
(iv) Land Revenue	2	2	10
(v) Contingencies	5	20	20
(vi) Irrigation	70	...	80
	50	117	295
Net return	190	303	425
	310	Say 300	

Saturday, November 13th, 1926.

COIMBATORE.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE,
K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E.,
C.B.

Rai Bahadur Sir GANGA RAM, Kt.,
C.I.E., M.V.O.

Sir JAMES MacKENNA, Kt., C.I.E.,
I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja SRI KRISHNA CHANDRA GAJA-
PATI NARAYANA DEO of Parlaki-
medi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU
GARU, C.S.I.

Rao Bahadur B. MUNISWAMI NAYUDU
GARU. } (*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.

Mr. F. W. H. SMITH.

} (*Joint Secretaries.*)

Mr. RUDOLPH D. ANSTEAD, M.A., C.I.E., Director of Agriculture,
Madras.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH (a) (i).—Research must always be very largely a provincial concern because it must deal with local problems. India is such a vast country and conditions differ so much in different parts of it, that very few problems are general and very few agricultural practices can be applied to the whole of India. Even in the Madras Presidency itself the conditions vary enormously. It is for this reason necessary for each Province to have its own research department to deal with its own special problems. A Central Research Institute like Pusa has only a limited value to Madras. The main crops in which we are interested are not grown at Pusa at all. It is only very general problems, such as those of the fundamentals of soil physics and chemistry, mycology, entomology, etc., which can be tackled at Pusa with benefit to the Provinces.

2. In considering the question of research it is necessary to distinguish between what may be called fundamental research and applied research.

3. Fundamental research should be the main concern of a Central Research Institute like that at Pusa, the application of the discoveries made there to local problems, which often requires additional research, must always be the task of the Provincial Research Institutes. There are many problems which involve no new scientific principles, but rather the diagnosis of the local conditions. Once these have been analysed the application of the main principle is obvious.

4. To illustrate what I mean, take the case of soil physics, a subject which has hardly been touched as yet in India. The Central Research Institute should attack the problem along its broad lines while the Provincial Research Institutes should follow it up as related to their own soil types and climatic

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conditions. To do this organised co-operation is needed both to plan out the general campaign and to keep the provincial research officers in touch with the discoveries made by the central research officers, and there should be frequent intercourse and discussions between the two groups of officers so that side-lines of local interest may be followed up.

5. At present there is little or no organisation for this to be done. The same thing applies to all the big fundamental subjects of research whether, they be chemical, entomological, mycological, or bacteriological. To take another example, Dr. Hutchinson's work on the effect of sulphur bacteria on making phosphates soluble in composts was a fundamental problem and is capable of infinite development in the Provinces under different local conditions. Yet there is no organisation for following it up and Provincial Agricultural Departments have done so or not just as they pleased, and where they have done so, have not kept in sufficient touch with the Imperial Bacteriologist to make the fullest possible use of his experience and advice on the one hand, or with other Provinces which may be working at the same problem.

6. I am therefore in favour of both a Central Research Station and a Central Advisory Board to act as an advisory body to the Provinces and afford them help when necessary both with men and advice.

7. It may be necessary for this Central Research Institute to carry out its investigations on fundamental problems, not at Pusa but in a Province. This has already been recognised since the Imperial Department have established their Sugar-breeding Station at Coimbatore, their Animal Nutrition Station at Bangalore, and their dairy schools at Bangalore and Wellington in this Presidency. The same idea is being followed by the Indian Central Cotton Committee who have decided to undertake research on the boll shedding of cotton. This is a fundamental problem in which all cotton-growing areas are interested, but the original work is to be done at Coimbatore by the Committee's research officers.

8. What I should like to see is an organisation on the lines of the Indian Central Cotton Committee with funds at its disposal to study all crops. Such an advisory and controlling body on which the Provinces, the firms, the landholders, and in fact all those interested in agriculture should be represented, could do an immense amount of good and afford very valuable help to the Provinces. Provincial research could be strengthened and helped financially and supplied with research officers if need be, and big problems tackled under the guidance of an advisory committee. At the same time the Indian Central Cotton Committee should not be disturbed and it should be left to deal with cotton.

9. It is also very necessary to rouse the interest of all those who are connected with agriculture in the research which is being done. It is they who will have to apply the results. Not only the ryots and the landholders, but also railway companies, shipping lines, and firms must be interested and a central organisation of the kind suggested whose conferences their representatives may be invited to attend is the best way of rousing the interest of such bodies.

10. I feel very strongly that greater facilities should be given to research officers from the different Provinces working on similar subjects to meet one another. Before the War, a few sectional meetings were held in the years in which the Board of Agriculture did not sit. These meetings were very beneficial and helpful. They were dropped on grounds of economy. Such meetings should be held frequently and research officers should be freely deputed to attend them and Directors of Agriculture should also attend such meetings. In this way, greater co-operation and co-ordination would be possible. It often happens now that the research officers and Directors in one Province do not know what their "opposite numbers" in other Provinces are doing and this leads to unnecessary duplication of work and other evils.

11. At the risk of being tedious I should like to give one example to illustrate my point. I am particularly interested in "artificial" farmyard

Mr. Rudolph D. Anstead.

manure as there would appear to be great possibilities of developing this source of organic manure in this Presidency where large quantities of waste material are available, and I should like to know just what has been done in other Provinces, their difficulties and successes. It was only when I met my fellow Directors at Simla last June—where I went for quite another reason be it noted—that I was able to collect this information. It should be obtainable in ready form through a central committee where Directors can meet frequently.

12. Provinces must issue their own literature in the form of leaflets, etc., dealing with local agricultural problems in the local vernaculars, but a great deal of information, both general and particular, could be issued by the central committee. At present the results of provincial research are issued in the form of Pusa bulletins, but these are too technical for the general public, while the *Agricultural Journal of India* does not reach a sufficient number of the general public. I would advocate the appointment of a special Publicity Officer attached to the central committee, a man with the knack of journalistic writing, whose duties would be to translate, so to speak, all bulletins, etc., into simple language and distribute regular articles to the Press all over India, even to small local papers, if necessary, in the vernacular. I feel that the general public do not know enough of what the agricultural departments are doing. It was for this reason, at the advice of Lord Willingdon, that this department issued its Popular Account of the work of the department and publishes monthly a Digest which is a running account of its operations. Since this has been done there has been much less criticism of the department due to ignorance and misinformation both inside and outside the Legislative Council and I think that we are in closer touch with the agricultural public than we used to be.

13. There is no lack of problems which await research when men and money can be found. In Madras, the special problems which need intensive study at the present moment are:—

- (1) Oil-seeds and pulses—These crops need study along the lines which have been adopted with paddy and sugar and cotton, and more recently, millets.
- (2) Fodder crops—An agrostologist is needed to study the whole question.
- (3) Soil physics—a question which has not yet been touched in this Presidency and which it is closely bound up with.
- (4) Agricultural engineering—a study of local implements with a view to their improvement.

Provision was at one time made for all the above research officers in the Madras Agricultural Department, but these posts have not been filled for lack of money.

14. As regards men for research work, I do not think that really suitable men can be found as a general rule (of course there are exceptions) in this country and it is necessary, in the first place, to recruit European research officers to start the work and train their own Indian assistants who can ultimately take their places. This has been done in the past with success.

15. The best method of recruiting Indian research officers is to first train assistants under a European officer and when they have been in the service for some years to pick out likely men who show talent and send them to England for special training and then bring them back to take charge.

16. In this Presidency, this has been done in the case of the Paddy Specialist and I am convinced that it is the best method and will give better results than recruiting men who have gone to England on their own account and taken an ordinary college course there. We know nothing about the ultimate suitability of such men as research officers.

17. I do not agree that sufficient training for research officers who are to hold high posts and organise and control research in the future can be

given at Pusa. It is necessary to send such officers to be trained at Rothamsted, and elsewhere, under the very best authorities and it is useless to send men for such training till we are first sure that they are likely to be what we want and until they have a preliminary grounding in the work to be done on the spot.

18. With regard to provincial research on crops and plant-breeding, the following progressive policy should be followed:—

- (1) Appointment of an expert botanist and plant breeder who will examine the crop, its distribution and possibilities and plan a campaign.
- (2) Establishment of a central breeding station at the Research Institute with necessary laboratories and equipment and staff of assistants and plant collectors.
- (3) Establishment of sub-stations in the main areas devoted to the crop for the evolution and testing of special strains to suit local climatic and soil conditions and special markets, with the necessary equipment and staff. The subordinate staff to these sub-stations must be appointed at least a year ahead of opening the station so that they may be trained at the central station.
- (4) Intensive study of manurial and irrigation problems connected with the crop.

19. This policy has been accepted in this Presidency and is being followed. Research on paddy has reached the third stage above and is just entering on the fourth stage. Research on cotton has reached the second stage. Research on millets has reached the second stage and the third stage is now being considered. Research on sugar has been complicated by the work having hitherto been done at Coimbatore by the Pusa staff. It may be said to be now in the second stage only. Other crops like oil-seeds, fodders, etc., have not yet been attacked.

QUESTION 2.—AGRICULTURAL EDUCATION.—It must be admitted that all forms of agricultural education so far tried in this Presidency have resulted in failure. Students who come to the Agricultural College at Coimbatore do so with one object in view and one only, *viz.*, to obtain a post in Government service. If they do not obtain such a post they look on it as a grievance.

2. As far as possible care is taken to accept only such students as come from the agricultural community and those who have lands of their own or who will have lands and several different courses have been tried and constant changes made, but the result is the same. A two years' course of practical agriculture designed to teach farming had to be abandoned because it failed to attract any student once they find that this did not lead to Government service.

3. I think that it must be admitted that at present there is no demand for agricultural education for its own sake and that there will be no such demand until present conditions change very considerably.

4. An experiment has been tried in the Presidency with two agricultural middle schools where a two years' practical course is given in the vernacular. These, however, have not really been a success. A certain number, about 15 per cent, of the boys who have undergone the course have returned to their lands, but it is difficult to find enough students to keep the schools running and one will probably have to be closed at an early date for lack of students.

5. I am strongly opposed to all ideas of trying to teach agriculture in primary schools or of including it as a vocational subject in high schools. Agriculture is a technical subject which can only be taught in a special technical school to which a farm is attached. Small children cannot be taught practical farming. Up to the age of about 12 or 14 boys should have a literary education supplemented by "Nature Study" and after that they may be taught practical farming and special technical schools equipped with a farm.

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6. A great deal more might be done in teaching nature study in primary and middle schools. The majority of Indian children are hopelessly ignorant about natural objects and processes going on around them. Could their knowledge of nature be increased it would help the Agricultural Department in their propaganda work. To take one instance only: The average ryot looks on a caterpillar which eats his crop as a complete entity and he has no conception that it has any connexion with a moth or butterfly. When the rains come the pest just disappears or appears as the case may be and he does not know why—it is a plague sent by the Gods. If we try to demonstrate a control method which involves the catching of moths, he fails to see any connexion and is not interested.

7. Could children in schools be taught nature study such difficulties as this would disappear. Nature study, to be successful, needs enthusiastic and knowledgeable teachers more than text books, the fields and the insects, etc., are the text book. In connexion with nature study, the school garden has a useful place. At present it is too often made as abortive attempt to teach horticulture which is styled "Agriculture" and the result is beneath contempt.

8. The "agricultural bias" in rural schools of which so much is heard could be obtained by teaching nature study if this subject were really well taught, and this, and a literary education of a general kind is all that should be attempted up to the high school stage.

9. Agriculture is not suited to "vocational" treatment in a high school for several reasons, the chief of which is that it is not a class-room subject which can be taught from a text book; it can only be taught on a farm. The difficulty and expense of attaching a farm to all high schools must be obvious. In the next place even if a farm is attached to the high school insufficient time can be devoted to agriculture. The boys are taken away to attend other classes at a time when they should be on the land. It is essential that every operation needed to raise any particular crop should be conducted by the boys themselves, they must not see it done only or be told about it, they must carry it out with their own hands. Such agricultural operations cannot be fitted into a time table such as schools delight in of so many hours a day at certain specified times. The time comes when the whole day must be spent in the fields ploughing or weeding or harvesting and these times cannot be predicted and put into a time table since they are dependent upon climatic factors. Then on the other hand there are times when no work can be done on the land. It is therefore necessary that any course in practical agriculture should be designed entirely on its own and it will not fit in with other courses. Hence the necessity for the special technical school for teaching agriculture in which this is the main subject and all other subjects are subsidiary to it and if they are taught at all they must give way to field work and only be engaged in when suitable occasions arise and the students can be spared from the land.

10. At a stage about Form IV the boys should have a choice of going on through the normal high school course leading to the University and a professional life or of going into special technical schools to fit themselves for an agricultural or industrial career. A number of such schools would have to be established. Those designed to teach agriculture will be equipped with farms and the course of instructions would be along strictly practical lines and given in the vernacular. A minimum of pure science would be taught just sufficient to explain the processes being carried out in the field. The teachers at these schools would have to be trained in an agricultural college and to hold an agricultural degree and the courses should be introduced by the Agricultural Department.

11. Such a training would not fit a boy for Government service or for a clerk's post and he would have to return to the land.

12. I am told that, were this scheme adopted, the technical schools would remain empty and that every boy, when it comes to the parting of the ways at Form IV, would choose the high course and the road to the University. If this is so, it simply means that there is no demand for an agricultural educa-

tion and that demand cannot be created by Government. It will only come when it has been sufficiently proved that the road leading to the University and the overcrowded professions usually leads to unemployment and starvation. When that lesson has been sufficiently learned, the technical schools will come into their own and farming will become popular.

(ix).—In England it was the gentlemen farmers who built up the agricultural industry but this is not the case in India. The big landholders here do not co-operate in the cause of agriculture and cultivation is always better in ryotawari areas.

2. One reason probably for the unpopularity of an agricultural life, which is by no means confined to India, is the dullness of the village, socially and intellectually, to a man who has had some education and a taste of the town facilities, and has learned that there is something better. I believe, therefore, that one of the ways to make agriculture more attractive to the educational youths is to improve the conditions of village and that bodies like the Young Men's Christian Association could probably be very helpful. What is needed is a few public spirited young men to make up their minds to improve the village, to start a social club, to take up the teaching of health and hygiene, to found a library and generally to take the town facilities to the village. In fact, agriculture as a profession is not likely to become popular till the Indian youth has learned a spirit of citizenship and any movement which tends to teach this should be encouraged.

3. The betterment of the economic and social conditions of the villages will do more to stop the present drift to the towns than any system of agricultural education. It is the educated men who do not like agriculture and who go to the towns. The village panchayats should be strengthened and the old village organisations reconstituted. These should give opportunity for public spirited educated men to do good work in villages.

(x).—The problem is both of recent date and complicated. Before the unsettling influences of English education, every young man found his calling determined for him by his elders or by the custom and tradition of his caste. Cultural education had no money value and was not sought after, except by a few. Practical agriculture, as the main industry of the population, held the loyal allegiance of youth and age. The practice of agriculture was, of course, developed to a greater extent than the theory or science. The various incidents of agricultural and allied work came to be specialised as the work of certain families and the village, in its economic aspect, was very largely a self-contained whole. The life of the individual was naturally cramped (i) by the joint family organisation and (ii) by the absence of scope for ambition and initiative. English education afforded careers to the individual. At first, such careers were assured; then the sight of a few dazzling prizes made the multitude freely bet on the gamble of English education, until to-day the "unemployed" problem among the intelligentsia calls for urgent solution.

2. To make agriculture attractive to half-educated youths by offering land or money inducements is neither necessary nor feasible. Under the joint family system and the traditional village economy, the ownership of broad acres is as much a trust and responsibility as a sign of individual prosperity. Leaving out of account the middle class youths who are out of the village for education, there are still as many men as the land can support, and more, to look after agriculture in the village. If they put energy and money into their work, they can achieve a great deal. Moreover, the restless and ambitious educated young men will not ordinarily be satisfied with the humdrum village life. The alumni of agricultural colleges hardly take kindly to agricultural pursuits, whether they come from agricultural classes or otherwise; they are ambitious to earn their best and to earn for themselves and they would leave to brothers or uncles the task of extracting yields from their small joint properties. The extra profit yielded from putting their brains into the family holding is hardly felt as sufficient recompense for the loss of a career, in which

they can live for themselves, a career for which they fitted themselves after an expense, which, according to Indian conditions and ideas, is substantial.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(a) The measures which are adopted in this Presidency for influencing and improving the practice of cultivators are as follows. When research, followed by trial on an experiment station, has shown that any particular practice is an improvement over local methods of agriculture, it is brought to the notice of the ryots by means of demonstration plots. Likely ryots in the localities concerned are picked out and persuaded to try the improvement on a small portion of their land. When new things such as seed, manure, or implements are concerned, these are given free (in the case of implements loaned) in the first place. The improvement in question is carried out under the supervision of a district officer, known as an Agricultural Demonstrator, and a cultivation sheet is kept, that is to say, a profit and loss account, in which all expenditure is noted, the ryot himself supplying the data. Attempts are made to carry such plots to a final conclusion, the crop is harvested and weighed and valued. Side by side with the demonstration plot is another on which the local method is carried out, the cost of this finding its place in the cultivation sheet also. Thus, at the end, it is possible to see the exact monetary gain to be secured by the adoption of the improved method. As far as possible, these demonstration plots are laid down in conspicuous places, *viz.*, public roads, near villages, etc., so that as many people may see them and discuss them as possible, and they are marked by a flag or some such thing to call the attention of the casual passer-by to them. This method has been found satisfactory for several reasons. The ryot sees the improvement advocated carried out on his own land, in fact he does it himself, and this disabuses his mind of the idea that he cannot do on his land what is done on a Government farm, that on the latter some secret nostrum of which he is not told is used, or that the farm soil has some special inherent fertility. Also it removes the fear that Government have some ulterior motive in wanting these improvements carried out. He actually sees the result both in crop and money and reaps the benefit. When the demonstration is successful he is quick to adopt the improvements for himself and his neighbours will follow his example. In this way his confidence is gained and by beginning with simple improvements, like a reduced seed-rate and economic transplanting of paddy, for instance, which cost nothing, he can be gradually led to adopt other improvements which may cost money to carry out, such as the use of iron ploughs or the application of artificial manures.

2. These demonstration plots have proved successful and popular and there is a growing demand for more of them. Some 600 of them exist scattered up and down the Presidency and the main things being demonstrated are the following:—

- (a) *Paddy*.—Reduced seed-rate followed by economic transplanting; use of improved strains; cultivation with iron ploughs; growing green manures; applying bonemeal with green manures; application of manures like sulphate of ammonia and superphosphate in conjunction with cattle manure.
- (b) *Sugarcane*.—Line planting, trenching, wrapping, propping; use of improved varieties; application of manures like poonac supplemented by sulphate of ammonia; improved methods of making jaggery, use of an improved type of furnace, iron mills, etc., use of iron ploughs for preliminary cultivation.
- (c) *Cotton*.—Use of improved strains; drill sowing; intercultivation with bullock-drawn implements; conservation of water; application of manures; clean picking.
- (d) *Coconuts*.—Introduction of dry farming methods of intercultivation and planting.
- (e) Demonstrations of methods dealing with pests and diseases.

(b) The limiting factor is men and money. These plots need the constant attention and supervision of the Agricultural Demonstrators, both to see that the necessary operations are carried out at the right time, and to sustain the

necessary interest of the ryot at the early stages. It is not always possible to bring the demonstration to a final conclusion at harvest time, but as many such results as possible are obtained. At present there are not enough Agricultural Demonstrators to supply the needs of the Presidency, each has a jurisdiction of two taluks, sometimes more, and there are large areas as yet untouched. The ideal is to have one Agricultural Demonstrator and two demonstration maistries to each taluk, and this should be worked up to as rapidly as possible. The Agricultural Demonstrators are men who have undergone a course of agriculture at the Agricultural College at Coimbatore.

2. In addition to the above, we have a few large demonstration plots, which we call demonstration areas. This is, at present, an experiment. It is an acceptance of the challenge that what the department teaches is not adapted to practical farming, and that what may be demonstrated on a small plot is not necessarily successful on a larger area. Areas of about 10 acres have been taken up on ryots' land and here half the land has been devoted to our improved methods, and compared and contrasted with local methods carried on on the other half. So far, the results have been very encouraging, but there is insufficient staff to enable us to have many of such areas.

3. In addition to this, a vigorous propaganda is carried out. Advantage is taken of as many fairs, festivals, etc., as possible to hold small agricultural exhibitions, to give lantern lectures, spraying and ploughing demonstrations, etc., and to distribute literature. In one place, we have even organised a ploughing competition and we are constantly on the look-out for new methods of getting hold of the people.

(c) Given men enough of the right kind for Demonstrators there is no particular difficulty in getting ryots to adopt expert advice, provided that it does not imply the expenditure of anything but a small sum. The ryot is very shrewd and is quick to take advantage of a real improvement once he has been shown it on his own land.

2. Attempts are being made to get co-operative societies to take up demonstration plots and areas and to run them for the benefit of their members, and to supply the members with necessary loans to enable them to purchase implements and manures. A few societies are doing this very well indeed, but there is a great tendency for the society to want the Agricultural Demonstrators to do all the work, and Government to bear all the cost. This is not possible or advisable and considerable improvement might be made along these lines by co-operative societies formed for the purpose.

3. It is often suggested that more use might be made of the cinematograph for propaganda work, but the difficulties in the way of this at present are to my mind insuperable. A projector is a difficult thing to handle if it is carried about by unskilled demonstrators. The main trouble, however, lies in the production of the films. Any one who has had anything to do with this will at once realise that a good film must be "staged" most carefully by trained actors. Attempts to fill an ordinary operation as it is performed in the fields give only poor results of little or no educative value. This difficulty has, I believe, been realised by both the staff at Pusa and by the Railway Companies who are trying to produce films. A great deal of harm may be done by the use of a bad film which does not show the improvement it is wished to advertise very clearly, as it will appear to be a difficult or even foolish operation.

(d) Many striking instances can be given of the success of demonstration and propaganda work, but the following two examples must suffice. The first relates to the introduction of the *sindewake* furnace with a thin pan for the boiling of cane juice to make jaggery. This furnace is so designed that it needs no fuel beyond that supplied by the megass and trash. Hundreds of these furnaces have been introduced and in many districts they have revolutionised the sugarcane industry and it has been started in places where it had disappeared on account of the cost of firewood. For instance, in the Chittoor district in 1921 during the cane milling season it was usual to see hundreds of cart-loads of fuel coming in from the forests every day to supply the furnaces. In that year the Agricultural Department first began to demonstrate the im-

proved furnace and now one sees no stacks of fuel, but only the chimneys of the furnaces of which 710 are at work. The saving to the ryots is anything from Rs. 50 to Rs. 100 per acre depending on his distance from the forests. Round Coimbatore during the cane milling season the chimneys of the sindewahe furnaces are quite a feature of the landscape.

2. The second example I have chosen is a demonstration against a disease known as "Mahali" of the Areca Palms on the West Coast. This disease is caused by a fungus which attacks the fruit and it can be prevented by spraying the bunches of fruit with Bordeaux Mixture just before the monsoon rains. This method has been steadily demonstrated on all possible occasions for the last four or five years and a vigorous campaign carried out with the help of the co-operative societies, and last year 13 lakhs of trees were sprayed largely under the guidance of departmental officers and wholly as a result of our propaganda work. The work can now be safely left to the garden owners themselves all of whom know what to do.

3. Other examples of successful propaganda work could be given, but the above must suffice.

4. As regards failures, these also exist, and they are largely due to the fact that the improvement advocated is costly or implies a good deal of trouble, such for instance as the preservation of cattle manure by the loose-box method which is not popular with ryots.

5. The remedy is two-fold, more demonstrators so that more particular attention can be devoted to the special point (naturally Agricultural Demonstrators push those improvements which are most popular and hold out most promise of success) and more search to devise better methods which will remove the particular prejudice the ryots may have.

QUESTION 6.—**AGRICULTURAL INDEBTEDNESS.**—(a) (1) The main causes of borrowing are:—(i) *Among the middle classes.*—False standards of life. I am all for people spending more for real comforts and raising their standard of living; but false standards lead people generally to the imitating of richer folk at wasteful expenditure on marriages, etc. Education has contributed its share in piling up debt. And once in debt, a ryot rarely gets out of it, as the rate of interest he pays his creditor is usually thrice the net yield on land of the same rupee value as his debt. The ryot does not sell a slice of his holding—it is derogatory to do so—and sentiment is against it. The debt goes on doubling every seven or eight years until the inevitable crash comes.

(ii) *Among the poor.*—Drink is a powerful factor in keeping the depressed and the coolie where they are.

(b) Special measures to rehabilitate the indebted ryots and to prevent his land being auctioned by the moneylender seem to be urgently needed. The creation of Land Mortgage Banks under Government auspices seems to be the only hopeful remedy for the evil, which in certain districts has assumed large proportions. Loans might be issued in the same way as *taccavi* loans and at the same rate of interest and on the same kind of security and made recoverable in instalments as *kists* under the Revenue Recovery Act, extensions of time being given in bad seasons.

2. In a wet village, all the principal landholders, except four or five, are more or less in debt, having borrowed at nine per cent or more from Chetti moneylenders. Many neglect to pay even interest, and by such default have been getting deeper and deeper into debt. Of the few who are without debt, half owe that position to their being engaged in professional careers. •

3. The scheme would require preliminary financing which may, for instance, be provided by the people themselves as, e.g., from postal savings bank funds or cash certificates; there would not be much recurring expenditure as there would be as steady inflow of instalments year after year. There would be no

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resort to courts and no terrors of the law and the extra work to the Revenue Department can be met by an increase of staff.

4. To prevent unnecessary resort to such help, help might be restricted to cases where the debt exceeds a certain multiple of the *kist* on the holding.

5. At present a large proportion of the net earnings from agriculture goes to the moneylender and the ryot in debt is in a position of unstable equilibrium. Under the State Aid Scheme, stability will be restored to the ryot, and a smaller proportion of the net earnings will be devoted to the payment of interest.

QUESTION 8.—IRRIGATION.—More attention should be devoted by the Irrigation Department to minor works and the keeping in repairs of existing tanks and channels, especially the smaller ones. Many of these have fallen into disrepair and owing to the negligence of the villagers have become inefficient. It seems to be nobody's business to put them into order again. In quite a number of places in the Presidency there are small tanks which hold water for only a few months in the year, but they make all the difference to the local crops. If these fall into disrepair, the crops suffer or in some cases disappear. Channels often become silted up and are encroached upon and the result is the water-supply is defective.

2. There should be a special branch of the Irrigation Department whose business it should be to remedy these evils and to keep in thorough repair all the existing irrigation facilities and insist on those whose duty it may be to keep tank *bunds* repaired and channels cleared carrying out their responsibilities. The same special branch should examine the possibilities of small irrigation projects serving only a very limited area, both as regards the extension and improvement of existing schemes and the carrying out of new ones. Insufficient attention at present is devoted to small local irrigation schemes while work is concentrated on the big projects.

QUESTION 10.—FERTILISERS.—(a) The main drawback to the more extended use of natural manures is their cost. This has of late years increased so much that in many cases it has ceased to be profitable to use them, that is to say, the increased yields they give do not pay for the cost of the manure. This is largely due to the fact that these manures are being exported in large quantities every year and that there is a good demand for them, especially from the estates in Ceylon, by those who are growing highly priced crops and who can therefore afford to outbid the Indian cultivator, as the following figures will show:—

Export of fertilisers from the Madras Presidency.

Name of fertiliser.	1923.	1924.	1925.
	Tons.	Tons.	Tons.
Bones	16,797	9,603	7,492
Oil-cakes—			
Ground-nut	399,487	299,572	388,178
Castor	12,450	66,352	24,674
Gingelly	97,359	207,559	355,946
Others	144,897	27,484	22,584
Horns	16,122	20,148	25,211

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Imports of fertilisers into Ceylon.

From 1898 to 1924.

Year.	FISH MANURE.		FISH GUANO.		GROUND-NUT POONAC.		BONEMEAL.	
	Tons.	Price per ton in rupees.	Tons.	Price per ton in rupees.	Tons.	Price per ton in rupees.	Tons.	Price per ton in rupees.
1898 .	73	57	10	120	...	...	4,714	55
1899 .	48	66	...	...	...	...	3,635	65
1900 .	25	51	31	168	...	...	4,802	51
1901 .	337	44	...	...	...	...	4,384	53
1902 .	899	51	...	...	...	...	3,728	48
1903 .	2,510	50	...	...	...	...	3,909	51
1904 .	3,134	58	10	156	1,393	68	4,377	57
1905 .	3,487	60	20	144	1,387	72	4,172	51
1906 .	6,001	58	20	149	1,630	80	10,286	36
1907 .	10,797	69	20	123	3,515	80	4,739	56
1908 .	9,713	57	50	151	4,827	79	6,573	67
1909-10 .	10,141	60	69	139	5,752	84	4,657	54
1910-11 .	19,845	59	160	111	8,750	81	5,544	65
1911-12 .	18,338	59	161	111	10,507	78	7,747	72
1912-13 .	20,726	57	3,661	98	15,627	87	6,644	83
1914 .	4,455	59	3,108	102	14,989	99	5,882	85
1915 .	3,082	73	52	30	31,624	86	9,766	77
1916 .	6,676	107	1,228	160	28,828	94	12,813	87
1917 .	7,645	66	1,287	129	16,114	98	5,392	106
1918 .	12,708	84	6,888	113	24,488	96	10,767	98
1919 .	13,363	102	10,963	132	20,092	121	12,535	88
1920 .	10,752	124	13,442	146	19,670	110	17,423	118
1921 .	3,618	102	1,576	146	3,553	117	5,052	118
1922 .	5,749	104	7,325	145	15,025	129	10,128	113
1923 .	9,292	86	12,578	117	14,103	122	14,673	107
1924 .	8,700	78	13,708	195	14,476	117	11,567	111

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Until this export is checked in some way it is not possible to extend the use of indigenous manures.

2. The use of artificial manures is increasing, but again it is largely a question of cost. Of late the price has been reduced and now sulphate of ammonia, for instance, is being used in very large quantities in this Presidency. If the price can be brought low enough to ensure a profit by their use, there is no particular difficulty in persuading the ryots to use manures. As an example, I may quote the V Circle (Trichinopoly), where during 1925-26 the following quantities of fertilisers were used by the ryots:—

	lbs.
Fish guano	5,824
Bonemeal	30,904
Trichinopoly phosphate	3,788
Ammonium sulphate and Nitrate of soda	6,864
Superphosphate	79,520

3. Much more can be done with the better preservation of cattle manure and with the manufacture of "artificial" farm-yard manure and both these are being widely demonstrated in this Presidency.

(b) There is very little fraudulent adulteration of fertilisers in this Presidency and no special precautions are necessary at present. Most firms sell under a guarantee and cases of deliberate fraud are very rare.

(c) The same methods as were dealt with under question 3.

(e) A great deal more research is needed on this subject. The chemical section of this department has done a great deal of work on the subject and is still doing such work, but a great deal still remains to be done, especially on the following lines:—

- (1) Discovering how rapidly the use of artificial manures used alone deteriorates the quality of grain, and how soon cattle manure will make up such deficiencies.
- (2) Discovering whether other organic manures like oil-cake, fish manure, artificial farm yard manure are as good as cattle manure.
- (3) Testing the behaviour of combinations of organic and artificial manures with different crops and on different soils.
- (4) Testing the efficacy of different phosphatic manures.

2. The results of our investigations will be shown to the members of the Commission in detail at the Research Institute at Coimbatore. They are far too numerous to detail here.

(f) I am inclined to think that the evil effects of using cowdung as fuel are apt to be exaggerated. A very large proportion of the cowdung thus used is collected from roads, etc., and would in any case have never reached the land as manure. Fuel of some kind must be had and people are not likely to buy wood, however cheap it may be, instead of using cowdung which they can get for nothing. I am of opinion that nothing can be done to stop this practice and that it does not matter so much as is sometimes thought.

QUESTION 11.—CROPS.—(a) (i) Existing crops can be improved along the following lines:—(1) purification, (2) increased yield, (3) disease resistance, and (4) drought resistance. A great deal has been done along the first of these two lines which were the most obvious and promised the quickest returns. Improved strains of paddy, cotton, sugarcane, *ragi* and *chulam* now cover large areas of this Presidency. Their further progress depends on facilities for distribution and reproduction and distribution of pure seed in large quantities. As regards the last two lines of improvement, work is now being begun and it will take time to evolve such strains. It is usually considered that it requires seven years for a plant breeder to evolve a new strain up to the point at which it can be safely given out to the ryots. It will probably take longer than this to evolve disease or drought resistant strains. At the moment, strains of paddy resistant to *piricularia*, of cotton resistant to boll

wcevil, and sugar resistant to mosaic are being worked at. Much remains to be done and to this end the research and plant breeding stations should be strengthened to the utmost.

2. In this connection it is important that some easily recognised character should be built into every improved strain, if possible, in order that it may be easily recognised and track kept of its spread and purity after it has been distributed.

3. Work is urgently needed with pulse, oil-seeds, and fodder crops, while there are possibly results to be obtained from fruit. In particular a strain of ground-nut resistant to wilt disease is needed. A pulse expert, and oilseed expert and an agrostologist are needed.

(a) (ii) There is little scope for the introduction of new crops in this Presidency which already grows a very wide variety, but more might be done with the development of fruit culture on the hills and of vegetables on garden land, two crops which the department has hardly touched as yet for lack of staff.

2. As regards fodder crops several new varieties such as lucerne, *berseem*, a Guinea grass and Elephant grass have been introduced during recent years. Their scope is limited and it is not likely that any more new fodders could be introduced with success.

3. A large number of green dressing crops have been introduced with success and here again it is unlikely that any more can be usefully introduced.

(a) (iii) The rapid distribution of seed is a great difficulty and an undoubted handicap in the way of spreading a new strain over a wide area. There are in this Presidency no seedsmen of repute who can be trusted to take up this work, as is done in Europe, while the department cannot afford facilities for large seed farms. We are, therefore, dependent upon private individuals for the multiplication of seed and it often becomes mixed in consequence. An attempt has been made to overcome the difficulty by means of seed unions, subsidised by Government and supervised by the district staff, and in the case of cotton this has met with a good deal of success. In the case of paddy, however, such seed unions have not been very successful as this is a food crop.

2. The question is complicated by the fact that all crops cannot be treated alike as regards the method of seed distribution. In the case of millets, there will be a great deal of difficulty in keeping a pure line uncontaminated, because in this plant natural pollination takes place. It will, therefore, be necessary to spread any new strains over a very large area very rapidly if it is not to deteriorate very quickly.

3. This implies an increased staff of district officers to spread the strain and also some laboratory and controlled seed farm organisation on a big scale to keep on sending out a few tons of undeniably pure seed on its career of expansion.

4. The work of distribution of seed is really work which should be done by co-operative societies, and the Agricultural Department should not be hampered by the work of distribution at all. Their duties should cease with the evolution of new strains and the maintenance of nucleus stocks of such seed. Co-operative societies have, however, hardly advanced far enough in this Presidency to be entrusted with this work on a big scale or to evince a desire to take it up.

5. In consultation with the Registrar, I have recently agreed to hand over the seed distribution now done by my department in any particular area to any recognised co-operative society and am willing to give them every chance of taking this work off my hands, even if at first they make mistakes, and the Registrar, at the beginning of this year, issued a circular to all societies to that effect, but so far there has been very little response and hardly any societies have come forward to do the work.

6. The solution of the difficulty appears to be for the Co-operative Department to make a special effort to push this line of work, and meanwhile we

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must go on as we are doing now and be content to remain patient and content with slow but sure expansion.

(a) (iv) Damage by wild animals is a practically negligent factor in this Presidency.

(c) Efforts at introducing profitable crops sometimes prove too successful. The example of Cambodia cotton and ground-nut bears remarkable testimony to the adaptability of the ryot but not to his capacity to take long views. Cambodia cotton was introduced by the Agricultural Department as a suitable and paying crop to be grown under wells. Ryots took to it eagerly but they went a great deal further than the department advised them to, by raising Cambodia wholesale on unirrigated lands and without proper rotations. This multiplied insect pests and necessitated the enforcement of a Pest Act. Again, ground-nut was first cultivated on the less fertile dry lands of the South Arcot district. It was soon found that the ground-nut crop was eagerly bought in by exporters at handsome prices and the crop spread from district to district until the area under ground-nut, which was barely 74,000 acres in 1882-83, has reached the figure of 2 million acres at the present day. The crop is now grown on all kinds of soil, including black cotton soil, and sometimes without rotation, and is often grown irrigated under wells. This extension is, by no means, an unmixed blessing.

2. Cotton and ground-nut have been responsible for deflecting large extents of lands from the cultivation of food-grains. To a certain extent, the reduction in food grains has been made up by extension of cultivated areas and better rates of yield; but in a country, which does not import much food-stuffs, it is not a very wise policy to devote lands wholesale to the cultivation of money crops to the detriment of foodcrops. This will lead to an unsettling of the balance of the ryots' economic condition; the ryot can hardly eat money when his granary is empty, and as money is spent more quickly than grain, the poorer ryots in a tract liable to famine are likely to be left with neither grain nor money when seasons are adverse.

3. The rapid spread of ground-nut in recent years in the unirrigated tracts of the Circars and the Deccan which are liable to frequent famine or scarcity is a matter to be viewed with grave concern.

QUESTION 13.—CROP PROTECTION.—(i) *External*.—The existing measures for the protection of crops from external infection, pests, and diseases are adequate.

(ii) *Internal*.—Internal measures against infection are provided for in the Madras Presidency by the Madras Agricultural Pests and Diseases Act, 1919. This Act is at present in operation in connection with the control of—

- (1) A fungoid disease of the palmyra palm caused by *pythium palmivorum* in the Godavari and Kistna districts.
- (2) An insect pest of coconut palms—*Nephantis serinopa* in Malabar and South Kanara.
- (3) Insect pests attacking Cambodia cotton.
- (4) The eradication of the water hyacinth.

2. No difficulty has been found in operating the Act in the first two cases and the last; and steady progress with the control of the respective pests and diseases has been made under its provision.

3. In the case of cotton, however, the Act has met with a great deal of opposition. The main pests at which control is aimed are the pink boll worm and the stem weevil. The only method of control of these insects which has been discovered is to ensure a dead season each year when there is no cotton on the ground, so that a large proportion of the insect population die of starvation and are unable to carry on to the next sowing season. Hence the new crop starts its life unhampered by insect attack and the harvest is reached before this population has increased sufficiently to damage the lint. Such measures have been adopted in most of the important cotton growing countries in the world. When the Act was first put into force in this Presidency

in 1920-21, it was enacted that all Cambodia cotton should be removed from the fields and destroyed by 1st August each year. The usual sowing time, which depends on the advent of the early rains, is in October, usually about 15th October. Thus a two months' dead period was aimed at. The Act was, however, deficient in that it provided for notice of eradication being given and also time for appeal. The result was that it was seldom the cotton was removed until the end of August and this reduced the dead period to such an extent that it was useless for the purpose for which it was designed.

4. The Act has now been amended so that no notice need be given and it is illegal to have Cambodia cotton on the ground after the prescribed date, but that date has been made 1st September. Even if the Act is honestly complied with the resulting dead period is insufficient, a period of two complete months being the minimum period which is necessary to have any controlling effect on the insects.

5. The Act has always met with opposition because it interfered with the second picking. The first or main season picking is taken in May; the June rains produce a new flush and there is a second picking in July. If the rains are delayed, as is often the case, this second picking is not complete, or has not been taken at all, by 1st August. The ryot sees his cotton full of bolls and objects to being forced to destroy it before he can harvest this second crop. This crop is, however, badly diseased and stained and is very inferior and it is really a better policy to forego it so as to ensure that the following season's first crop shall be insect free and of good quality and thus realise better prices.

6. The natural opposition could probably have been satisfactorily dealt with by the Agricultural Department by means of propaganda, the ryots being a very teachable body of men. Indeed, in the neighbourhood of Avanashi, near Coimbatore, the ryots regularly remove their cotton after the first picking in June, plough the land and raise a fodder or food crop with the July rains, a very much better system of farming. The opposition has, however, been fostered by politicians and petitions were presented year after year and the Government have given way, with the result that the Act, though amended, has been rendered quite nugatory as far as insect control is concerned.

7. The Agricultural Department's case is a sound one and is based on facts and figures obtained by careful experiment. It may be summarised thus—

- (1) At the Central Farm at Coimbatore, where the cotton has been regularly uprooted early each year, actual counts have shown that the maximum incidence of the pink boll worm has steadily declined, which shows what the Act would be capable of accomplishing were it strictly enforced.
- (2) We know that flower buds, which are produced between the middle of December and the end of January, are the buds which give most of the crop of the first picking.
- (3) We know that it is precisely this period over the greater part of which the spotted boll worm is most active in attacking flower buds.
- (4) We know that attack of the spotted boll worm causes the crop to be six weeks late and that therefore in an unfavourable season with a shortage of water, the crop is bound to give a poor yield.

8. This being so, all cotton should be eradicated by 1st June. The effect of such an order would be twofold. The area of Cambodia would be reduced since it would not pay to grow it on dry land. This would not matter. It would be better to have a small area of really good cotton than a large area of poor quality stuff. The Agricultural Department could evolve a good cotton to grow on dry lands, and indeed have already done so. The second effect would be an increase of area under food and fodder crops which would have a beneficial effect on famine conditions.

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9. This case has never been considered on its own merits alone. At present, the Act only extends over some of the districts which grow Cambodia. It should not only be extended to cover all cotton-growing districts in the Presidency, but it should apply to all kinds of cotton, and the date of eradication should be made such that a real dead season is provided. Only in this way can adequate internal protection be provided for this crop against pests and diseases.

10. The only other alternative is to evolve a strain of cotton which is resistant to the pests. This is being attempted, but it is not likely to succeed. The breeding work of the department is at present greatly hampered for want of application of the Pest Act, since the breeding station is surrounded by cotton fields where the cotton is allowed to remain on the ground till 1st September and these insect-infected crops infect the cotton of the breeding station causing great loss and seriously hampering the work.

11. Two other legislative measures, which have as their object, the protection and improvement of the cotton crop have met with greater success, the Cotton Transport Act, III of 1923, and the Cotton Ginning and Pressing Factories Act, XII of 1925. The Cotton Transport Act has been applied to (1) the Tiruppur-Cambodia area, (2) the Tinnevely area, and (3) the Northern and Westerns area. No cotton, *kapas*, seed, etc., may be imported into these areas by rail except under a license issued by the Director of Agriculture.

12. The protected areas represent well-known trade types and in every one of them the Agricultural Department have evolved and given out to the ryots improved types, but work was hampered by the bringing in of inferior cotton by merchants for adulteration.

13. The Madras notification prohibits imports by rail and sea only. Import by road has not yet been touched owing to the great difficulties of such control. Cases have come to notice of cart traffic in cotton with a view to evade the Act, and there is evidence that cart traffic generally has received an impetus in the cotton areas from the restrictions on transport by rail. It is necessary to stop all such unfair traffic effectively by restricting traffic at least on the important routes.

14. Conditions are much more favourable for effective control of movements by rail. Vested interests have, however, done their best to obtain concessions which narrow the usefulness of the Act, *e.g.*, mills and exporters in the South have been granted annual licenses for import of Cambodia *kapas* in the current year at the instance of the Provincial Cotton Committee though such a step is admittedly opposed to the objects of the Act.

15. In spite of these set-backs, definite results have been achieved. Improvement has been reported in the Northern cotton owing to the keeping out of Cocanadas cotton. Cotton marketed in the South has been comparatively free from admixture with Mysore and Deccan cottons and cotton in the Northern and Westerns area free from admixture with short-stapled cottons from Bombay and the Central Provinces.

16. The Cotton Ginning and Pressing Factories Act regulates the working of the ginning and pressing factories. There are 62 pressing factories and about 370 ginning factories in the Presidency.

17. All pressing factories and most ginning factories maintain the prescribed registers showing the weights of cotton handled by them with particulars of ownership, and all pressed bales of cotton are clearly marked and numbered, so that it is possible to trace any bale of cotton back to its owner. It is as yet too early to judge of the merits of the Act.

18. Of late, small ginning factories have been springing up in the cotton areas, away from the railway and the pressing factories; and these are much more difficult to control though it is in them that clean ginning is most often neglected. Also, the control of scales and weights in the ginning factories hardly helps the ryot whose *kapas* is sold on the basis of weight in the godowns of the dealer. A remedy for this situation will have to be found.

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QUESTION 14.—IMPLEMENTS.—(a) There is in all probability a great deal which could be done by way of improving the existing agricultural implements and machinery far more than along lines of introducing new machinery. Western machines are too expensive for the ryot and do not suit our conditions of small holdings.

2. What is very urgently needed is the careful testing of different makes of ploughs under controlled experimental condition, the testing of different makes of cane crushing mills and of water lifts and buckets, the invention of a cheap automatic seed drill and the improvement of yokes. Good, sturdy and cheap winnowing and threshing machines are a necessity, and it should not be difficult to improve upon the present type of country cart which is hard on the roads.

3. What is needed is a Research Engineer who is a farmer first and an Engineer afterwards, a man who is familiar with the land and the handling of agricultural implements and the various problems with which the ryot is confronted. He must have sufficient mechanical training and skill to be able to make implements with his own hands, and to know how to test them in the fields and alter them to fit more closely the desired conditions. He must, of course, be given a good workshop and equipment. Unless he knows how to use implements from the farmer's point of view, and knows ultimately what sort of work an implement should do, he will never succeed as a Research Engineer. Such a man will be difficult to find and I doubt whether he can be found in this country because the graduate in Engineering is not drawn from the agricultural community, while the graduate in agriculture is not likely to possess the mechanical aptitude to benefit by an Engineering training and become a good mechanic. It will probably be necessary therefore to look for him in England or America and get a man with farming knowledge and instincts who is at the same time a good and resourceful mechanic. It is true such a man will know nothing of the local conditions, but he is more likely to be able to learn these and apply his knowledge of mechanics to them than *vice versa*.

4. Work of this sort has as yet been untouched and it is likely to lead to much more rapid progress than any attempt to introduce modern western machinery. Indian agricultural implements are in many cases extraordinarily well adapted to local conditions, they are cheap, easily made and repaired and they are constructed of materials close to hand. They are, however, undoubtedly capable of improvement if carefully studied in the light of modern knowledge of the soil conditions.

(b) This is largely a question of adequate demonstration and once more calls for increased staff. The limiting factors are price and the size of the cattle and the question of improvement of implements (especially ploughs) is closely bound up with the question of cattle improvement.

2. The pushing of iron ploughs, iron cane mills, chaff cutters, etc., is part of the regular propaganda work carried on by the district officers and ploughing demonstrations are given on all possible occasions. In 1924-25, 1,834 iron ploughs and 2,681 spare parts were sold in the Presidency and in 1925-26, 1,713 ploughs and 2,969 spare parts were sold. We can safely say that 1,600 ploughs are being sold every year and as the life of a plough is four years or so, there must be at least 6,000 iron ploughs now in use in the Presidency. The steady demand for spare parts shows that they are being used.

3. I consider this a very fair rate of progress when we bear in mind that fifteen years ago an iron plough was hardly to be seen off a Government farm.

(c) The main difficulty felt by the manufacturers is probably the comparatively small number of sales made in the year as compared with Western fields of operation. It would not pay a firm to manufacture any particular type of plough if they are only going to sell 1,500 a year, more especially as the price must be kept at the lowest possible limit. Another difficulty is probably the impossibility of giving credit.

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2. This is another matter which might well be taken up by co-operative societies who should be able to distribute ploughs once the Agricultural Department have demonstrated their efficiency.

QUESTION 16.—ANIMAL HUSBANDRY.—The answer to this question has been compiled by Mr. R. W. Littlewood, the Deputy Director of Agriculture, Livestock, who has requested me to incorporate his reply in my own. I have little to add to what he says beyond the fact that this Presidency has a definite policy of animal husbandry which is being steadily pursued with success. All the lines of not only cattle-breeding and distribution of breeding bulls, but also of dairy work and animal nutrition studies touched on by Mr. Littlewood are being pursued. The latter subject is being studied in close co-operation with the Imperial Physiological Chemist at Bangalore.

2. All that is needed is an opportunity to develop this policy to its utmost capacity, that is to say sufficient men and money.

3. With reference to dairying I believe that this will never prove really profitable until a pure food law is introduced to protect the honest dairyman from the unfair competition with which he now meets from those who adulterate their milk and *ghi* and can thus undersell any producer of pure milk.

4. As regards the possibility of utilising a cinematograph, please see my remarks under question 3.

(a) (i) *Improving the breeds of livestock*.—Pedigree herds of local breeds should be established and special attention paid to a dual purpose animal. Milk recording should be widely advertised amongst the milk contractors, zamindars and other cattle breeders.

2. Large zamindars should be encouraged to establish pure bred-herds of country cattle.

3. The three main breeds in this Presidency which may be maintained are the Ongoles, Kangayams and Alambady.

4. Breeding bulls from dams selected for their milk yields should be loaned to district boards for improving cattle in their districts.

5. A maintenance grant of Rs. 100 per animal should be given by Government to the District Board; the balance of maintenance should be made by the District Board; all services could be free. Bulls can then be transferred from district to district to prevent inbreeding and this may be done at the discretion of the Deputy Director of Agriculture, Livestock, after consulting the District Board. Good Ongole bulls will cost between Rs. 300 to Rs. 350 each at 3½ years to 4 years old. After the age of 8 years or so those bulls will become too old for breeding purposes. They can then be withdrawn to the farms, castrated, and sold as work animals and the receipts credited to Government. The animals would realise possibly Rs. 400 to Rs. 500 a pair.

(a) (ii) *The betterment of dairying industry*.—Small dairies like the one at the Coimbatore Agricultural College could be run by co-operative societies quite easily, as in large towns most of the separated milk could either be sold back to the ryots for feeding their calves, or sold to the coffee hotels in the towns.

2. Dairying in its strict sense is almost unknown in Southern India except for one or two Government farms.

3. Milk recording should be done at all large Government institutions, like hospitals, etc., where cows are milked on the premises, in order that reliable data regarding yields of the various breeds could be obtained. At present the Government farms are the only places where milk recording is done and as they have not a large number of animals, the data obtained are not sufficient.

4. At the present time in this Presidency, dairying is not a profitable business owing to the poor yields of the country breeds. A dairy will just about pay its way in this Presidency if good crossbreds are available. Crossbreds are at a disadvantage as they are not dual purpose animals in the eyes of the ryot. They yield good milk, but the majority of the ryots would not

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purchase a crossbred bull for work purposes. They seem to be biased against them. Every effort should be made to produce a good animal of the country breed which will calve annually and will give sufficient milk to feed its calf and maintain it in good condition and also give a surplus which could be sold in order to pay for the cow's maintenance. Until it is achieved, dairying will not be a profitable industry, as will be seen from Mr. Carruth's Bulletin, that is, that the average Madras milkman just about pays his way and this is after he has adulterated his milk.

(a) (iii) *Improving existing practice in Animal Husbandry.*—In former years when a big man died in a village his relatives generally dedicated a bull to the temple. A committee of local breeders was immediately called and bull calves were brought for inspection. The examination was very strict and if a bull did not possess all the points which the committee thought the breeding bull should have, it was not accepted. In this way, very good bulls were dedicated to temples. Owing to the increased price of cattle, this practice of dedicating a good bull to the temple is gradually becoming obsolete. The relatives pay only a small amount for an animal and dedicate it to the temple without the consultation of the committee. Owing to this, very poor breeding bulls are seen in the districts. A Brahmini bull in former days was allowed to roam over any crop and was in a good condition. But, in these days, when expensive crops are being raised, the ryot in many instances does not think twice about driving it out of his field, and so bulls are seen to-day in a poor condition. I strongly advise the appointment of a committee of capable breeders in each village for the purpose of selecting bulls for dedication to temples and for supervising the breeding cattle in the village.

2. More veterinary hospitals should be opened in the districts in order to combat the diseases which break out.

3. Preventive inoculation against rinderpest should be well advertised in all the villages.

4. More propaganda work should be done by the Veterinary Department in demonstrating bloodless castration, and this will require more staff. I suggest that the committee stated above should also decide what bull calves should be kept for breeding in the village and also state that the remainder should be castrated by the Veterinary Officer by a bloodless castration method. The committee could also see that every bull calf not recommended was castrated. The benefit of castrating useless bull calves should also be pointed out to cattle breeders by the Veterinary Officers. For instance, the Ongole breed of cattle is deteriorating annually owing to bad breeding bulls and to the importation of outside blood; this is due to cows and heifers being served by outside bulls in the grazing areas.

5. Small herds of the main breeds of cattle and buffaloes in this Presidency could be kept in each experimental station for the purpose of demonstrating good feeding and rearing, milk recording, etc., to the ryots of the district. A herd of six or seven cows with one breeding bull would suffice for a beginning and the bull could be utilised as a stud bull for the district at the same time.

6. Village panchayats should be encouraged and they should be advised to pay attention to limit the stock grazing lands and not overstock these as is usually done.

7. Silage-making should be demonstrated in the breeding tracts by the Agricultural Demonstrators, especially in years of good rains when there will be an abundance of green fodder. Silage-making should also be demonstrated to Forest Panchayats so that use can be made of the grass and weeds which grow in the forests.

8. Concession towards purchasing good breeding bulls by co-operative societies should be given by Government.

9. Co-operative societies should be encouraged to open milk depôts in the districts where milk is plentiful. Butter and ghee could be manufactured on sanitary and scientific lines, and so the ryot would eventually become educated in this line of business.

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10. It is to be noted that the ryot does not pay any particular attention to the feeding of his female stock. Cows and heifers generally receive the fodder discarded by the bull calves and work bullocks. The ryot should be educated and shown that neglecting his female stock is unprofitable. He should be taught how to feed and rear his cows, and I think a demonstrator with a cinema exhibition showing work on Government cattle farms, etc., would be the best means of bringing this to the knowledge of the ryot.

11. Milkmen's Co-operative Societies should be formed in large towns in order to purchase foodstuffs and fodder in bulk and so obtain it at a cheaper rate. Advances should be given to milkmen for the purchase of fresh cows when their cows become dry.

12. Regarding the Madras Dairy Industry, all reserved forests in the neighbourhood of Madras City should be reserved specially for the grazing of dry cows belonging to the milkmen of Madras. Forest Panchayats will levy a monthly sum for grazing. This would no doubt stop the slaughtering of good cows when they become dry. From information received at various times, it is discovered the Madras milkman now sends most of his good cows into the Nellore district for grazing until they calve down again. It is due, no doubt, to the decreasing numbers of good milk cows and the milkman is just realizing that good milking cows are not plentiful and that it is more profitable to retain his good milkers and to pay for their maintenance whilst dry.

13. It has been pointed out by different people at various times that the maintenance grant of hundred rupees towards the maintenance of a breeding bull is hardly sufficient in these hard times, and possibly better results could be obtained if Government increased the grant by 25 per cent. (The Director now has power to do this.)

14. Steps should be taken to work out the different values of all Indian foodstuffs and fodders as soon as possible and a list giving data of all these should be prepared by each Provincial Government. This will be of great benefit to the cattle breeder and rearer. He will then have some idea how much concentrated food, etc., should be fed to the different kinds of stock and he will also be given information as to the manurial value of each foodstuff.

(b) (i) *Injury done by overstocking of common pastures.*—The injury done by overstocking is that the animals are never in good condition and so they are liable to pick up any disease which comes along.

2. Bull calves between the age of 1 and 2 years very often serve pure bred cows, and so various breeds of cattle become mixed. No bull calves should be allowed to graze in the grazing areas along with female stock. Only bulls of well-known pedigree should be allowed to roam over grazing areas.

(b) (ii) *Absence of enclosed pastures.*—Young grasses in pastures never get a good chance to grow as the ryot is often so short of fodder that he turns his cattle on to the grazing grounds immediately after the first shower of rain.

2. In this Presidency it is seen that the ryots usually graze their cattle on the grass *bunds* and these are generally in charge of a boy or woman.

(b) (iii) *Insufficiency of dry fodder.*—According to my knowledge, dry fodder is becoming scarce in the Ongole breeding tract in the Guntur district where the introduction of commercial crops, such as tobacco, ground-nut, etc., is gaining ground rapidly. A ryot will only grow fodder value about Rs. 40 per acre whereas he can make as much as Rs. 100 to Rs. 175 per acre out of tobacco so that this becomes an economical problem. In the Guntur district alone the Imperial Tobacco Company now employ about thirty Europeans in leaf production, and this must have an effect on the cattle-breeding of the district.

(b) (iv) *Absence of green fodder in dry seasons.*—This is very noticeable, as during the last three years the Kangayam breeding tract has suffered from water scarcity and it is seen that the Kangayam cattle on the whole were smaller in size than those seen in previous years.

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(c) *Fodder shortage*.—There is generally scarcity of fodder in the Coimbatore Dairy during the months of March and May and in Hosur and Chintaladevi from February to May. Animals do not begin to thrive until July or August, that is, six to seven weeks.

(d) *Supplementing fodder supply*.—I am informed that in former days, the Ongole ryot who reserved one-fourth of his holdings for grazing land was not taxed on this portion. In these days he is taxed on the whole of his holding and so he is unable to leave all this land uncropped. He maintains the same number of cattle as in former days, grows more commercial crops, less fodder crops, reserves about one-third of his former pasture for grazing and so his cattle suffer.

I suggest that grazing areas be free of tax in the ryots' holdings and that each ryot should be compelled to grow a certain amount of fodder or straw sufficient to maintain the number of animals he keeps and that his number of animals should be limited to his holding.

(e) *Keener interest in these matters by ryots*.—There are no ryots in this Presidency who devote their whole attention to cattle-breeding. Cattle-breeding is mainly one of their side lines. The Indian ryot generally has a little of each crop and he seems to dabble in everything.

2. I do not think landowners will take much practical interest in cattle-breeding until they can see that this is a profitable business and until the breeds of cattle are improved and their milk yields increased, I do not think interest will be shown. The price of Indian cattle is too low.

QUESTION 19.—*FORESTS*.—Forest lands are probably not being utilized to their fullest capacity for agricultural purposes, but it is extremely difficult to utilize such lands. Directly strict control is raised, the lands are apt to be abused and the trees stripped off them, when soil erosion takes place very rapidly. There are very many places to be seen where, in comparatively recent times, there was jungle and now there is nothing but bare rock.

2. One of the best attempts which has been made to solve this problem of recent years is that of the Forest Panchayats, and it should be possible to persuade such panchayats, not only to conserve the forests handed over to them and regulate the grazing and fuel cutting, but also to teach them to plant trees, grow green dressings, both for seed and cutting, cultivate fodder crops, prepare hay and silage as a reserve in the hot weather, and even to keep breeding bulls and regulate the cattle-breeding.

3. Steps are now being taken to get into touch with the panchayats with this object in view. The panchayat system should be encouraged and it should be the first step in the learning of co-operation and should develop ultimately into co-operative societies.

4. The difficulty with such Forest Panchayats, however, is the same as that with co-operative societies, agricultural associations, etc. A very few of them are really good and mean business. Too many of them depend entirely upon the enthusiasm of one or two public-spirited men, and when they go the panchayat, society, or association rapidly decays and dies. Many of these bodies except Government officers to do all the work and even give them a subsidy, and as soon as such help is withdrawn the body rapidly dies.

5. What is needed is a much greater spirit of public service and self-help. Where good organisations exist they are being encouraged and used to the utmost, but there are at present far too few of such bodies.

QUESTION 20.—*MARKETING*.—Adulteration wherever possible is the rule. Improvement is largely dependent on educating the conscience of the buying public.

2. In the matter of dairy products, such as milk, butter, *ghi* and curds, adulteration is particularly rife. This is largely a question of economics. Under existing conditions, it is almost impossible to make dairy products available in a pure state on a large scale at present prices. In large towns, milk is usually watered or mixed with flour.

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3. *Ghi* is obtainable only in an adulterated form everywhere except in the large producing centres and even then, only when purchased from the direct producer. The adulteration of *ghi* is due to the rapid extension of the markets for *ghi* and the smallness of supplies. Oils are also subject to adulteration, lower priced oils being used to adulterate the higher priced oils. In respect of these, co-operative production and sale have a good chance of contributing to public welfare by making and selling standard qualities of these articles at reasonable prices.

(a) Existing market facilities are very far from being satisfactory. The history of the Tiruppur cotton market will serve to show the difficulties which exist:

(i) The idea of a cotton market was first mooted at a meeting of the cotton growers and sellers of the Coimbatore district, held at Coimbatore on the 10th July 1918, which resolved, among other matters,

(1) that a "Coimbatore Cotton Marketing Association" be formed, and

(2) that the possibility of this Association establishing markets for *kapas* at Coimbatore, Pollachi, and Tiruppur should further be considered.

(ii) A committee appointed at the above meeting to consider the best methods of carrying out its resolutions met on the 3rd August 1918 and recommended that the Coimbatore Cotton Marketing Association when formed should approach Government to have a market opened at Tiruppur *under the auspices of the Municipality* and controlled by the rules of the Association, and that the opening of such markets at other centres could be considered later, if the experiment at Tiruppur proved successful.

(iii) The opinion of the Advocate-General was obtained by the Director of Agriculture as to the powers of municipalities in regard to such markets. The opinion favoured the proposal. It is extracted below:

"Municipal Councils can provide places for use as public markets for cotton (*vide* sections 194 and 113 of Madras Act IV of 1884). Sale of cotton in or upon any public street or part thereof can be prohibited—*vide* section 203 (1) of Madras Act IV of 1884."

(iv) The matter was accordingly placed before the Tiruppur Municipal Council and it readily accepted the proposal.

(v) The Municipal Council in its meeting held on the 19th February 1919 passed a resolution in regard to the establishment of a cotton and *kapas* market and submitted copies of its resolution and the recommendations of its sub-committee for the approval of Government.

(vi) The proposals of the Municipal Council were approved by Government in G. O. Mis. No. 649-M., dated 26th April 1919, and the Council was requested to frame by-laws for the management of the market and submit them for the approval of Government.

(vii) A suitable site was selected and approved by the Collector and the foundation stone of the cotton market was laid by His Excellency the Governor on 14th June 1919.

(viii) The plans and estimates of the cotton market were sanctioned in G. O. No. 438-W., dated 12th March 1920, and it is understood that the market buildings have nearly been completed since.

(ix) Draft by-laws were framed by the Coimbatore Cotton Marketing Association at the request of the Municipal Council and passed in a general meeting with Mr. H. C. Sampson as President. The by-laws were based on those of the Berar cotton markets, modified where necessary to suit local conditions. They went further however, in two important respects, (1) in the definition of the *market proper*, which was made to include the whole of the municipal area, and (2) in the direction of protecting the trade from the malpractices of unscrupulous dealers which are likely to lower the standard of cotton produced and consequently its price.

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(x) Meanwhile considerable opposition to the cotton market began to be visible among the commission dealers, agents and middlemen at Tiruppur. The opposition first took shape in regard to the location of the market. The objection was disposed of by the Collector, Mr. F. J. Richards after personal inspection who decided in favour of the site on the Palladam road. The objectors then urged the abolition of the market. As they were, however, in a minority, they were informed by the Municipal Council that they could only make suggestions for modifications in the by-laws. Objections and suggestions were also invited under section 256 (1) of the Madras District Municipalities Act, 1884. Those that were received were considered at a meeting of the Municipal Council held on 22nd March 1920 and the draft by-laws, suitably amended in the light of them, were finally submitted for the approval of Government on 29th March 1920.

(xi) Meanwhile the Madras District Municipalities Act of 1884, under which the draft by-laws were framed, was replaced by Act V of 1920. The Advocate-General, to whom the by-laws were forwarded for scrutiny, held that the more important of them were illegal and *ultra vires* under the new District Municipalities Act.

(xii) Government then considered the question whether special legislation should be enacted on the lines of the Berar Markets Act so as to enable by-laws such as those drafted for the Tiruppur Market to be duly enforced.

(xiii) A draft Bill, the Madras Industrial Crops Markets Bill, was prepared, embodying the essential features of the Berar legislation, but the proposed legislation was abandoned by Government, as it was supposed to contain many features, open to controversy or objection such as (1) the proposal to levy a tax on all cotton entering the municipality, but not necessarily entering the market "yard," (2) the proposal to limit the number of municipal councillors on the market committee, and (3) the financial relations between the council and the committee.

(xiv) The only alternative was, therefore, to amend the by-laws so as to come within the scope of the District Municipalities Act V of 1920 and this was ordered by Government. Meanwhile the attitude of the Municipal Council entirely changed after the election of the councillors in 1920 and the Municipal Council appointed a committee of three councillors, including the chairman and three cotton merchants of Tiruppur to undertake the amendment of the draft by-laws and they did this in consultation with the Inspector of Municipal Councils. The draft by-laws as modified by the council are to be found in column 3 of Appendix XV.

(xv) The market is to be for grains and other agricultural produce as well as for cotton, under the new scheme. There is only one representative of the Cotton Marketing Association who must be a cotton merchant resident in Tiruppur as against six under the old scheme. Except for providing space and accommodation where buyers and sellers can meet, none of the original objects with which the market was built is given effect to in the new draft by-laws and it is difficult to see how the interests of the grower, middleman, merchant and buyer are to be safeguarded.

2. It will be seen from this that the whole question has now come to a deadlock and no further action in developing cotton markets can be taken till special legislation is introduced.

(b) *Existing market facilities and systems of marketing and distribution for different kinds of agricultural produce.*—Dotted throughout the Presidency and at distances varying from 10 to 20 miles are innumerable weekly markets. These are owned mostly by Local Boards or Municipalities and in some cases by private individuals. Agricultural produce from villages finds its way to these markets either through village cart-tracks or by head-loads or by canals according to the nature of the district. The markets are mostly situated on local fund roads. In the delta districts of the Circars the means of communication is usually by canals. On the West Coast the agricultural produce is taken usually by head-loads to the markets. In all other districts, villages are connected with each other by a net work of cart-tracks which are never re-

paired or maintained in good condition for traffic. After the produce reaches the weekly markets they are conveyed to towns by local fund roads or by boats or by trains. From hill districts produce like grains, tea, or coffee are invariably carried by bullock carts where roads of some kind are available or by pack animals. This Presidency is not adequately supplied with railways though more and more railways are being opened, but railways will not, in the near future, be able to command all the traffic in agricultural produce and bullock carts will remain the chief means of conveyance for many years to come. Improvement of the condition of roads, repair of cart tracks through the agency of village panchayats, the use of motor lorries for the transport of agricultural produce from weekly markets to big trading centres, the abolition of the numerous tolls on the local fund roads are some of the ways by which the system of transport could be improved.

2. *System of marketing.*—Crops may be divided into two main classes (1) food crops and (2) commercial crops.

3. *Food crops.*—In the case of food grains, the bulk of the produce is sold to middlemen, merchants and moneylenders to whom the producer is indebted for cash advances for cultivation or family expenses. The big landowner who is generally solvent prefers selling in the open market and such men sometimes hold stocks for a rise in price. In the case of paddy, there are a large class of professional dealers who go about the villages and arrange to buy stocks and supply them to big merchants in towns. The dealers always approach the village *sowcar* who acts as sub-dealer and also as a petty merchant. Export to outside districts or out of India is arranged by larger traders in towns.

4. *Commercial crops.*—In handling commercial crops like cotton, groundnut, jaggery and oil-seeds, etc., both a moneylender who acts as a middleman and a commission agent are involved. It will perhaps be unnecessary for the purpose of this reply to enumerate in detail the methods of marketing these commodities in the various districts, but I shall give some typical examples.

5. *Cotton.*—The methods of marketing cotton vary in different centres. At Adoni, the ryot takes his cotton in country carts to the market place. The agents of the buying firms go about inspecting the cotton and then state their rates for that particular day. The ryot then takes his cotton to the compound of the agent whose offer is the highest and by the time the carts reach there the commission agents also arrive. Each ryot chooses his commission agent who attends to the weighing, etc. The agent of the buying firm examines each *bora* and begins to pass a few *boras* and rejects the rest, but the latter are accepted when the ryot is prepared to give allowance, i.e., so much cotton free for each 12 maunds. The ryot is obliged to give the allowance, as such of the *boras* that are rejected are marked and no other firm would give even the price first offered when they see the marks on the *boras*. The commission agent helps to reduce this allowance at times, but he does not press the claim in the way he ought to do as he does not want to be at loggerheads with the firms. In addition to the allowance and the commission, the ryot has to pay for weighing charges, etc.

6. At Bellary, the ryot and the middleman bring their cotton to the market and if the price offered is acceptable to them they dispose of it the same day through the commission agents. Otherwise they leave the cotton with the commission agents, borrow money from them to the extent of 50 to 60 per cent. of the value of their cotton and go away to their villages after instructing the commission agents to sell their cotton as soon as the market improves. The agents very often borrow money from the bank on security of this cotton and sell it at their convenience. The ryots will have to accept any rate which the commission agent says he sold their cotton, but he seldom states the value which he actually realized. In addition to the interest on the money advanced, the commission agent gets his commission, godown rent and insurance charges, but the ryot has also to give allowances in kind and pay for weighing charges, etc., as at Adoni. The ryots in Bellary centre are for the most

part under the thumb of the commission agents and middlemen to whom they are always indebted.

7. At Nandyal, most of the cotton is sold on forward contracts. The village middlemen and sometimes the big influential ryots enter into forward contracts with the buying firms some months in advance. They buy cotton from the ryots either on forward contract or for cash and fulfil their contracts. Some ryots, however, prefer to sell their cotton direct to the firms. They bring it to the market on the day convenient for them and dispose of it at the prevailing rate. They have no option to wait till the price for cotton rises as there are no godowns at Nandyal.

8. *Ground-nuts*.—This crop is largely exported. The cultivator sometimes sells the crop on the land to the dealer who arranges to harvest the crop and sells it to the sub-agent of the big buying firms like Volkart Brothers. These big firms establish small depôts at convenient centres where the produce is collected and then transport it to the ports. Holding up of stocks by rich landowners is not very common in the case of this crop as the commodity is more or less of a perishable nature.

9. In the case of a crop like sugarcane, which is grown on a comparatively low acreage but which at the same time involves large financial transactions, marketing conditions are generally bad. The trade is in the hands of a few commission agents working on behalf of merchants, and these men go about the districts during the season and successfully form a ring. The producer deals through the village moneylender to whom he pays commission for the privilege of sale, godown rent, a contribution to the village deity and interest in small sums of money advanced through the season. The middleman or moneylender is unable to get a fair price on account of the ring aforesaid and the producer suffers in consequence.

10. *Ways and means of improving existing systems of marketing*.—The existing systems of marketing will be improved in proportion to the advance made in general education of the ryot and the population as a whole. This is a fundamental need.

11. In the meanwhile, an improvement may be made by the establishment of organisations for the purpose of co-operative credit. Until experience has been gained in this form of co-operative work and until members who actually cultivate the land are solvent and sufficiently educated to conduct the affairs of such organisations, effort to sell co-operatively is likely to end in disaster. For the success of co-operative sales organisations depends on the handling of large quantities of produce of one kind necessitating the employment of a business man of experience, and until co-operative credit work has created confidence in the minds of the average ryot, sale transactions would not be on a sufficiently large scale to warrant the employment of a special man for the purpose. The primary need, therefore, is the undertaking of co-operative credit work with a view to remove or at least to mitigate the indebtedness of the ryot which forces him to sell his produce to the village *sowcar* to whom he agrees to sell by a system of forward contracts.

12. *The channel of marketing and distribution from the producer to the consumer in India or exporter in the case of produce exported overseas*.—The produce, in the case of foodgrains consumed locally, pass from the ryot to the middleman, who sells to the merchant. In the case of produce sent out of the district by road or rail, the channel of distribution is from the ryot to the moneylender or middleman, who sells to the commissioned agent on behalf of the exporter. The latter sells to the importer, who, in his turn, sells to the merchant until the produce finally reaches the consumer.

13. In the case of export by sea, the produce passes through at least one middleman before it reaches the commissioned agent employed by the exporting firm. There are therefore three intermediaries from the producer to the exporter.

14. *Services rendered by each intermediary and whether each intermediary acts in the capacity of a merchant or commission agent*.—The middleman and

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moneylender are the only intermediaries who are in touch with the actual growers and it is they who furnish information, correct or otherwise, regarding conditions of crops and harvest prospects in the area in which they work. In the case of commissioned agents employed by exporting firms, their services are necessary because it is impossible for a firm to become sufficiently acquainted with bazaar prices and fluctuations except through such agencies. Further, dealing with middlemen direct is difficult, as these intermediaries usually deal on a small scale and lack the necessary capital.

15. The small middleman acts in the capacity of a merchant in the case of produce for export purchased by a firm through a commissioned agent. When purchase of produce for local consumption is involved, the middleman often acts in the capacity of commissioned agent, but in the majority of cases as merchant and moneylender. In the case of commercial crops, the middleman, to a limited extent, may act as a commissioned agent only.

16. *The margin upon which such intermediaries operate.*—A commission agent will make from 1½ to 3 per cent. on transactions and the merchant will get from 5 to 6 per cent. The rates will be low in the case of foodgrains and higher in the case of commercial crops.

17. I have no information regarding the rate of commission allowed by European exporting firms to their commissioned agents nor do I know the margin on which such firms work in handling different classes of agricultural produce.

18. *The method by which each transaction is financed or, in the case of barter, by which an exchange is affected.*—In the case of small transactions between moneylenders, merchants and the producer, a promissory note is given by the latter stipulating that he will either pay in cash or in kind at a specified rate at the time of harvest. The rates of interest charged vary from 10 to 30 per cent.

19. In the case of produce sold in larger quantities and more especially commercial crops, it is a common practice for the big merchant to advance money to their commissioned agents, the rate being about 5 to 10 per cent. of the value of the produce to be purchased, the balance being payable after the produce is delivered.

20. A system of barter by which an exchange of goods is made exists in the Agency tracts and in other hill villages, agricultural produce being exchanged for cloth, beads, bangles, oil and dried fish. I have no detailed information as to the basis on which such exchanges are affected.

(c) 1. *Steps whereby the quality, purity, grading or packing of agricultural products may be improved—Distinguishing where possible between the produce destined for (a) the Indian market and (b) export.*—(a) Improvement in the quality of produce for the Indian market is dependent on an improvement in the methods by which produce is sold. The advance of money for cultivation against a valuation put on the crop before it is harvested encourages the ryot to ignore questions concerned with purity. This method of financing the producer discourages the cleaning and drying of produce and quality is thereby affected. Improvement in the quality of produce is possible by means of pure line selection and by hybridisation. Attention should also be paid to methods by which cereals become adulterated by cross fertilisation, use of farmyard manure containing foreign seeds, the threshing of different varieties on coudunged threshing floors. Adulteration in all such cases is involuntary and must be distinguished from deceitful mixing of produce and wilful neglect in the matter of cleaning, winnowing, and drying.

2. (b) In the case of produce intended for export, steps should also be taken to remove causes of adulteration referred to above. This should form part of the propaganda work of the agricultural department, agricultural associations, and co-operative societies. There is a demand for uniform, pure and graded produce in the case of commercial crops, but here again the system of sale and the method by which the producer is financed is the root cause of bad quality and adulteration. The remedy lies in improving the economic condi-

tion of the producer and progress in this direction can be made by the establishment of co-operative credit societies. When the ryot is solvent and independent of loans outside his society, he will be in a position to sell his produce according to quality.

3. The formation of co-operative sale societies, which should be the sequence of successful credit work, will make it possible to introduce systems of grading and an improvement for the export trade.

4. *Whether effective steps might be taken to place at the disposal of the cultivators, merchants and traders information as to market conditions whether Indian or overseas, crop returns and marketing news in general.*—In the case of the insolvent ryot or cultivator who is indebted to the village moneylender and middleman, little advantage will be gained by the circulation of information concerning market rates. In the case of co-operative societies, such information would be of value, if supplied in time, and this would also apply in the case of big growers who are solvent.

5. As the methods of transport are slow, neither the producer nor the dealer are in a position to take the best advantage of fluctuation in prices. The supply of information to merchants and traders concerning marketing news in general is already undertaken by Chambers of Commerce. The Madras Agricultural Department publishes the crop forecasts and the season and crop reports, but this does not contain any prices in the various markets. Collection of information regarding the prices in the various taluks might perhaps be undertaken through the agency of the taluk tahsildars, but whether the benefits that are expected to accrue from such publication will be at all commensurate with the labour involved is rather problematical in view of the conditions of marketing prevailing in the country already explained.

(d) A great drawback in marketing is the multiplicity of weights and measures. Standardisation is a crying need. The Weights and Measures Committee recommended such standardisation as long ago as 1913-14, but its recommendations have not been given effect to. If one definite standard cannot be agreed on for the whole country, a simplification at least of the present bewildering number by setting up fewer standards suitable to homogeneous areas is desirable. In Vizagapatam and Ganjam, weights and measures vary from taluk to taluk and sometimes from town to town. Other districts, though not so bad, are still in a bad way.

2. Such discrepancies enable the buyer, who is the shrewder of the two, continually to deceive the seller who is a ryot. Professional merchants are known to have two sets of weights, the larger for purchasing stocks and the lighter for selling in retail. Information as to the general level of prices under fluctuations from time to time can hardly be of use when their conversion to local weights and measures had no meaning or is not possible.

QUESTION 24.—ATTRACTING CAPITAL.—(a) Men with capital have hitherto purchased land more with a view to stabilise their position and provide for their less gifted children than to adventure with new improvements in agriculture. The reason for not devoting capital to agriculture is that there is a larger income from capital put to other uses than agriculture. The best cultivation in this country is not the result of the efforts of the capitalist farmer, but that of the ryot who has a small garden farm with a good will. There, freed from the worry of the variable monsoons and from the need to pay heavy assessments, the ryot resorts to intensive cultivation and appears at his best. Capitalist farmers might be a success in countries which are young and where land fit for cultivation is available in plenty. In India, the tendency of farmers with surplus capital is rather to increase their holdings by purchase of more land than to devote it to more and more intensive cultivation. Such purchase would be useful at least in creating large holdings, but for the fact that, in the next generation the large holding is again subdivided into smaller parcels. As the joint family system is well-nigh unalterable, right lines of progress lie in finding more and more ways and means of increasing yields of land owned by the small farmer who has a little capital, and this is what the Agricultural Department has set itself out to do.

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The number of men who live by agriculture is large enough. There is not enough work and not enough wages and income for them, even now. The need is not so much for diverting the capitalist to agriculture as for securing that such floating capital as is in the hands of the ryot is conserved and used for the benefit of agriculture. Helping him out of indebtedness is one way of achieving this end. Another way is by educating him in proper ways of living, *i.e.*, making him spend more on things like sanitation, wholesome food, and decent dwellings, which will improve his efficiency, and spend less on marriages, ceremonies, promiscuous charity and drink. These changes will make him a *plus* instead of the *minus* economic unit he now so often is.

(b) *The force of custom and tradition.*—The Indian ryot is, as all good ryots should be, conservative, and is slow to give up traditional practices unless others are clearly demonstrated to be better. When such demonstration is forthcoming his response is ready enough. The Agricultural Department had first to learn and then to teach. The process of teaching the ryot by effective demonstration began not so very long ago, and the results have been, by no means, discouraging. It has to be remembered that there are only a few hundred men to demonstrate to the ryots of a Province as large as Madras, and that there are comparatively few other agencies to supplement their influence and teaching.

2. Other factors are ignorance and indebtedness.

3. Another reason is what may be described as a “lack of strenuousness” which prevents people from doing the best they are capable of. There is a tendency to remain in a state of contentment with things as they are, which is detrimental to progress. The defect is constitutional, probably due to climatic causes; and the influence of malaria and hookworm, but it has to be reckoned with.

QUESTION 25—WELFARE OF RURAL POPULATION.—The following replies to question 25 have been supplied by M. R. Ry. V. N. Visvanatha Rao, M.A., B.L., the Statistical Assistant to the Director of Agriculture, Madras, who has had some experience in these matters. At his request I am incorporating it in my replies to the Questionnaire.

(b) Yes. The scope should be the ascertainment of the economic position of the ryot. As to the scope and methods of such enquiries, I am in agreement generally with the views of Mr. Burnett Hurst in the Report of the Economic Enquiry Committee.

(c) Villages may roughly be divided into three classes:—

- (1) wet land villages,
- (2) villages with superior dry lands and where gardens (lands with wells) predominate,
- (3) villages with inferior dry lands.

In (1) the classes who depend on unearned increments (*e.g.*, Brahmins, Non-Brahmins higher castes) have taken most readily to English education. This has led to the disintegration of the joint family life, the prosperity of individuals and hardships to many, and extravagance in living by imitating their betters. With the removal of the check on procreation imposed by life in the joint family houses, the families of these individuals usually increase in geometrical progression, and the result is partition of property into un-economic holdings, migration to towns, indebtedness, sale of land, etc. This will be obvious by taking the history of families taken at random, which have been educated for three or four generations. In the fourth generation, they are more often objects of pity than of envy. The landless labourers in the wet villages have been more or less the economic slaves of the landholders and there is much discontent, now that he has discovered that to be such a slave is neither pre-ordained nor in the eternal fitness of things. The efficiency of the worker has been lowered by such discontent, and this together with the attenuation of the purse of his master, is leading to the deterioration of wet cultivation. On many of these holdings yields have gone down to the abso-

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lute minimum, as is shown by the wonderful way in which crops on them have been known to respond to good farming when they chance to get it.

2. The superior dry and garden land villages usually have a sturdier ryot population; the Brahmin is absent, except as a *purohit* (priest) or as a school-master; the ryots are more accustomed to work with and supervise their labour; and families do not multiply with the fatal facility that is so often observed among the educated townsmen. The result is that in these villages the ryot is at his best. He is resourceful, and receptive of ideas, and usually has enough money to adventure with new experiments. It is he that has been responsible for the sweeping new practices in cultivation that have come in recent years, the spread of Cambodia and Karunganni cotton, the better cultivation of dry lands. He does not readily buy wet lands, and he is slow to resort to English education. They are usually approached directly by the Agricultural Department but approach through their sons at the Agricultural College is practically barred, as they do not care to master English and Mathematics which is the entrance qualification to such schools. A scheme of vernacular middle schools may possibly provide for a real want among such men.

3. In (3) the ryot is face to face with the wolf at the door. There is very little unearned increment from land. Land does not respond except to hard work and even then only if the season is favourable and the village population is usually a struggling proletariat. A few wells make a few families somewhat better off than their neighbours. In a good year, there is surplus money to indulge in such luxuries as litigation in civil or criminal courts. As they are dependent on the vagaries of the seasons, they do not care to spend money on improvements, which may not give them more. The population is fairly stationary and the surplus, if any, move off to the more prosperous areas.

QUESTION 26.—STATISTICS.—(a) (i) Figures of areas under crops are fairly accurate with two exceptions. Crop areas are not recorded in detail in permanently settled tracts which cover about one-third of the Presidency. The reliability of the figures reported by estates vary, depending on whether they are surveyed or unsurveyed, and whether their administration is assimilated to the standard prevalent in the ryotwari tracts. Any improvement must take the form of the maintenance of land records in these tracts and this implies a sufficient staff responsible to Government and not to the landholders.

2. The second exception is in the case of dry crops which are often sown mixed in the same field. This is especially the case in the Deccan. In such cases, it is difficult to ascertain the area under each crop. At present the area is split for recording purposes into its component crops in proportion to the rows under each.

3. It was suggested by Mr. Stuart, when he was Director of Agriculture, that the area under each important mixture should be entered separately in the Season and Crop Report. When the areas of mixtures are of sufficient importance he proposed once every ten years to make a detailed census of actual crops by a special staff, and specify all mixtures in detail; to compare the figures thus obtained with those reported by *patuwaris*, and on the basis of this comparison to estimate the usual proportion of mixtures and adjust the yearly figures accordingly.

4. It is by no means certain that this would be any improvement on the present method.

5. An attempt is now being made, at my suggestion, to record the area and yield of mixed cotton and *korra* separately in Guntur and the Deccan, and the result of this experiment will throw light on the general problem.

6. Even in ryotwari districts it is not uncommon to find the area under one crop reported under another. Some of such mistakes are detected in my office by a comparative study of the figures, others escape notice.

(a) (ii) A useful check on the estimated yields published in the season and Crop Report was provided by the Rail-borne Trade Returns which furnished the only available information about the inland movement of the crops. These

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returns were abolished in 1922 and they should be restored in the improved form recommended by the Board of Agriculture in 1924. Orders have recently been issued that rail-borne returns should be compiled and published monthly for cotton, but what is urgently needed is similar returns for all crops which will show their movement from district to district. Statistics can only be improved if this is done.

(b) A statistical department should be attached to each Provincial Government similar to the Department of Statistics for India at Calcutta. This latter compiles returns sent in by Provinces and has no means of judging of the degree of accuracy of such returns. A Provincial Department would have a wide field of usefulness with regard to accuracy and it could address itself to the task of working out in detail and giving effect to lines of improvement suggested by bodies like the Prices Enquiry Committee, the Weights and Measures Committee, the Indian Cotton Committee, the Sugar Commission, and the Industrial Commission. At present recommendations made by such Committees are apt to be ignored for lack of funds and staff.

2. In Madras a statistical section is attached to the Director of Agriculture's office, but there is need for more clerical staff, and also for the establishment of a staff of itinerant officers to examine the actual registering of statistics in taluk offices, and to give advice on improvements.

3. It is also necessary to carry out a large number of crop cutting experiments each year on the main crops if real accuracy as regards yields is to be obtained, and the system should also be extended to minor crops. At present the staff of the Agricultural Department does not admit of this being done. What is needed is a special crop cutting staff who could be employed in non-harvest time as extra demonstrators.

. Oral Evidence.

9277. *The Chairman:* Mr. Anstead, you are Director of Agriculture in the Presidency of Madras?—Yes.

9278. I do not know whether you would care at this stage to make any statement of a general character or whether you would like to proceed at once to question and answer?—I think I would like to proceed at once to question and answer.

9279. Would you tell the Commission at the outset what your own training and experiences have been?—I took a Natural Science degree at Cambridge in 1899; from there I went to the West Indies as a member of the Imperial Department of Agriculture under Sir Daniel Morris. Out there I was Research Chemist; then I worked as a Sugar Chemist in Barbados at the headquarters station; from there I took charge of the whole of the agricultural organisation in Granada; from there I came over to the Indian Service and was employed as a Scientific Adviser to the planting districts in Southern India under the Government of Madras. From there I took my present office of Director of Agriculture. I am myself a Research Chemist.

9280. The Commission is greatly obliged to you for the very complete note of evidence that you have placed before us, and which is, I take it, to be read in conjunction with the series of monographs provided from the services in this Province, in the shape of a file which you probably have before you?—Yes.

9281. Would you give the Commission an account of the organisation of your staff in the Presidency. First will you give us an account of the central staff in the College here directly under you, with some account of the division of duties as between the various Heads of Departments, and then some indication of the disposition of the staff of the Agriculture Department through the districts of the Presidency? Now, first for the staff immediately under you in the College for doing research, teaching and so on?—Yes. Here at the college all the research of the Department is done; this is not only a teaching college, it is also a research institute. We have a system of what we call sections for each subject, with a research officer, an Imperial officer, at the head of each of those sections. Those sections at present consist of a Chemistry Section, an Entomological Section, a Mycological Section and a Botanical Section. Then, in addition to that, the other research officers are plant breeders who are also stationed here with laboratories in the big College, and little farms of their own, plant breeding stations. Of those directly under me, we have first of all a Paddy Specialist with the station that I had the pleasure of showing you and the other members of the Commission yesterday afternoon; then we have a similar thing for cotton, a Cotton Specialist with his own station; we have a Millet Specialist, that is the last one; we have just started that post. That officer again has his own station. Each of these sections have their own staff of assistants in the Provincial Service; they are responsible to me for the work of their own sections; and I look on these research officers as my advisers on their particular branches. Then the teaching staff here consists of a Professor of Agriculture with a number of teaching Assistants. That teaching is done on a time-table of which I have control. The teaching is the University course; we are affiliated with the University of Madras; it leads up to the Madras University degree of Bachelor of Science in Agriculture. The University of Madras of course impose their rules on us for examinations and the standard of the course.

9282. Is all the teaching done here?—All the teaching is done here. At the present time there are about 80 students and it is a three years' course. The central farm is mainly used for teaching students; we try to grow as many of the crops as will grow here and as are representative of the Presidency. The course is largely a practical one; the students have to carry out all the operations of agriculture with their own hands. All these officers are directly responsible to me.

9283. Are all the officers who are charged with the duty of teaching doing a certain amount of research work?—No; not very much. We do allow them to do research work, and they engage in the long vacation in doing research.

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work. The research officers themselves, though they do not teach directly, do give a certain number of lectures to the students and the students of course see what is being done in the research sections. The teaching assistant in entomology and the teaching assistant in mycology are assistants on the staff of the research officers. So that, the students have every opportunity of seeing exactly what is going on in the research being done here and are kept up to date in it.

9284. You think that the inter-action between research and teaching has been beneficial to both?—I think so.

9285. Do your research workers complain that their educational duties interfere with their technical work?—No.

9286. That is the whole picture as regards the essential organisation?—That is the picture here at Coimbatore.

9287. Now, will you give the Commission a general view of the disposition of the staff of the Agricultural Department in the districts, and at the same time let us know what grade of officer holds each position?—May I refer you to the map which is at the end of my Administration Report which I have placed before you? That map shows exactly where the circles are and where the men are posted. We have divided the Presidency into eight circles. Each one of these circles is in charge of what we call a Deputy Director; he is an Imperial officer. He is directly responsible to me for the work in the circle; the district work, all the propaganda work; and in many of these circles there is an experimental station, that is to say, a farm on which the research work done here is first of all tested out in the district before it can be put out to the ryots. That farm is in charge of the Deputy Director in each circle. On this map, the round red spots are the headquarter stations of the Deputy Directors; the round green spots are the experimental stations that I am talking about. Under each Deputy Director there are a number of what are called Agricultural Demonstrators who are scattered about all over the Presidency to do the actual demonstration and propaganda work with the ryots. Those demonstrators are in the Subordinate Provincial Service and they are recruited from men who have passed through this college and have taken their agricultural degree. They are employed by the Government for this work, and all my staff in the districts have passed through this college at one time or another, including even farm managers. In fact we do not employ, if we can help it, any man who has not passed through this college or some similar agricultural college outside this Presidency. The majority of the men are our own men who have been through this college. Many of these Deputy Directors have risen from the ranks and were themselves students trained at this college. The Agricultural Demonstrators are scattered about as widely as possible so as to cover as big an area as possible. At the present moment the actual area that each one works over is, on the average, about two taluks, which is far too big, but we are limited by the number of these men and we have to do what we can. As you will see on this map the black dots are where the headquarters of the Agricultural Demonstrators are. You will see there are a very large number of white blanks where we have not done any work at all, or practically none; that is for want of staff. We concentrate on the areas round about these black dots. All these men are responsible, first of all, to the Deputy Director, who is responsible to me for the work. I tour about, visit the circles, discuss what work should be done and how it should be done, with the Deputy Directors; they themselves are responsible for getting it done in that particular way.

9288. Before you go any further, do these blank spots where you have not been able to place men correspond approximately with the dry areas in the Presidency, or is there no connection between them and the dry areas?—There is not very much connection; but a great deal of it is dry area. We have rather concentrated on the wet areas and the garden land, but there is no real direct connection in that way.

9289. But you have concentrated on irrigated areas?—Yes; the reason for that, if I may say so, is that when this department was started some 20 years

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ago we started our work on paddy as being the most important crop in this Presidency for two reasons; first of all it is a food crop and secondly it is the biggest crop. There are 11 million acres of paddy in this Presidency. We started with that, and we have done more work and gone further with paddy perhaps than anything else. We naturally concentrated on paddy work. Then after that we have concentrated very particularly upon cotton work, especially all round Coimbatore.

9290. Now, on another question of general application; what organisation have you here for recording the administrative experience of the department? Have I made the question clear?—No, not quite clear. Do you mean publications?

9291. I mean this: Have you a record office here which is a store-house of information, a depository of past experience and which is capable at short notice of providing the Director with all the information bearing on a particular problem whether historical or current?—No, not exactly that; we have to hunt it out of the libraries; we have a very good library here at the college; we have a complete set of publications on work which has been done in other Provinces. We should have to hunt it all out ourselves; there is no record office to which I can go and ask for information.

9292. Is not that felt as a want?—I do not think we have felt it as a want; we have always hunted up all our own information and we keep a complete set of records of our own.

9293. You do keep complete records of your own; you do not have to hunt through large volumes of documents and papers?—No; if I had to start an entirely new subject, I should have to do that but we should do it for ourselves.

9294. So that, on the whole, you cannot say that there is any place for a machine of that nature?—I do not think so.

9295. I take it that, broadly speaking, the allocation of functions between your department and the Secretariat is that you are responsible for keeping the records of the technical matters and the Secretariat, in the main, is responsible for keeping the records of the administrative work?—Yes.

9296. Have you found that the Secretariat provides you with accurate and full information about past administrative experience?—Yes; I have no complaints to make about that; I can always get the information that I ask for from the Secretariat.

9297. Now may I take you into the body of your note of evidence? You state there very plainly your view about the Central Research Institute at Pusa. The Commission is anxious to hear your candid view about Pusa. If you would rather give such information *in camera*, I shall take an opportunity later on of clearing the room; otherwise, perhaps, you would let us hear now what you have to say?—I think I am prepared to let you hear now what I have to say on the matter. I do not quite know how the discussion will go, but may I say at any moment if I would like to stop?

9298. You can stop whenever you like?—Then I should like to start in public if I may.

9299. Very well?—As far as this Presidency is concerned, in some ways we have always found Pusa very useful, but in some ways it is not of use to us. For one thing, as I said just now, one of our great problems here is paddy, and paddy cannot be grown at Pusa; therefore Pusa as far as that crop is concerned, is not of very great use to us, except on very general problems. But I look on Pusa as being a central research station, where fundamental problems can be worked out, which is of enormous value to us. We take those discoveries up and work them out here to see how they fit local conditions; and in that way we use Pusa and have found it extremely valuable. We also find visits from the Imperial officers of great use to us, or we used to; nowadays we cannot get them as much as I would like to have them because I cannot afford to pay for them. The travelling allowances of an Imperial officer who comes from Pusa to a Province are charged to that Province. Very often it is impossible to find that money and so I cannot have the Imperial officers

as much as I should like; but I have had a lot of help from Pusa, and I look on Pusa as being a very valuable asset.

9300. You divide in your note the works of fundamental importance which may properly be done at the Central Research Institute, from the application of such fundamental principles to local problems which in your view is better carried out in provincial institutes?—I feel they must be carried out in provincial institutes.

9301. On the question of Pusa as an institute concerned with the fundamentals of research, what have you to say about the capacity, prestige and reputation of Pusa on that score?—I think the prestige of Pusa is a very high one; I think they are perfectly capable of carrying out fundamental research and have done some remarkably good work. The scientific staff of Pusa is of the very highest, and it has been partly recruited from the Provinces. Two of our Madras men have been taken out to go to Pusa. I think it has a very high standard.

9302. So that, you have no criticism of Pusa to offer on that ground?—No criticism on that ground, none at all.

9303. Is there anything which you wish to say about the teaching at Pusa?—I do not think Pusa is capable of giving a complete training to research officers or district officers who are to be heads of sections in the Provincial Governments, in all cases. I say that for several reasons; I think it is much more important that such men should get their training abroad, because Pusa, after all, is a comparatively new place, and I lay a lot of stress on what I describe as the "atmosphere" of the place where you learn. In England, or Germany, or any other part of Europe, you go to a University or a station like Rothamstead, that has been doing wonderful work for 60 or 70 years, or if it is a University, for hundreds of years. The atmosphere of training that you get there to my mind is all important; Pusa could never give that atmosphere. Then there is another point; the men at Pusa who are engaged in research are also engaged in teaching, and I very much doubt whether a man can both conduct research and teach; I think that he is bound to devote much more attention to his research than to his teaching. It is not always the good research man who is able to teach; the teacher, I think, is rather born. Another thing is that, after all, the men at Pusa are engaged in work there; they stay out long periods at work, three or four years at a time, without going home; so that, I think, they are bound to be out of touch with the latest methods. Possibly they may read about them, but even if they have it is not the same thing as seeing them done and seeing them carried out all round you as you find in a station at home like Rothamstead. For that reason, I do not think Pusa is the best place to train the men we want; I would much rather that they were actually trained at home.

9304. What you say is of course subject to your own experience here that teaching and research can be combined to the advantage of both?—Yes, but I am afraid, possibly, I may have misled you. I did not quite follow your original question; it is my fault. Here my research officers, the heads of sections, do not do any teaching; they have teaching assistants who do the teaching. The men actually engaged in research do not teach; my Chemist, for instance, does no teaching at all.

9305. But they are in touch?—Yes.

9306. And meeting daily the men who are teaching?—That is true; but they do not have the bother of lecturing and dealing with the students.

9307. Is it not of some importance that they should be in touch with the students, even though they are not in direct personal touch with them?—Yes, it is important, as long as the man is not taken off his actual research.

9308. It is a question of having adequate staff reasonably divided between teaching and research?—Yes.

9309. On page 33 I see you are definitely of opinion that there is serious lack of co-ordination and inter-communication between Province and Province?—Yes.

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9310. You would probably agree with me that it is easy to exaggerate the danger of duplication of work; it is sometimes useful to have results checked by investigators at a distance?—Yes, I do agree with that; it is very valuable at times.

9311. So that, you do not aim at what I may call geometrical accuracy in the distribution of research. You would not object to a certain amount of overlapping?—No.

9312. But your desire is to obtain a reasonable degree of co-ordination and inter-communication?—Yes.

9313. So you turn to the expedient of a Central Advisory Board?—Yes.

9314. How do you conceive that Board as being constituted?—I conceive that Board as being constituted very much on the lines of the present Indian Central Cotton Committee. It should be a Board on which all classes interested in agriculture should be represented; the science side, the actual cultivators and big landholders, the important Rajas and Zamindars, the trades concerned, the big shipping people, railways, irrigation; everybody in any way connected with agriculture should be represented on it as a representative Board. Then I conceive of that Board appointing, and appointing very carefully indeed, committees to deal with the research work necessary for each crop; that is to say, there would be a number of committees dealing with each crop and also with the veterinary work, and possibly with co-operation. Those committees would have funds at their disposal, and would actually lay down the policy and the work that was to be done in research; if it were necessary to appoint men to carry out that research, they should be appointed and chosen exactly along the lines of the Indian Central Cotton Committee, which I look on as an almost ideal organisation.

9315. But, of course, your Central Advisory Board would be dealing with all crops?—Yes.

9316. Do you conceive the Central Advisory Board as having control over funds, or the right to recommend the allocation of funds?—Yes.

9317. What funds?—They must have some funds, and the funds should be provided by the Government of India.

9318. But what funds do you suggest?—Do you mean how to raise them?

9319. Do you suggest they should be Central Government funds?—Yes.

9320. Have you any suggestions to make as to how those funds might be raised?—Yes, by a cess. In the same way that the funds for the Indian Central Cotton Committee are raised I would have a cess; I think you could put a cess on most crops.

9321. Would it be an export cess?—Yes.

9322. Do you think it would be reasonable to disburse funds, the result of a cess upon export trade, upon cultivators and upon crops not concerned with the export business?—I think that would be fair for the total good of the country.

9323. *Mr. Calvert*: Why do you suggest an export cess? Why not an acreage cess?—I think an export cess would be very much easier to collect. It is going to be very difficult to collect an acreage cess, especially where you have a rotation of crops.

9324. *Professor Gangulee*: Do you suggest an export cess on all crops?—Not necessarily on all crops; on some crops, you could not have an export cess, but you could on big crops; for instance, I would put an export cess on oil-seeds; on cotton there is one already; I would have one on oil-seeds certainly, and I would have one on paddy.

9325. *Mr. Calvert*: What proportion of the paddy is exported?—A great deal is exported.

9326. What proportion?—I could not tell you straight off.

9327. Would it be 5 per cent?—It is more than that I think; I am not sure; I would like to get the figures and tell you.

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9328. Your export cess would have to be that multiple of an acreage cess which your home-consumed product bears to the amount exported; that is to say, if 5 per cent of the rice produced is exported, your export cess on rice would be 20 times the acreage cess?—Yes.

9329. Then why not an acreage cess of one-twentieth of the weight?—My reason for not advocating an acreage cess is that I think it would be such a very difficult thing to collect.

9330. It could be collected with the land revenue?—I think it would be difficult.

9331. *The Chairman:* How do you conceive the Provinces standing in relation to your Central Advisory Board? Where would the initiative lie?—The initiative would lie with the Central Board.

9332. As regards the particular problem, would the Central Board suggest the problem?—I think very often they would, but sometimes the Province would suggest the problem.

9333. And the Province would go to the Central Advisory Board and say, “Here is our problem, please bless us and give us some financial assistance?”—Yes.

9334. Would that give an opportunity to the Central Advisory Board to look at the problem, to divide it into its component parts, and if necessary to allocate some fundamental part of the problem to, let us say, Pusa?—Yes, exactly.

9335. And to correlate that work with the works known to be going on in other Provinces?—Yes, exactly.

9336. But it would be open to the Province to withdraw at any moment, of course, at the sacrifice of any financial assistance which the Central Advisory Board might be inclined to give? There would be no compulsion upon the Province?—No; there would be no compulsion.

9337. In your experience do you take the view that a scheme of that nature could be conducted without any invasion of the position of the Provincial Government in relation to agriculture?—Yes; I think so; we have experience here, if I may again quote the Indian Central Cotton Committee. We have in this Presidency a cotton problem connected with a somewhat mysterious disease; we find that a very large proportion, 40 or 50 per cent, of the actual bolls produced, fall off and never produce cotton at all. It probably is not a disease; we cannot find any particular organism. It is a very big and fundamental problem; we in this Province are not able to tackle it; we have neither the staff nor the money to tackle it. The Indian Central Cotton Committee have decided that it is a problem which must be attacked. They are providing the staff, two men who are being selected in England, a Botanist and a Chemist, to take up this study and they are putting up Rs. 50,000; they have decided that the work should be done at Coimbatore. These men are going to be sent to us, the Central Committee are going to finance them and we on our side say we will give them every facility for doing the work. We shall find accommodation for them here both in regard to bungalows and laboratories and shall put everything, including land, at their disposal. It will work perfectly smoothly; there will be no friction whatever as far as I can see.

9338. I assume that you accept both the Provincialisation and the making of Agriculture a Transferred subject, as something permanent in India?—Yes.

9339. So that your opinion, I take it, is that any scheme which was suggested and which because of its bearing on those two points did not commend itself to the Provinces would be doomed to failure from the start?—Yes.

9340. On page 34, paragraph 11, there is just one point. You are clear that there is a lack of sufficient knowledge in any one Province of what is going on in other Provinces. I assume that the mere reading of published accounts of work done in other Provinces is not a sufficient guide to what is going on. Is that your view?—Yes. It is not a sufficient guide. It is of the utmost importance that one should be able to talk things over with men who are doing similar work, who have probably done a lot of work which they

cannot publish. My idea, if I may say so, is, that men working on the same subject should be able to get together and discuss their difficulties.

9341. You think the money spent on these journeys is well spent?—Very well spent, indeed.

9342. Turning to page 34 you say in paragraph 14, "As regards men for research work, I do not think that really suitable men can be found as a general rule (of course there are exceptions) in this country and it is necessary, in the first place, to recruit European research officers to start the work and train their own Indian assistants who can ultimately take their places." That process is going on at this moment in this Province, is it not?—Yes.

9343. But in your view it would not be in the interests of the country to take the final step before it is perfectly clear that the Indian officer who is to take on the work is capable of maintaining the high standard already attained?—I think it is absolutely essential that we should have the very best men that we can get irrespective of what their nationality is; it is the best men that we want always.

9344. There is not merely a shortage in India of the very best; there is a world shortage of the very best?—Yes.

9345. Do you think the short-term contract is proving a success?—No. I do not like the idea of it at all; I do not think it is going to attract the best men. We have experience of one man here on a short-term contract, but he has only just come. I do not think you are going to get the best men on the short-term contract, for this reason, that at the end of the contract the man becomes unemployed and his prospects are not particularly good; he is always risking unemployment. In these days it is no joke to come to the end of a job and have to look for another at the end of every five years. Therefore I do not think it will attract the best men. I think it may attract men at the beginning of their career; it is not so bad for a young man to take his first job like that but a more senior man, I think, would hesitate long before accepting such an appointment; I know I should.

9346. At the same time, of course, any general appointment of officers from overseas on contracts other than short-term contracts would be difficult to reconcile with the principle that Indianisation should proceed as fast as thoroughly competent Indian officers can be trained and appointed?—That is true.

9347. So that probably a half-way house is what you are aiming at?—We must aim at a half-way house.

9348. With regard to paragraph 15 on page 34, will you tell the Commission at what stage in his career you think an Indian research worker trained in India should proceed to Europe or America?—That depends to some extent on the man, but in general terms I would like the man to have had about ten years in the Service at least before he goes.

9349. What age would he be then before he leaves this country?—He would then be round about 30.

9350. Your experience is quite definite in this respect, that you prefer that an Indian should be trained in India than that he should proceed as a young man overseas to be trained?—Yes; I think he ought to have the local knowledge first and give us an opportunity of seeing whether he is going to be a likely man for the work.

9351. Now would you turn to page 35 of your note? Are you satisfied with the standard attained by a graduate in this Presidency?—Not altogether.

9352. In what respect are you dissatisfied?—I think they do not know enough; they have not got sufficient literary education when they come to begin their degree course; their English is weak; that is what I am mainly dissatisfied about; we do not have sufficiently good material to work on during the course.

9353. *Dr. Hyder*: Do you take Intermediate students of the Madras University?—Yes.

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9354. *The Chairman*: During the first year of what course?—During their degree course here; I would like them to be better educated when they come.

9355. *Sir Henry Lawrence*: At what stage do they come?—They come after they pass their Intermediate; they come from the colleges.

9356. *Professor Gangulee*: Intermediate Arts or Intermediate Science?—Intermediate Science.

9357. *The Chairman*: What about their scientific equipment when they come to begin their course?—It is very poor. They know practically nothing. Even if they have taken their Intermediate in Science they know very little.

9358. How about the scientific attainments of the degree student after he has taken his degree?—The scientific attainment is good enough for the purpose for which we want him.

9359. Is it your view that men who are best qualified for the post-graduate training are at any rate qualified in pure science?—We have no post-graduate training here.

9360. No post-graduate training here at all?—No.

9361. Are you training no research students at all?—What we generally do in the way of training research workers is that after a man has taken his degree he gets a definite appointment with the Government as Assistant to a research officer; then he goes into that section and the research officer teaches him as it were.

9362. So that he has the advantage of both a salary and post-graduate training?—Yes.

9363. What is his equipment in pure science?—His equipment is just what we can give him here, but he has a lot more to learn.

9364. What do you say about his equipment in pure science when he comes to you as an officer appointed for post-graduate training?—I think it is sufficient; we can teach him the rest easily enough.

9365. The inference is that he has managed during his degree course to make up the leeway and to overcome the limitations, which in your view are serious, in students who come up for the degree course?—Yes. We give him a really good grounding in that course in science; he is always a little bit weak in English, but I do not know that that matters very much.

9366. On page 35, in answer to question 2, you say, "It must be admitted that all forms of agricultural education so far tried in this Presidency have resulted in failure." Are you really inclined to think that the fact that your students when they leave this college aspire to offices in the public service is a mark of failure?—Yes.

9367. Somebody must fill the public services, must they not?—That is true, but my complaint is that no student would come to this college at all if he did not think he would get a Government post.

9368. So that, to the extent to which an agricultural college is a training ground for public service, you think you have been successful, but to the extent to which an agricultural college is concerned with training agriculturists to return to the land and to work there on a commercial basis, you think you have failed?—Yes, exactly.

9369. Is it within your knowledge that other countries have to contend with the same difficulty?—Yes, I notice that most places complain of this difficulty.

9370. Do you know of any country which does not complain of the same difficulty?—No, I do not.

9371. Is it your view that you would have had more success in the second category (that is, the training of agriculturists proper) if you had elected to train them at an institution other than that at which you were training officers for the public service?—Yes, that is what I wish to do.

9372. Do you think that close touch with men ambitious for public service disturbs the minds of those who come here in the first place with the intention of returning to the farm?—I do not think I would put it like that.

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9373. Will you put it in your own way?—What I would like to do is to train men who wish to go back to their farms in a technical school devoted to that purpose in which the training would consist of as little science as possible and as much practice as possible; I would give that training in the vernacular and not in English at all; every word of it should be in the vernacular.

9374. *Mr. Calvert*: Would you not have difficulty with regard to terminology; for instance "sulphate of ammonia"?—I think that difficulty would be overcome, because even now in the Tamil language a great many words have been simply taken bodily from the English language. They would call it "sulphate of ammonia." From the point of view of teaching a farmer I would not mind if it was called what the ryot calls sulphate of ammonia. The ryot always refers to it as "sugar." I do not think it would matter as long as people knew what they were talking about.

9375. *The Chairman*: Have you pursued the after-careers of students who have left your college and who have not gone into the public service?—We do not keep a careful record or register of them, but I know pretty well what has become of all of them.

9376. Do you not think that a persistent attempt to keep accurate records of after-careers might, at the end of 15 or 20 years, be a very useful thing?—Yes, I think it would.

9377. I gather from the general trend of your note that you are strongly of opinion that in the earlier stages of education, literacy is the goal of modern general education?—Yes.

9378. But you do think that a certain amount of nature study can be given without any loss of direction in that respect?—Yes, I feel very strongly upon that point; I would like, in the primary schools, to see nature study introduced as a central subject, so to speak, and all the other subjects, reading, writing and arithmetic, built up round that nature study. I think that could be done very easily; if you are teaching small children to read there is no reason why they should not learn to read by reading about nature study subjects. All the teaching, dictation and arithmetic could be bound up with nature study and deal with agricultural subjects, nature subjects. I would like to see nature study a central subject round which primary education should be built up.

9379. One has to be very careful in discussing these matters to distinguish between words and facts. What size of class has the ordinary teacher in this Presidency got to deal with in a primary school?—I suppose about 20.

9380. A teacher would take 20 children between the ages of 6 and 10. Is that approximately correct?—Yes.

9381. Would you agree with me that to take 20 children between the ages of 6 and 10 into a garden for half an hour, and give those children, 20 of them mind you, a good talk on nature, is one of the most difficult things that you can ask a person to do?—It is difficult, but it can be done.

9382. I am sure it can, but you do really mean it is a very difficult work to do well?—I do.

9383. What percentage of teachers in the primary schools in this Presidency do you suppose are capable of doing that?—Very few indeed, at present.

9384. What constructive suggestion have you for equipping those teachers with the necessary knowledge?—The teachers in this Presidency go to a training school to begin with and that training school should teach them how to teach nature study.

9385. I see you are quite clear that a small school garden and not a school farm is what is required?—For nature study, yes.

9386. What size of plot do you recommend?—I do not think it need be big; I do not want all my nature study taught in a stereotyped way in a school garden; I want the children to be taught outside; I want them to be taught about the weeds that grow in their own fields, about the trees that they can see round the school, the life history of butterflies and things like that.

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For that you do not necessarily want a garden at all; I could teach nature study in a town.

9387. You are not at all sure that gardens are necessary?—They are not necessary, though I think they are a useful adjunct.

9388. On page 36 you give a description in paragraph 10 of the sort of school you are thinking of, designed to encourage boys to return to the land. Is that the purely vernacular institution that you were describing just now?—Yes, I would have it all in the vernacular.

9389. I see you intend to teach the rudiments of pure science?—You must teach the rudiments; just enough to explain the operations that you are carrying out. If I may take an example, if you are going to teach a student it is a good thing to plough a little better than the country plough does, you have to show him why, and therefore you have to teach him the rudiments of soil physics. But I would not go further than that; I would go just far enough to enable him to understand why a particular operation is necessary and no further.

9390. In paragraph 12 on the same page you are dealing with the tendencies that bring about this disinclination to return to the land, and you think you see a possibility of the experience of unemployment on the part of those who have been trained in provincial life and public life having its effect on the village boys in their choice of a career. Do you, in fact, see the slightest sign of this tendency?—Not the slightest, but I think it is bound to come in time. My feeling is that there is no demand for agricultural education in this Presidency for its own sake at all, and we cannot do anything until that demand exists. It is no good talking about schools until we get the demand. At present there is no demand, but I think that demand is bound to come by a process of starvation in time.

9391. On page 37 you say you believe that one of the best ways of making agriculture more attractive to the people is by improving the conditions of village life. Has the co-operative movement undertaken this work in this Presidency?—It has, but it has not got very far with it.

9392. Through the medium of better-living societies, or how?—Yes.

9393. Have you got such a thing as a better-living society in the Presidency?—We have got some sort of health societies, but very few of them.

9394. Are they founded on a co-operative basis?—No, they are not, not on pure co-operation.

9395. So that your co-operative organisation as such has not passed beyond the stage of providing credit?—Exactly; that is all that is done.

9396. You recommend the revival of the panchayat?—Yes.

9397. Have you studied the history of the ancient panchayats?—Not deeply, but I think a great deal could be done by the panchayats, and is being done in many places.

9398. In the old days a village isolated by lack of communications had to manage its own affairs for better or for worse?—Yes.

9399. So that some system of village government was inevitable?—Yes.

9400. But in these days you have communications and you have effective administration and judicial systems conducted from outside the village, so that in those fundamental matters there is no longer a need for communal government on a panchayat basis?—True, but then the panchayat, instead of doing that, might take up these questions of improvement of health and sanitation, and so on.

• 9401. So that the panchayat really becomes only a name; it has no connection with the institution which in ancient days used to be known by that name—Yes, that is so.

9402. *Dr. Hyder*: Your panchayats working in certain directions have been a success. Could you tell us why the panchayats here are a success?—No, I am afraid I could not.

Mr. Rudolph D. Anstead.

9403. *Dewan Bahadur Raghavayya*: Is there a strong village feeling, and in spite of the rapid development of communications does not each village feel it is a separate entity? Has not the movement which started a few years ago succeeded in many cases?—I think it has.

The Chairman: Am I not right in thinking that in the old days there was a series of panchayats, one in each community?

Dewan Bahadur Raghavayya: Yes, in some cases.

9404. *The Chairman*: On page 37 you say; "The problem is both of recent date and complicated. Before the unsettling influences of English education, every young man found his calling determined for him by his elders or by the custom and tradition of his caste." I suggest to you that you are over-emphasising the disturbing influence of English education and perhaps rather forgetting the inevitable disturbance resulting from the outer world breaking in upon these village communities, due to improved communications and trade with the outer world. Do you agree?—Yes.

9405. I think you give on page 3 of the general memorandum in the file of memoranda provided for the Commission some time ago an account of the staff dealing with demonstration work?—Yes.

9406. How do you divide responsibility at the top as between Research and Demonstration; have you a particular officer who is charged with the duty of organising demonstrations?—Each Deputy Director is responsible for that in his own circle.

9407. But what is the position at the centre, in this College?—Research men have nothing to do with demonstration.

9408. Who does organise demonstration and propaganda here in Coimbatore in a general way over the whole Province; do you do it yourself?—I do it myself.

9409. I had an idea that one of your Deputy Directors was specially charged with the duty of over-looking demonstration and propaganda throughout the Province?—No.

9410. You emphasise the immense importance of demonstration on the cultivator's own plot. Who takes the risk in regard to those demonstrations; the cultivator or the Government?—It is a point which has never been settled, but there is no risk; we never demonstrate anything unless we know it will be a success.

9411. Is not that the sort of risk that you would be prepared to undertake?—I should be perfectly prepared to take it, yes.

9412. You say that this plan is being pursued up and down the Province. It is being pursued, I take it, at those centres which you pointed out on the map?—Yes.

9413. Are experiments on cultivators' fields being carried out at all those centres, or have you demonstration plots under the control of the department?—Demonstration plots under control of the department. We never carry out an experiment on a ryot's field if we can possibly help it, for two reasons; first of all, there is the risk that you mention, and one failure puts one back far more than a number of successes bring one forward. Another thing is that in my opinion you never can carry out an experiment which is of any value on a ryot's field, because you are very hazy about the results, and you know nothing about the probable errors and that sort of thing. It is unscientific to experiment on a ryot's field.

9414. Perhaps I used the wrong word; I mean all your demonstrations are being carried out on the cultivators' own plots, and your experiments on your own farms?—Yes; all our experiments are carried out on our own experimental farms; nowhere else.

9415. Have you applied yourselves to the problems of dry cultivation in this Presidency?—Yes; to a certain extent along the west coast, especially in Malabar.

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9416. And on the higher tracts? You have tracts of dry cultivation at a higher altitude than the one you have mentioned, have you not?—No, not very high.

9417. They are all low, are they?—Directly we get up here we get the big rainfall and we get the jungle.

9418. I understood there was an intermediate zone?—Along the West coast there is, but it is only 500 or 600 feet; it is on the dry hill tops; we have done a great deal of work there.

9419. How far do you think you have been successful in demonstrating improved dry cultivation?—Locally we have been very successful. What has happened is this; we have a farm on the West coast at Taliparamba, half-way up the West coast. That is in a dry tract; on that farm we did dry farming and started our own methods; and now all the hills around for many miles are covered with that cultivation, carried out by ryots who have copied us. The same is the case in connection with coconut cultivation; it has been a success, but it is slow. A great deal of work remains to be done yet, but on the whole it has been successful.

9420. Where is the principal famine area in this Province?—One of the worst is Bellary, right up in the north.

9421. Would you describe the agricultural practices in that tract; what are the major crops there?—The major crops are millets and cotton; it is a famine area because along there the monsoon very often fails. During the last three years, for instance, and until this year, they have had practically no rain at all.

9422. That is a dry area?—It is a dry zone.

9423. How many stations have you in that area for demonstrating improved tillage and cultivation?—We have a farm at Hagari, but we have not done very much work along that line; nothing like as much as we should do.

9424. Does it not occur to you that that is one of the points most requiring attention from the Agricultural Department?—It is.

9425. How do you account for the fact that your department has not applied itself towards the solution of the agricultural problems of these famine areas?—Purely owing to lack of staff and money. As a matter of fact we have a scheme that has been before Government for some time for doing definite work on that very problem, but we have not yet got either the staff or the money for it; it is still under consideration.

9426. *Dr. Hyder*: Could not you transfer some of your activities from the wet areas and make a fair distribution of men between dry and wet areas?—That could be done. It is a question of balancing problems, but in my opinion it would be a pity to stop the work we are doing.

9427. *The Chairman*: I fully realise what you say; but I still have some difficulty in accounting for the fact that you have applied what men and money you have to districts not subject to famine while you have not applied your men and means to those districts which are liable to famine?—We do not think it is a sufficiently big problem. If I may say so, with the present means of communication famine can be dealt with; you can get food to people very quickly.

9428. What was the most important famine you had there?—We have never had a serious one there in my experience.

9429. How long have you known the district?—In 1924 there was a small famine; but during the 20 years I have been here they have not had any serious famine.

9430. Is it still called a famine area?—We still call it a famine area; but people do not starve and die nowadays; famine can be dealt with.

9431. But of course the standard of living in that area is low?—It is low, yes.

9432. Do you agree that, short of the preservation of life, one of the first duties of your department is to apply itself to the problems of those areas,

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where the cultivator is on the very margin of subsistence?—True, but I must not let you get the impression which I am afraid I have given you, that we have done nothing; we have done a good deal, although we ought to do a good deal more, I admit, and we would do more if we had the staff and money. The truth of the matter is that we want more research on what to do in areas like that; unless we know that, I do not think we can do anything; and I do not think we ever shall know that until we have a good soil physicist at Pusa.

9433. Do you not think that enough is known already to give the hope of greatly increased yields, in years of partial drought, as the result of better cultivation and better rotation?—Better cultivation, certainly.

9434. Not better rotation but better cultivation?—Better cultivation, yes.

9435. And yet you have no station in that particular area designed to demonstrate better cultivation?—Yes, we have.

9436. I beg your pardon; I thought you said you had none?—Yes, there is a station at Hagari, and another one at Nandyal, where ordinary methods of cultivation are demonstrated.

9437. *Dr. Hyder*: Have you got one at Cuddappah?—We have no station at Cuddappah, but we have a demonstrator there.

9438. At Kurnool?—At Kurnool we have a demonstrator.

9439. *The Chairman*: How long have those stations been opened?—Hagari and Nandyal were two of the earliest stations in the Presidency.

9440. Have they been a success?—Yes, there has been a very big improvement in the cotton cultivation.

9441. Have you an agricultural economist on your staff?—We have no agricultural economist.

9442. Do you think an appointment of that sort would be an advantage?—It would be an advantage.

9443. Do you think it is urgently called for?—Not so urgently as others.

9444. Will you turn to page 38? What is the approximate average number of villages in a taluk in the Presidency?—It varies enormously; the size of the taluks varies and the number of villages in them varies enormously.

9445. You have no figure in your mind?—No.

9446. *Dewan Bahadur Raghavayya*: From 50 to 200?—Yes, from 50 to 200; they vary as widely as that.

9447. *The Chairman*: On page 39, you say, "In addition to the above, we have a few large demonstration plots, which we call demonstration areas. This is, at present, an experiment. It is an acceptance of the challenge that what the department teaches is not adapted to practical farming, and that what may be demonstrated on a small plot is not necessarily successful on a larger area." That is a very familiar argument. But how comes it that demonstration on the ryot's own holding which, I presume, is begun as part of the ryot's general scheme of cultivation, does not meet this challenge?—I think it does; but it is a challenge which has been flung at us so often, very often not by the ryot but in the Legislative Council.

9448. I should have thought the first answer, the answer of the demonstration plot on the ryot's own holding, was the best answer of the two?—It is not quite a complete answer, because the demonstration plot on the ryot's own farm is always a very small one. It is very often a quarter of an acre, and they say that what one can do on a quarter of an acre one cannot do on ten acres. So I said I would show them that that was not true.

9449. They cannot have it both ways. First they say, what you can do on ten acres, you cannot do on a quarter of an acre; then they say, what you can do on a quarter of an acre you cannot do on 10 acres; but if the ryot has 8 or 10 acres, I should have thought the demonstration of a particular crop by that method on half an acre would be an ideal exposition of the possibilities of the practice?—I agree; but other people do hold the same view, unfortunately.

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9450. On page 39, you point out the extreme difficulty of getting really satisfactory cinema films prepared?—Yes.

9451. If I may say so as one who has had some experience, in another field, of the difficulty of getting demonstration and propaganda films prepared, I entirely agree with you; but of course it can be done. It is a highly technical art, the people who have it are few and they must be properly paid?—Yes.

9452. Would you support a proposal to have a propaganda bureau, particularly a bureau concerned with the preparation of films, as a central institution in the country?—I would support it very strongly if I were assured that it would really be done properly. What I am afraid of is the exhibition of poor films, because people will say "If it is like that we will not do it." I want very good films; if these are got and the exhibition done properly I should support the idea very strongly. I foresee a difficulty, however, about showing them. I think that again will have to be in the hands of fairly skilled men, who will take the films round. The ordinary projector is not a particularly easy thing to handle. I have tried one. You have to put it in the hands of a fairly intelligent man.

9453. I do not think that presents any great difficulty; I think people who have learnt to drive motor cars in a week will easily learn the art of projecting cinema pictures?—It is very easy to set fire to the film, especially when it is being shown in villages in tents and that sort of thing where you have no buildings. If the film caught fire there would be trouble.

9454. Demonstration through an opaque screen in the open air is best in these days?—Yes.

9455. Those are technical difficulties which can be met very easily?—The point I want to make is that if it is to be done it should be done by skilled men.

9456. Do you attach importance to it if it can be done?—Yes.

9457. Do you think it is a promising line?—It is very promising if it can be done well.

9458. Would you agree that practices which do not promise substantial returns are, in the nature of things, unlikely to attract cultivators who are in debt? A three, four or five per cent increase in output is not a great attraction, is it?—No.

9459. It is when you reach 15 or 20 per cent?—Yes.

9460. That is your experience in this Presidency?—Yes.

9461. What use has been made of co-operative organisations for the purposes of demonstration and propaganda?—Well, as much as possible. Wherever I can persuade a co-operative society to run a demonstration area of their own I do so, and a certain number of them is doing very good work in that direction; but there are not enough. A great number of these societies are not interested in that kind of work at all.

9462. *Dewan Bahadur Raghavayya*: They have just made a start at Lalgudi?—That is true; the Lalgudi one is a particularly good one; but there ought to be a great many more.

9463. It is a very recent one?—Yes.

9464. *The Chairman*: Talking about agricultural indebtedness, can you provide the Commission with any detailed statistical statement of the state of debt in this Presidency?—I could not do that; I have no means of finding out.

9465. Could you get those figures?—No.

9466. Can you tell the Commission what proportion of the debt is secured and what unsecured?—I have no information.

9467. Do you know the extent of the mortgage debt?—I have no information on those points.

9468. Do you think the problem can be envisaged as a whole until those fundamental facts have been ascertained?—No, probably not, I think they should be ascertained.

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9469. They have not been ascertained?—No.

9470. *Devan Bahadur Raghavayya*: Cannot you get figures from the Registration Department?—Only for mortgages; that is all.

9471. *The Chairman*: Perhaps you would see whether figures of that sort can be provided?—Yes, you could get the mortgages, but that is not the complete story.

9472. I agree that mortgages are not everything, but they would be something?—Yes.

9473. And so far they are better than nothing?—Yes, we could get you those figures.

9474. You say education has contributed its share in piling up debt; do you mean the expense on education has proved unremunerative?—The expense on education at the Universities; there is this tendency on the part of parents to send their boys to a University for an expensive training.

9475. So that the education has proved unremunerative?—Yes.

9476. Among the poor, you say drink is a powerful factor in keeping the depressed and the cooly classes where they are. Is that because of its physiological effect, or because of the expense?—It is the physiological effect.

9477. *Dr. Hyder*: Does the ryot also send his son to the University? We are concerned with the indebtedness of the ryot?—Yes, he has a tendency to do that.

9478. And for that purpose, he is getting into debt?—Yes, I think that is one of the factors.

9479. *The Chairman*: The cost of drink is also an important consideration amongst the lower-paid wage earners?—True, it is.

9480. You have not provided us with any answer to question 4, Administration. There are just one or two questions which I should like to ask you on that. Do you find that the railway authorities pay attention to any request that you may put forward for the construction of branch and feeder lines?—Yes. A good many lines have been made in this Presidency, and a lot more are projected.

9481. *Dr. Hyder*: Are you or the public satisfied with the branch line rules made by the Government of India?—I think so.

9482. *The Chairman*: So you have no complaint against the railways on that score?—I have no complaints against them.

9483. What is your opinion about the service rendered by the railways and the charges levied?—I have no great complaint against the railways on that score; they have reduced the charges, and I very much doubt whether, from the railway point of view, they could reduce them very much more. After all, the railways have got to pay and, on the whole, though we keep on worrying them, they have treated us rather well in this Presidency.

9484. Do you ever make applications for reduced rates on particular products?—Yes.

9485. They have been met sympathetically?—They have been met sympathetically on the whole; we do not get all we ask for; but I think they give us all they can in reason.

9486. How about the Local Railway Advisory Committee?—I do not know much about it.

9487. What avenue has the cultivator by which he can bring any grievance he may feel against the railways to the notice of the authorities?—He would do that through the Collector of the district.

9488. Is it within your knowledge that if the cultivator makes a complaint it cannot go up to higher authority until the cultivator deposits Rs. 100?—No.

9489. Of course, that is not necessarily a ground of complaint?—No.

9490. Are you satisfied with the roads in the Presidency?—I am not; the roads are getting steadily worse.

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9491. To what do you attribute that fact?—To the fact that now the roads have been handed over to the District Boards, and the District Boards do not spend sufficient money on them; they spend their money on other things, like education, schools, hospitals, etc., and they do not keep up the roads. The roads in this Presidency are nothing like as good as they were 10 or 15 years ago.

9492. Have you any suggestions for improving the position?—I am afraid not, except, if I may use the expression, “gingering up” the District Boards.

9493. How are you going to do that?—I do not know; it must be done in some way or other.

9494. Would you suggest that where a District Board has failed and failed badly in its duty in the matter of roads that for a period at any rate that particular responsibility should be removed from it?—I agree with that.

9495. I do not know that that would hold any particular terrors for the District Boards?—No, probably not.

9496. But it might improve the roads?—Yes.

9497. *Dr. Hyder*: Is not the money collected at the toll barriers spent on the improvement of the District Board roads?—It is not earmarked for the roads; it goes into the general funds.

9498. Are you sure of it?—I think so.

9499. *Professor Gangulee*: Is there no such thing as a road cess?—No. I am told now that the money received from toll bars is earmarked.

9500. *The Chairman*: Does the Meteorological Service give you as much help as may be in its power to give?—At present it does not give us any help at all.

9501. Do you think it ought to?—I do not think it can.

9502. You do not think that the Meteorological Department can do anything for agriculture?—Very little, unless they can forecast what the monsoon is going to be like at least two months ahead, and I take it that that is impossible. It would be of some assistance if they could do it.

9503. Do you think if they could forecast the monsoon two months ahead, that would be an important contribution to your problem?—I do.

9504. How about the Post Office?—I do not think the posts can help us at all.

9505. Does the Post Office not conduct a savings bank?—Yes.

9506. Is not that a direction in which they could help you?—It is a general direction.

9507. Do you not think that the habit of saving amongst the agriculturists is one of the most important virtues which can be encouraged?—Yes, certainly.

9508. Do you not think that the Post Office could help you there by taking upon itself the duty of popularising the savings system?—Yes. That is a view which had not struck me.

9509. Do you envisage the day when every village will have a broadcasting receiver?—I suppose ultimately, yes. At present, of course, we are a very long way from that; we are hardly linked up even in Madras. There is very little wireless to be had.

9510. Do you think it will come?—I think it is bound to come. Personally, I think wireless is going to change the whole face of the world in quite a short time. I envisage being able to talk very easily with England.

9511. Have savings certificates been pushed at all by any organisation?—Not to my knowledge.

9512. But you will agree that this question of investing the surplus margin in a good season is very important?—Certainly.

9513. Meantime, all such savings are invested in ornaments for women?—That is a common custom of the country.

9514. That is a practice which to my knowledge is almost universal?—Yes, it is almost universal.

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9515. I suggest to you that the wealth so utilised is not necessarily wasted; is it not the case that the ornaments are usually pledged in famine periods?—Yes, I think that putting the savings into ornaments is merely a form of investment; it is considered safe.

9516. And it is available as a source of credit?—Yes, or it can always be turned into money.

9517. *Dr. Hyder*: What do you think is the value of the total amount of silver ornaments which a gaily decked bride of a ryot wears?—I do not know.

9518. *The Chairman*: How long have you been in this Presidency?—Twenty years.

9519. With regard to question 6 of our Questionnaire (Agricultural Indebtedness) are you familiar with the statutes, whether All-India or provincial, which deal with the question of debt or credit?—No, I am afraid I have not made a study of that.

9520. Are you familiar with the practice of advancing *taccavi* loans in the Presidency?—No; again, I do not know very much about it.

9521. Have you applied yourself to the problem of long-term credit at all?—No, only in a very general way. That part of the work I rather look upon as being the duty of the Co-operative Department, which is an entirely separate department. I am in close touch with that department, I meet the Registrar, and we talk things over a great deal, but that is as far as it goes.

9522. I do not want to press you on the point, as you have told us that you have not applied yourself to it, but surely in the matter of *taccavi* it is not quite correct to say that co-operative organisations are alone concerned with it, is it?—No, not in the case of *taccavi*.

9523. On page 40, dealing with our question 6 (b) you say, “special measures to rehabilitate the indebted ryot and to prevent his land being auctioned by the moneylender seem to be urgently needed.” Is the whole of the scheme which you adumbrate designed to deal with existing debt, and not to provide long-term credits for improvements?—I think it could do both, but existing debt is the first thing to get rid of.

9524. You make a suggestion in paragraph 3 for the preliminary financing of such a scheme, and you say “*e.g.*, from postal savings bank funds or cash certificates.” So that you do lean upon the Post Office a little?—Yes.

9525. You say further “there would not be much recurring expenditure as there would be a steady inflow of instalments year after year.” Do you know the rate of interest paid to investors in the Post Office savings fund?—I do not at the moment, no.

Dewan Bahadur Raghavayya: It is 3 per cent.

9526. *The Chairman*: Is that money on demand; is it liable to be produced at call?—Yes.

9527. I do not want to take you into this unless you have seriously considered the financial proposal that you have made; but do you think it possible to finance a scheme for long-term credit on funds liable to be produced at call? If it is only a general suggestion I will not pursue the matter?—It is a general suggestion.

9528. You make a proposal for the provision of land mortgage banks under Government auspices. How far has this idea proceeded in your Presidency? Is this just a suggestion from you or is it in the air?—It is in the air.

9529. Nothing so far has been done?—No.

9530. Do you know anything about the specific proposals for the setting up of these land mortgage banks?—No, it is merely a proposal of mine.

Dewan Bahadur Raghavayya: Two banks have just started working.

9531. *The Chairman*: I notice you do not give us an answer to our question 7 (Fragmentation of Holdings) although you have been good enough, as a Presidency officer, to provide us with a monograph on that question?—I have sent you a note on that question.

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9532. Have you accurate facts and statistics as to fragmentation in the Presidency?—No, I have not, but they could be got.

9533. Are they available?—They are not available; they will have to be got.

9534. Does that mean that they have been amassed but not arranged, or that they have not yet been collected?—It means that they will have to be collected from all the villages; they are there but we should have to collect them.

9535. They are there I suppose on the land revenue records?—Yes; they would have to be put together.

9536. The matter has not gone any further than that?—No. We could not possibly get them collected in time for this Commission.

9537. I should like to ask you a question or two in regard to your answer on page 41. What so-called major irrigation schemes have you in this Presidency?—Beginning in the north, there is a very big canal centre in the Godavari all round Vizagapatam, right down. There is a big canal irrigation scheme run from the river. And then there is the big Mettur project which is now being constructed and which is an enormous affair. Then there is another project here at the foot of these hills, which will bring water, irrigation, light and power into Coimbatore; it is projected but not completed.

9538. What degree of touch is there between you and your department on the one hand and the Irrigation Department on the other?—None whatever.

9539. Would you agree with me that no irrigation problem is without its agricultural problem?—I agree very strongly.

9540. How do you account for the fact that there is no touch between these two departments?—I cannot account for it; it always has been so.

9541. *Dr. Hyder*: Is it due to the land revenue system here, where you have consolidated assessment for water and revenue, that the Irrigation Department is more in touch with the Land Revenue Department than with your Department?—That probably is the reason, yes.

9542. *Devan Bahadur Raghavayya*: Before undertaking big schemes of irrigation do not the Land Revenue Department now consult the Agricultural Department as to the suitability of the soil, adaptability to irrigation and so on?—They do in a very tentative way. A few projects have been sent to the Director for his opinion. But no notice is taken of one's opinion.

9543. *The Chairman*: That is not quite the same thing as not consulting?—That is true; but I may point out that on the Mettur project, the new one, we have never been consulted at all.

9544. May I ask you when you first heard of the Bhavani scheme?—When I was living here at Coimbatore.

9545. About how long ago?—Before the War.

9546. Do you know how that scheme is proceeding at the moment?—No. I understand it is hung up.

9547. Have you ever been consulted about the agricultural problems connected with that scheme?—No.

9548. Do you wish to make any specific complaints or to make any suggestions with regard to this absence of touch between the Departments?—Yes. I would like to suggest that the Director of Agriculture should be a member of the Irrigation Board.

9549. How about your Provincial Board of Agriculture?—We have not got one.

9550. You have nothing of that sort?—No, no Provincial Board of Agriculture.

9551. You have no consultative or general Board of that sort which brings together round a table every one interested in agriculture?—We have nothing of that sort.

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9552. Then how about the minor schemes? Have you in this Presidency any officer charged with the duty of advising the cultivators as to minor irrigation works?—No.

9553. Is it your view that a great deal might be done to increase the productivity of the soil of this Presidency by minor irrigation works?—Yes, I think a great deal could be done. What I particularly wish to emphasise is that existing works, existing tanks and existing channels should be kept in order.

9554. You will be glad to see even the existing works kept in order?—Yes.

9555. You say, "There should be a special branch of the Irrigation Department whose business it should be to remedy these evils and to keep in thorough repair all the existing irrigation facilities." Do you mean major and minor?—No. I am speaking of minor works here.

9556. *Sir Ganga Ram*: Do the Irrigation Department get any revenue from these minor tanks?—No, probably they do not, but there is always the water-tax and the land-tax.

9557. *Dewan Bahadur Raghavayya*: Is there not a minor irrigation staff attached to each district working under the Collector, a staff of supervisors and overseers?—There is, yes; but they do not get these things done. I want a Special Irrigation Officer who will see that they are done.

9558. *The Chairman*: Is well-irrigation in the Presidency being pushed?—Yes; that is being pushed up to a point; the pumping and boring is done by the Industries Department and they help the people.

9559. We shall of course ask the officer responsible for the technical details; but I wondered whether on this subject of wells there was anything you wished to say as to the measure of touch between the two departments?—No, no more than what I have said. We are out of touch with the Irrigation people.

9560. Have you water-logging problems in this Presidency?—Not very serious ones.

9561. Have you the alkaline problem?—Again not a very serious one.

9562. By not very serious, what do you mean?—I mean that there is not a very big area of alkaline land, and it is alkaline land which can be handled; all that is necessary is to grow a big, bulky green dressing on it and plough it in.

9563. Have you in mind that the fact a certain amount of water-logged and also of salt land exists is a warning that it might spread?—Yes. We are watching that. We keep our eye on that very carefully.

9564. Have you any schemes here, not for irrigation in the ordinary sense, but for occasional soaking of the soil? That is to say, small schemes designed to give a group of ryots enough water to soak their ground, say, two or three times?—That is to say, small tanks?

9565. Yes. That is the sort of scheme which you have in mind when you say that an extension might be brought about?—Yes. A great many of these tanks exist all over the Presidency, but they are apt to fall into disrepair and it seems to be nobody's business to keep them in repair. I want that sort of thing looked to more carefully.

9566. Have you found that in matters on which you and the Irrigation Department must, in the nature of things, come together, you agree with the Irrigation Department? How about the advice of these two departments as to the amount of water required to grow sugarcane?—We do not agree. As a matter of fact in this Presidency we have really done very little work indeed upon the question how much water is in fact required for the crop.

9567. But yet, in spite of that, you manage to disagree with the Irrigation Department?—Yes, that is true.

9568. What gallonage do you as a department recommend for sugarcane?—We have not gone as far as that.

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9569. *Professor Gangulee*: Do you carry on any investigation on the water requirements of sugarcane?—No. We are just now beginning to try and find out. The sugarcane station which you saw yesterday is a Government of India station. We have no station of our own, but we are just opening a station of our own at Anakapalle. There I am definitely preparing to carry out systematic research work as to the amount of water required for sugarcane, and I have got sanction to put down all my water channels in cement; so that it is a piece of new work.

9570. *Mr. Calvert*: But sugarcane occupies a very minute area, does it not?—No.

9571. 100,000 acres?—Yes.

9572. But that is nothing?—Nothing compared with some other Provinces; but still it is a good area in this Province.

9573. Nothing compared with 39,000,000 acres of your total area?—No.

9574. *The Chairman*: Have you anything to say as to the method of charging for water? Which method do you recommend, the volumetric basis or the acreage basis?—I should like to recommend the volumetric basis, but I see the difficulties of carrying it out.

9575. You think it is the ideal basis?—I think it is ideal, but I admit the difficulties.

9576. And you have nothing more which you wish to say on that subject?—No.

9577. You do not give us any answer to our question 9, with regard to soils. I am sure you must have a great deal of information which is material on that question?—I am afraid my answers are not very complete, because I had such a very short time within which to prepare that note. But I would like to mention that, with regard to question 9, I have answered it in answering other questions.

9578. Are you satisfied with what you are doing here as to research on soils?—I am satisfied with what we have done; but I want to do a lot more.

9579. Have you problems of denudation and reclamation before you, denudation due to flooding of deforested areas?—Yes; there are those problems but they are not very big problems here.

9580. Not very important in this Presidency?—Not very important.

9581. I should have thought that in the hill country here they were very substantial?—No; on our hills nearly all the cultivation is being carried out by big companies who are growing tea, rubber, coffee and that sort of thing; the rest of it is forest and heavy jungle, and the planters, as a whole, have been taught to stop all soil erosion. When I came here originally I found that there was a good deal of that; I introduced systems of green dressing, trenching, pitting and so on, which have been very successful and are now almost universal practice; a tremendous lot of denudation has been stopped.

9582. Is there no cutting down of virgin forest above the level of forest plantations?—No.

9583. So that you do not think the shocking calamities of 1925 were in any way due to faulty practices?—No.

9584. But were entirely due to the immense rainfall in a short time?—Entirely.

9585. How about improving and reclaiming lands by the deposit of silt? Is that a practice which has been worked out in this Presidency at all?—No. We have done nothing of that sort.

9586. You probably know that in many parts of Italy, for instance, most important and fertile tracts have been built up by the able application of the principle of carrying silt by water and depositing it where it is required?—Yes. In this Presidency nothing of that sort has been done; but a similar thing is being done in Travancore.

9587. On page 41, question 10, you give a list of the fertilisers exported. But before proceeding to that I should like to ask if you have anything to

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say as to the use of night-soil as manure. Is that practice in existence in this Presidency at all?—Yes, in certain places; especially round the towns you will get people to take it. But on the whole in this Presidency there is a strong caste objection to using night-soil.

9588. Do you think that the manufacture of manure from night-soil will overcome the prejudice?—I think it might, particularly if it were by a process like the activated sludge process which would eliminate all smell and appearance and leave the manure in the form of nice, clean organic matter.

9589. Do you think, in view of the enormous expense of fertilisers and the large population in this Presidency, that that problem is one which might well receive the attention of your department?—Yes. It is receiving the attention of my department.

9590. Work is being done?—Work is being done up to a point. I would like to have an activated sludge process linked up with the drainage system of every big town; that is a point of view that I have done my utmost to teach, to preach about and to lecture about. The difficulty arises in getting the municipality to do it. There are one or two schemes being put down now; there is one at Madura, and there is a big scheme in connection with Madras, which I believe is to have an activated sludge plant. But it is slow uphill work convincing people and it is an expensive thing.

9591. Does that leave a crude manure; is that the ultimate process?—No; it does not leave it in a crude state; you deal with night-soil and sewage as a whole and treat it bacterially; it leaves the mud at the end, which is the fertiliser. Sludge is a very valuable fertiliser.

9592. Is your department actually carrying out investigations in that direction?—No; I have asked for an activated sludge plant to be attached to this farm, but I have not yet got it; I hope to get it; I certainly think it is a thing I ought to have.

9593. You give a list of fertilisers exported from the Madras Presidency; you give the weight of bones exported in tons. Do you deplore that export?—I do deplore it; I want it stopped.

9594. *Dr. Hyder*: Do you want it prohibited?—Yes; prohibited.

9595. *The Chairman*: What is the limiting factor in this Presidency?—Phosphate.

9596. Quite definitely?—Quite definitely.

9597. *Professor Gangulee*: What about nitrogen?—That is not the limiting factor.

9598. *The Chairman*: Are superphosphates or is slag being imported?—Superphosphates are.

9599. Not basic slag?—Not basic slag to any extent.

9600. You give a list of imports of fertilisers into Ceylon; are those all from Madras?—To a very great extent.

9601. But not all? They are the figures of import from overseas into Ceylon, are they not?—My table of figures shows the imports into Ceylon of fertilisers from everywhere. I could give you figures showing how much goes from Madras to Ceylon.

9602. As it stands I really do not see that the table makes much contribution to the solution of the problem, because one does not know how much of these imports come from Madras and how much from elsewhere?—Most of these things do actually go to Ceylon from Madras. I put in the table to show how the price was going up.

9603. On page 43, paragraph 2, you say, "If the price can be brought low enough to ensure a profit by their use, there is no particular difficulty in persuading the ryots to use manures." Of course if you can bring the level of cultivation upwards that is the same thing, is it not?—Not altogether.

9604. It has the same effect? All I mean is that, if you introduce varieties of crops which are better qualified to make full use of the manures which

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are provided, then a price can be paid economically for the manure which with a poor quality of crop would not be economic?—Yes, that is true.

9605. Have you any figures of improved yield per acre in typical tracts of the Presidency as the result of applying various manures?—Yes.

9606. Could you provide us with those figures?—I can, yes.

9607. Perhaps you will put them in later on?—I will.

9608. With regard to this question of fertilisers in relation to research, do you feel that you are carrying out sufficient research on fertilisers?—Certainly not sufficient; but I am satisfied with the work that we have done, though it is certainly not sufficient. If I were to admit it was sufficient I should have to admit that research on that particular problem had finished, and I do not admit that. In view of the fact that even at Rothamsted new discoveries are being made in relation to manures, we cannot yet have done sufficient work out here.

9609. On page 43, paragraph 3 (e) (1) you say: “Discovering how rapidly the use of artificial manures used alone deteriorates the quality of grain . . .” What do you mean by “quality of grain”?—Its feeding value.

9610. Its feeding value to the human population?—This is a very big subject on which we have done a great deal of work in this Presidency and we rather think we are on the eve of a very great discovery. It would take a good deal of time to explain that to you; may I deal with that actually in the laboratory; I have got it all planned out there with all the graphs and everything else.

9611. I only wanted to know what you meant by the words “quality of grain.” You are not concerned with the price on the market; you are concerned with the nutritive value?—Yes, I am concerned with the nutritive value. I should like to take you through that story in the laboratory from beginning to end.

9612. On page 44 you say you have not, in your view, had the resources at your disposal to give the attention to horticultural matters which they deserve. What have you by way of horticultural stations?—We have at Coonoor a very small fruit station where we are experimenting with varieties of plums and apples, and fruits of that sort. Half-way down the Ghat we have another little station where we can grow tropical fruits; at the foot of the Ghat we have a third station where we can grow oranges. They are all very small and work on them is very limited.

9613. Do you think fruit-growing can be undertaken by ryots?—I do not think it can be developed very widely; it will have to be confined to the hills; there is no reason why it should not be in the hands of the ryots in the hills. The main difficulty about fruit in this Presidency will centre around the transport to the markets.

9614. Where will the markets be?—The markets would be in the big towns like Madras. Transport will be our chief difficulty. But if one could grow apples and fruit that would travel well, I think a good deal could be done.

9615. Do you see any signs of cultivators in the hills taking up fruits?—Very little.

9616. *Deewan Bahadur Raghavayya*: Is not a good deal of tropical fruit grown in the plains?—A certain amount of oranges.

9617. Oranges, plantains and mangoes?—Yes; but not as a big industry. A good deal of plantains is grown, but otherwise it is not a big industry.

9618. *The Chairman*: Is the department attending at all to the question of tropical fruit-growing?—Yes; in particular we have done a fair amount of work on plantains.

9619. Have you a station?—We do some of that work at the Anakapalle station, where part of the work is devoted to plantain growing.

9620. Of course the tropical fruit problem is quite a different one from the hill fruit problem; is it not?—Quite a different one, yes.

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9621. The production of tropical fruit, if capable of extension, might make a very important addition to the ryot's means of livelihood?—Undoubtedly; all the way up the north-east of the Presidency there are great stretches of limes and oranges and that sort of tropical fruit, as to which we have done and are doing a certain amount of work, though we have not got a station.

9622. You would like to do more?—Yes; I should like to have a definite citrus station.

9623. On page 44, in answer to question 11 (a) (iii), you say, "There are in this Presidency no seedsmen of repute who can be trusted to take up this work." Do you think it would be a great advantage to agriculture in the Presidency if the distribution of good seed were to pass into reliable commercial hands?—Yes; if it passed into reliable commercial hands, I think it would be a great advantage.

9624. Has it ever occurred to you to consider the possibility of encouraging the venture by, let us say, a small subsidy on a declining scale or some expedient of that sort? You do not recommend it?—There is no starting point.

9625. Is the main difficulty the fact that seed at present, apart from that which you distribute, is in the main being distributed by those who lend money to cultivators?—Yes.

9626. On page 44, paragraph 4, you give what you conceive to be an ideal system of distributing seed. You probably conceive the co-operative societies as being even better distributors of seed than commercial people?—Yes, I do.

9627. Do you look forward to a day in the measurable future when these societies will be in a position to distribute seed?—I am afraid I personally am very pessimistic about co-operative societies in this or any other Presidency.

9628. So that when you say that the work of distribution of seed is really work which should be done by co-operative societies and that the Agricultural Department should not be hampered by the work of distribution at all, your policy there is really one of despair. You do not look forward to the co-operative societies being able to relieve you of this function?—Not in my time; I think one here and there will be able to do it, but as a general thing I think it will be many years before they can do it as a whole. Here and there one finds a society which can and will do it, but they will not be able to do it for the whole Presidency for a very long while.

9629. *Dewan Bahadur Raghavayya*: Some societies have taken over the sale of seed from you already?—One or two of the good ones, as an experiment.

9630. *The Chairman*: How about the details of your own machinery for distributing seed? This is very important; can you tell us any more than you have put in in your note?—No; I tried to put it in the note very fully, but I will go over it again if you wish.

9631. If you are satisfied there are no points of interest, I will not trouble?—I have nothing to add to that note and to the description in my Administration Report, as long as it is plain.

9632. On page 45, in answer to question 11 (c) of our Questionnaire, that is to say, asking whether any successful efforts in improving crops or substituting more profitable crops have come under your own observation, you talk about Cambodia cotton having required legislation and the passage into law of a Pest Act. Was that the Pest and Diseases Act of 1919?—It is a local Act, not the All-India Act.

9633. The Pest and Diseases Act of 1919 is mentioned later in your note, and I was wondering whether that was the same Act. Perhaps you would rather wait till we come to the second reference, and I will take you back to it?—Yes, it is the same Act.

9634. Would you make it much more rigorous than it is?—Very much more rigorous.

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9635. Of course, Government is naturally sensitive about any compulsion?—True.

9636. Do you think public opinion is ripe for the extension of the Act in the direction you suggest?—I think so.

9637. On page 45 you talk about the extension of the ground-nut crop in recent years; you give the very considerable increase that has taken place in the past 22 or 23 years, and you say this extension is by no means an unmixed blessing. Is that because ground-nut has displaced food crops?—Yes; for no other reason.

9638. Do you think the standard of living of the cultivator in the country which you know here is likely to rise substantially as the result of any process other than the substitution of money crops for food crops?—No, I do not think it is.

9639. You think that a substantial increase in purchasing power can only result from an extension of the acreage, and an improvement in the yield, of money crops at the expense of food crops?—Yes, on the whole I do think that.

9640. Then why do you deplore the extension of ground-nuts?—Well, because the first duty of an agricultural country is to feed itself.

9641. You do not think that the ryot, given cash for a money crop, can always feed himself?—Not necessarily.

9642. Do you not think he can buy his food with the cash he secures for the money crops?—Not necessarily at all, because if your food crop runs short and you have to import food, immediately the price of food will go up, and you are in somebody else's hands.

9643. How do you reconcile that with your agreement (if you do agree) that no substantial and lasting improvement in the ryots' economic position can be attained by any means other than an increase in the amount of money-crops grown?—No, I think I must go back and say I do not agree with that; I did not quite see where that was leading to.

9644. *Dr. Hyder:* I ask you to consider this position. In a famine year you will have no food crops at all?—No.

9645. Then you have these prosperous years in which the cultivators grow money crops?—Yes.

9646. Now compare the first state of affairs with the second state of affairs. You say an agricultural country should grow foodstuffs. In a famine year there will be no food crops. If in good years the cultivators grow money crops, there is a probability of their having money to pay for imported food in a famine year; if they do not grow money crops, they will not be able to purchase imported food in the famine years?—That is so up to a point, but that does not imply that all the money got in a good year is saved up against a bad one. I do not agree that it is saved; it is spent.

9647. But the position would be the same if he grew food crops; in a famine year there will be no money and no food?—True; there will be no money or crop.

9648. So that I think the balance of advantage lies on the side of the money crops; because if he raises a money crop there is a chance that he may carry over some money to buy his food in a famine year; but if he grows a food crop, there will be no money and no food?—Yes, I see that.

9649. *The Chairman:* I suggest to you that this apparent paradox is to be explained in this way; that, given good selling of money crops and good buying of necessities; given also sufficient communications to make available at a reasonable price to the ryot foodstuffs and the necessities of life which he must buy, an increase in purchasing power, the result of the substitution of money crops for food crops, is in fact going to lead to an increased standard of living?—Yes, I agree.

9650. But, in the absence of those communications and good selling and buying by the ryot, persons other than the ryot get the benefit of the difference

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between the value of the food crop and the value of the money crop, and the ryot is still left with hunger to face in years of famine?—I agree.

9651. Do you suggest any action to check the tendency described on page 45. "The rapid spread of ground-nut in recent years in the unirrigated tracts of the Circars and the Deccan, which are liable to frequent famine or scarcity, is a matter to be viewed with grave concern." Have you any positive measures in view now?—No.

9652. Now may I take you to page 48 of your note. Have you any striking examples of the successful introduction of agricultural machinery into the Presidency?—No striking examples.

9653. How about the sugar mill?—I should not call it striking. Iron sugar mills are undoubtedly spreading; they came linked together with the improved variety of cane, which is a very hard one which the country mill will not crush so that they had to have the iron mills.

9654. *Professor Gangulee*: What about the Monsoon plough?—The Monsoon plough is slowly becoming popular; we sell a great many of them; it is largely a question of price.

9655. *The Chairman*: Later on you say you think that there is a very promising opening for the introduction of improved implements of tillage based rather on a bettering of the indigenous tools and implements rather than upon any introduction of new machinery?—Yes.

9656. I suppose that in the interests of India you look forward to a thriving industry founded on a flourishing system of agriculture?—Yes.

9657. Do you think that Indian industrial enterprise is coming forward to meet the demand for improved agricultural implements?—It is not coming forward now; I think it would come forward.

9658. Can you suggest any way of encouraging that movement?—No; I am afraid I cannot. What I feel is that if one had a cheap and efficient plough that one could sell in such very large quantities as to make it worth while for a firm to take up its manufacture, there is no reason at all why a firm like Tata's should not be able to make it in India.

9659. So as to get the full advantage of the cheapness of mass production?—Yes.

9660. Is there any difficulty in the way of distribution of agricultural implements which you wish to bring before the Commission?—No, there is no difficulty about distributing them.

9661. Would you suggest that the instalment principle of payment, the price-down system or the hire system would be the best form by which you could extend the use of more expensive implements?—The hire system if anything; I do not think the instalment system will work; the hire system will be the better one.

9662. As regards question 15, Veterinary, you do not give us any ideas?—The Veterinary Department is a separate department.

9663. I quite understand that, but it touches you very closely, does it not?—True.

9664. Is there anything that you wish to say about the central institution at Muktesar? I am merely giving you the opportunity?—No, I have nothing special to say about Muktesar.

9665. What about the Provincial Department; is it in close touch and co-operation with you?—There is very close touch indeed.

9666. You are satisfied, are you?—Quite satisfied.

9667. How about veterinary skill in relation to the improvement of the breeds of animals? Are you getting there the help you are entitled to expect from the Veterinary Service?—Yes. We have a Veterinary Officer from the Veterinary Department attached to all our cattle farms to deal with disease. There is an officer at Hosur, and there is one here.

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9668. Have you anything to bring before the Commission about the teaching of veterinary science?—No. I may put in a word about research. I think more veterinary research should be done in the Province; I should like to see more provincial veterinary research.

9669. Provincial veterinary research carried on at existing institutions?—Yes; at existing institutions; I want that done centrally and provincially in the same way as we are doing agriculture.

9670. On page 49, you speak of the Deputy Director of Agriculture, Mr. Littlewood. What is the exact function of that officer in relation to animal improvement?—He looks after all animal work; he has charge of what I may call the Presidency work; he looks after all the questions dealing with breeding and animal work all over the Presidency.

9671. Is he a whole-time cattle improvement officer?—Yes; with headquarters at Hosur.

9672. What is he styled?—Deputy Director of Agriculture, Livestock.

9673. You do not call him Cattle Improvement Officer?—No.

9674. Do you not think some title of that sort might make his function plainer to the public?—I do. I think there is no system with regard to most of the titles given to officers in my Department. They are very often inappropriate; I should like to have an improvement in that direction.

9675. On page 49 you go on to deal with dairying; you say it is not going to prove really profitable until the public is protected by law from inferior products put on the market. Do you suggest that public opinion is now ripe for legislation on this matter?—I think so.

9676. Do you suggest that there should be municipal rules or provincial legislation or an All-India Act?—I think it would be better if the legislation were Provincial.

9677. The urban population forms an overwhelming majority of the potential demand?—Yes. The matter is now under the consideration of the Madras Municipality; they are talking of introducing such legislation. I think they were and they certainly should.

9678. Are there no rules now?—No.

9679. I thought you had a Public Health Act in Madras?—Yes; but it does not deal with the question of pure food.

9680. That is definitely so, is it?—Yes, you can adulterate food as much as you like.

9681. *Dewan Bahadur Raghavayya*: Under the Madras City Municipalities Act, the municipalities can control food?—They have the power, but they do not exercise it.

9682. They can frame bye-laws?—They can; but they do not.

9683. *The Chairman*: There are really three stages; the first is to do nothing; the second is to pass rules but not to enforce them; the third is both to pass and enforce rules. At what stage are you?—We are at the middle stage.

9684. *Dewan Bahadur Raghavayya*: There is an Act empowering the Corporation to do it?—Yes; but they have not done it yet.

9685. *The Chairman*: Have you anything to say about the improvement of sheep?—We are doing a little work on that; we are trying to improve the quality of the wool and the weight of the clip.

9686. Do you think that sheep offer any promise for the future?—I do not think so in this Presidency; there are not sufficiently big grazing areas.

9687. *Dr. Hyder*: What about the Nilgiris?—In the Nilgiris sheep do not do particularly well, because they cannot stand up to that terrible monsoon; you get a very high death rate when you try rearing sheep in the Nilgiris. We tried to do it, the planters tried it, but in the big monsoon, owing to the cold, the wind and the rain, they die unless they are carefully sheltered, and that adds to the expenditure enormously.

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9688. *The Chairman*: Are you doing anything in the way of improving goats?—We have not touched that.

9689. The goat is a useful animal, is it not?—Yes. It is a useful animal but it is a serious nuisance. It does an enormous amount of damage to forest grazing areas.

9690. It gives good milk?—Yes, but it also does an immense amount of harm.

9691. *Dewan Bahadur Raghavayya*: Is not there a systematic campaign carried on for the destruction of goats in this Presidency?—I would not call it a systematic campaign, but many of the Forest Panchayats have determined to eliminate the goat because it does more damage than it is worth.

9692. *The Chairman*: Why is that so? Do you wish to see the goat eliminated from the Presidency?—No, by no means; I should like to see it controlled; but I certainly do not want to eliminate it by any means.

9693. I notice that there are more pigs in this neighbourhood than I have seen anywhere else in India. Is that an important industry?—It is not important; it depends a great deal on the caste of the people who keep and eat pigs; round here there are a great many people who do that.

9694. Have you any idea of the pig population of the Presidency?—None whatever; they are chiefly kept for food purposes.

9695. *Dr. Hyder*: Are they kept by the Panchamas?—Yes.

9696. They eat them?—Yes.

9697. *The Chairman*: I do not see any other reason for keeping pigs?—For making bacon.

9698. That is food?—Yes; I meant they were eaten direct.

9699. *Dr. Hyder*: Do the Panchamas supply the European population of the Madras Presidency and other areas with pigs?—No; all the pig that is eaten by Europeans is imported; we should be afraid to eat pigs bred in this country.

9700. *The Chairman*: On page 49, you say, "Large zamindars should be encouraged to establish pure-bred herds of country cattle." How do you propose to do that?—Merely by education and propaganda generally. When we are talking about encouraging zamindars, Rajas and big men to take up agriculture, I think a great deal could be done (it is beginning to be done now) if the Governors of Provinces and His Excellency the Viceroy showed that they took a personal interest in the matter. Lord Goschen, the Governor of Madras, who is a farmer and is very keen on farming, is doing that, and it is undoubtedly doing a lot of good. I should like to see more of that done; I think it is one way of improving things. If the really high officials like the Viceroy and Governors show that they are interested in agriculture and care about it and know about it, I think it would do an enormous amount of good where big men are concerned. His Excellency the Viceroy is at present going to see all the Government farms himself and to my mind he is doing an immense amount of good work.

9701. *Mr. Calvert*: Do you think if the Viceroy and Governors took an interest in cattle-breeding, as they do in horse shows, it might do a good deal for the cattle-breeding industry?—Yes. I understand Lord Willingdon did that; I should like to see more of that.

9702. How many premium bulls have you in the Province at the moment?—Twelve.

9703. Only 12?—That is all.

9704. Are you satisfied with that figure?—No; this is quite a new idea of ours. We have only been at it a very few years.

9705. Are they standing at a fee or free?—At a small fee.

9706. Do you think the fee is a deterring factor?—No, not if it is kept low; I think there should be a fee; I do not believe in giving things away; there is no value then set on them.

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9707. *Professor Gangulee*: How much do you charge?—8 annas or a rupee.

9708. Never more than a rupee?—No.

9709. *The Chairman*: Where are the best cattle in the Presidency?—In the Ongole tract.

9710. Is the difference as between the best and the average really noticeable?—Quite noticeable.

9711. Is the Ongole tract an area of enclosures? Is the land enclosed?—No, it is not enclosed.

9712. *Dewan Bahadur Raghavayya*: Is there not the *Kancha* system there to some extent?—To some extent; it is a very small extent, as far as I know.

9713. *The Chairman*: Do you associate the effect of enclosed pastures and enclosed land generally with the general improvement of cattle?—Yes, it would improve the cattle if we could do that.

9714. With regard to page 49, the herds of the Military dairy farms are of course founded entirely on the first cross between an imported bull and the local cow?—Yes.

9715. Is that cross highly economic and satisfactory as a producer of milk?—Yes.

9716. What about the next cross after the first cross? Is that a useful animal?—Quite useful.

9717. And the next?—The next also, I think; I have great hopes of this crossing; I think that we have some animals here that will show we are justified in that hope.

9718. Do you think that one of the results of this cross is likely to be an improvement in the indigenous breed?—Yes; as far as milk is concerned certainly.

9719. How about the cross as a contribution to the production of a dual purpose animal?—You will not get a dual purpose animal on that cross.

9720. Which are you inclined to back, the attempt to develop a good dual purpose animal or the attempt to specialise as between draft and milk?—I am backing both for their own particular purposes; where you want to do dairying and supply milk to big towns (which is one of our problems) I should be in favour of the cross; where you want animals for cultivation purposes, I should favour the Kangayam or the Ongole breed.

9721. Do you not think that one of the hopes of improving the breed of cattle in the countryside is the production of a dual purpose animal, which will make it possible for the cultivator to breed his own or his neighbour's working bullocks, and at the same time to get a reasonable return in milk from the dam of the working bullocks?—Yes, I agree, but I do not think that you can ever make a dairy pay as a dairy, with that kind of animal.

9722. So that the result of your cross with breeds from overseas is likely in the main to assist dairying industries founded on the urban demand for milk and milk products?—That is what it is intended to do. May I say, while we are on this point, that that is why, in this department, we have over and over again insisted on Government and elsewhere that we must do both kinds of work. At one time we were faced in this department by this attitude, "If you want to do cross breeding, why do you want these pure Indian herds?" We have emphasized that point because we must do both. At Hosur you saw I am not only doing my cross breeding, but also grading up pure bred herds of Ongole and Kangayam for that very reason.

9723. I quite understand that. On page 50, you are talking about improving the existing practice in animal husbandry. You say "In former years when a big man died in a village his relatives generally dedicated a bull to the temple. A committee of local breeders was immediately called." Then you go on to describe the manner in which that committee might be used for present-day needs. How is that committee to be constituted?—It would be a village panchayat, to a great extent.

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9724. How would it be chosen for this purpose? I take it it must command the confidence of breeders in the village?—Yes, it would be the headman, the elders and the priest of the temple, who do command the respect of the villagers.

9725. On page 50 you say, "Silage-making should be demonstrated in the breeding tracts by the Agricultural Demonstrators, especially in years of good rain when there will be an abundance of green fodder." Can you give the Commission, very shortly, a history of the attempts to popularise the silo in this Presidency?—When we first began work on these things, we were obsessed with the idea that silage should be made in a tower; we had tremendous failures with that system and I think it made all silage-making unpopular both in the department and outside the department. Now we have discovered that the way to make silage in this country is not in a tower but in a pit. Now that we have discovered that (I am afraid somewhat late in the day) we are trying to demonstrate it. But there is no doubt that we are suffering from the first mistakes which were made, many years ago, before there was a properly organised Agricultural Department for research. I think it is a very good example of how important it is to have organised research work instead of haphazard methods.

9726. When did you make the discovery that you could make silage in pits in the first place?—About 10 years ago.

9727. What steps did you take thereafter and up till now to popularise it?—We now make silage on all our experimental stations and demonstrate its use there.

9728. Do you carry it out as demonstration or propaganda on the cultivators' holdings?—It is very difficult to do it. We have done it in several places. At all our experimental stations we make it and use it and show the people how to do it.

9729. You told the Commission that the best way to persuade the ryot to adopt new methods was to go to his own farm, work under his own conditions, and show how it was done. Is that not applicable to the silage?—It cannot be done quite so easily.

9730. Why?—In the first place, the ryot must be growing a fodder crop from which to make it, which very often he is not. He must then agree that you may cut it and silage it, which he is not always willing to do; it is a very difficult thing to demonstrate in that way. To begin with you must have the ryot's permission to demonstrate on his land.

9731. I agree, but will he not give that permission?—He would perhaps give the permission, but very often he has not got the material in sufficient quantity for the demonstration. You want a fairly big area of fodder to cut and put into the pit. He is not always prepared to let you do that. You cannot demonstrate it on 30 or 40 cents. of land as you can with other things; that is the practical difficulty in demonstrating silage.

9732. *Professor Gangulee*: On page 39, you say that the ryots are a teachable body of men. How do you reconcile that with the statement you have just made?—I do reconcile it. You are trying to hurry me too much; give me time and I will teach him to make silage. I cannot teach him as quickly as I could teach him to transplant paddy, for instance. It may take 10 years.

9733. *The Chairman*: Do you agree with me that this system of silage may make a very important contribution towards solving one of the ryot's principal difficulties?—I am sure it will; and the light which has been thrown on the value of silage by animal nutrition work makes it still more important.

9734. What crops are you recommending as the best for silage?—Sugarcane. When you thin out the sugarcane that makes very good silage.

9735. What part of the cane do you use for making silage?—You cut out the suckers at the bottom.

9736. That means no sacrifice?—No; they have got to be thrown out in any case, and it is used as fodder. Then, very largely *chulam*, millet and *jowari* can be used.

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9737. At what stage do you recommend the cultivator to cut his *chulam* for silage?—Just about when it begins to throw flower.

9738. That is a very difficult moment at which to see it go down the pit, is not it?—Yes. Sunflower we recommend as a crop for silage. We use that ourselves and it is a very useful crop for silage.

9739. Is there any forest grass here which would make good silage?—I do not know. I doubt it. We know very little about grasses.

9740. What about spear grass?—At Hosur that is what we are going to do; we have discovered that hay made out of spear grass is not of any great value; the cattle only just maintain themselves on it; so to get over the difficulty we are going to cut it early and make silage.

9741. With regard to what you say about the nutritive quality of hay made from spear grass, do you include hay made from spear grass before the spears harden?—Yes.

9742. Do you think the fact that the use of the silo involves double handling of the fodder is a serious disadvantage?—No.

9743. You think that the ryot would find a place for his pit quite close to where he feeds his stock?—I think he could quite easily and, after all, that sort of thing does not matter very much in this country. Where the ryot does his own work it is a question of labour and there is always labour to be had.

9744. We realised the other day at Hosur that in this climate it is necessary to cart your crop almost as you cut it unless you work early in the morning or very late at night, so as to prevent a degree of dryness occurring which prevents fermentation?—That is so.

9745. Is that a serious handicap to silage-making by the cultivators?—I would not call it serious, but it makes it more difficult.

9746. You have known for 10 years that silage should be made in a pit; can you tell the Commission how many ryots as such are to-day making silage? Very few indeed.

9747. Do you know of any?—Yes.

9748. About how many?—The Pattagar of Paliacottah, one of the bigger cattle breeders here, is making it.

9749. Is he a typical ryot?—No.

9750. Do you know of any typical ryot who is making silage?—No.

9751. Do you think that is due to some inherent difficulty, or due to a failure in propaganda, or due to the time which must inevitably elapse between the recommendation and demonstration of a process, however sound that process may be, and its adoption?—I think it is a combination of those factors; one very important fact is that the ryot does not usually grow enough fodder to make silage; he does not as a rule grow enough fodder to keep his cattle properly fed, his main area being taken up by crops like ground-nut, tobacco and others.

9752. Do you think that the practice would substantially improve the quality of the working bullocks in the Presidency?—I think it undoubtedly would, yes.

9753. And thereby make an important contribution to the fodder problem?—Yes.

9754. In view of what you said, do you feel yourself that your department is spending an adequate amount of time, money and attention in recommending the adoption of silage?—Yes; I think we are.

9755. *Sir Ganga Ram*: Have any big landholders in the Province taking to this?—Only the Pattagar of Paliacottah.

9756. You do not know of any other landholder who has taken to it?—No.

9757. *The Chairman*: On page 51, in paragraph 10, you are more hopeful about the use of the cinema than you were earlier?—May I point out that the note you are taking me through was written by Mr. Littlewood and not by me?

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9758. But I want your views. I take it that you are responsible as regards the views put forward?—I am not more hopeful about the cinema, though Mr. Littlewood thinks that it could be done. I made that remark about the cinema in my introduction to this very note of Mr. Littlewood.

9759. I quite agree. But I am sure the Commission wishes to hear your views about cattle improvement and so on, because you are the responsible officer?—Yes.

9760. On page 51, paragraph 11, you say, "Milkmen's Co-operative Societies should be formed in large towns in order to purchase foodstuffs and fodder in bulk and so obtain it at a cheaper rate." Do you know what Mr. Littlewood refers to there? Is it co-operative societies of milkmen supplying the demand?—Yes; we have a Milkmen's Co-operative Society in Madras.

9761. Is that a co-operative dairy?—No. It is simply a society for getting cheaper foodstuffs and fodder in bulk.

9762. A buying society?—Yes.

9763. Is the demand for milk in Madras supplied in the main by milk from cows or by milk from buffaloes?—Milk from cows in the main.

9764. Is that the rule in this Presidency?—I think so, yes.

9765. You think that the cow supplies the greater part of the milk in this Presidency?—In the big towns, yes.

9766. But not in the rural areas?—I do not think so. It varies from area to area. In the towns as a whole it is supplied by cows. There are some places where people like buffalo milk much more.

9767. Do you think the public distinguishes between the two classes of milk?—I think so.

9768. By flavour?—Yes. Buffalo's milk is much richer in fat.

9769. You think the public prefers cow's milk?—I think the public in towns does certainly.

9770. You think the buffalo is a better milk-producer than the average country cow?—Yes, and it produces much richer milk.

9771. And more milk?—Yes.

9772. Do you feel that the amount of attention given to the buffalo is hindering the improvement of the cow as a milk-producer?—No. I would not say that. The buffalo is a very important animal; it is used almost entirely in some places for cultivation, especially in the very wet districts, because it can stand up to the wet and where it is used for that purpose it is also used for the dual purpose.

9773. On page 51, paragraph 11, you say, "Milkmen's Co-operative Societies should be formed in large towns in order to purchase foodstuffs and fodder in bulk and to obtain it at a cheaper rate. Advances should be given to milkmen for the purchase of fresh cows when their cows become dry." From what source do you suggest those advances might come?—From Government loans, or where there is a co-operative society they borrow from the banks.

9774. I only wanted to be certain that Mr. Littlewood is not suggesting any subvention of the dairying industry from the funds provided by the general taxpayer?—No.

9775. There is sometimes a tendency to forget that Government is merely another word for the general body of tax-payers?—Yes.

9776. *Mr. Calvert:* Mr. Littlewood has no objection to the advance being made from their own savings?—No.

9777. *The Chairman:* Do you think the cultivator on the whole is as well or better off than he was 20 years ago?—I think he is a good deal better off than he was.

9778. Then why do you suppose Mr. Littlewood, in paragraph 13, talks about "these hard times"?—Because times are still hard, though the cultivator is better off, they used to be harder.

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9779. So that it would have been plainer if he had talked about this hard work rather than these hard times?—Yes, it would.

9780. In regard to paragraph 14, on page 51, you say, "Steps should be taken to work out the different values of all Indian foodstuffs." Are you familiar with the work being carried out at the Animal Nutrition station of the Government of India at Bangalore?—Yes. I am working in very close co-operation with that station.

9781. Do you suggest that the work is after all of a fundamental character and completely within the category which you described in an earlier part of your note as being that which might suitably be dealt with by a central institution, or should it also be done by provincial organisation?—I think we ought to do exactly as I suggested for the whole system; the central organisation at Bangalore should work on the fundamental problems and the general questions, and we should take it up where it is necessary for our own local needs. In this particular case I should not expect Mr. Warth at Bangalore to work out the values for all the foodstuffs in the whole of India; he would only work on particular lines; it is our provincial duty to work out the nutritive value of our own local foodstuffs. That I consider we ought to do and we are taking steps to do it.

9782. Would you suggest keeping in close touch with Mr. Warth in the work that you are going to do?—The very closest. As to the work that I am now doing on animal nutrition, I lay all my schemes of work before Mr. Warth for his advice and opinion. He is always willing to advise.

9783. Do you think that the problem of animal nutrition is also capable of being broken up into two parts, a fundamental part and a part dealing with local application; and it is another illustration of the way in which work should be divided between the Central Government institution and the provincial institution?—Exactly.

9784. I want for my own information to be sure that I understand what Mr. Littlewood means when he says on page 51 that "ryots usually graze their cattle on the grass *bunds*." Is that a division between irrigated fields?—Yes.

9785. On page 52, you say, "There is generally scarcity of fodder in the Coimbatore Dairy during the months of March and May." How much silage do you make in the Coimbatore Dairy?—Enough to carry us through the hot weather.

9786. That only means that on the land you have here there is a shortage of grazing?—Yes.

9787. And he means there is general scarcity of green fodder?—It would have been clearer if he had said "shortage of green fodder."

9788. Do you think green fodder is better than silage?—Yes.

9789. Have you asked Mr. Warth about that?—Yes.

9790. He told us the other day that he thought an experiment now being conducted showed that silage gave slightly better results?—So he tells me, but I want to see the results first.

9791. You stick to your own view?—Yes.

9792. On page 52 Mr. Littlewood says, "I suggest that grazing areas be free of tax in the ryots' holdings, and that each ryot should be compelled to grow a certain amount of fodder or straw sufficient to maintain the number of animals he keeps, and that his number of animals should be limited to his holding." Now, to divide that suggestion up into its component parts, I do not know whether you agree with any or all of this?—I agree about the grazing area being free of tax, but I do not agree to compulsion.

9793. Have you consulted the Revenue Department on that point?—I am afraid the Revenue Department would be against it.

9794. Because it means the sacrifice of revenue?—Yes, but that objection could be overridden.

9795. How do you mean?—If it were a better thing to do.

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9796. It is a question of degree?—Yes.

9797. Have you any figures in mind as to what it would cost?—No, I am afraid I have not.

9798. That after all is the point?—Yes, it will have to be worked out very carefully.

9799. *Dr. Hyder:* Mr. Littlewood says that in former days a certain portion of the area was tax-free; is that a reference to pre-British days or British days?—The pre-British days, I expect.

9800. He says, "I am informed that in former days the Ongole ryot who reserved one-fourth of his holding for grazing land was not taxed on this portion"?—I am afraid I cannot tell you where he got that information from.

9801. *The Chairman:* You are opposed to compulsion?—Yes, always.

9802. How about the number of animals being limited?—I am afraid you cannot do that without compulsion; but you must simply do what you can by teaching them.

9803. You would have to limit the advantage of the easement from taxation of grass lands to those ryots who kept an approved number?—Yes, you would have to do something of that sort.

9804. But you would probably find a group of cattle in the immediate neighbourhood of the village which, on that particular day, would be without owners?—Yes, but I think that difficulty could be overcome.

9805. Is there a demand from overseas for the indigenous cattle of this Presidency?—There is a big demand for Ongoles.

9806. Where?—They go to Ceylon, they go to Malay, and they have even gone as far away as South America.

9807. Have they gone to Brazil?—Yes, and that demand was so great that we had to stop the export of these cattle; it is forbidden now.

9808. Is it absolutely forbidden?—The export of that breed is absolutely forbidden.

9809. Are you in agreement with the policy of closing your ports to all export of cattle?—Certainly, of a breed like that.

9810. Why?—For this reason, that the people sell all their breeding bulls and all their best cows, and the stock runs down and down; that is exactly what did happen, so we stopped the export and built up the breed again. There was a great danger of that breed being entirely lost.

9811. When did you close the ports to that export?—About 15 years ago.

9812. You point to a steady deterioration in the cattle of the ryot going on to this day. Do you attribute that to the effects of export?—No, it was only on this particular breed that there was such a tremendous drain.

9813. Would you agree with me that the demand for pedigree animals overseas has been the great stimulus in Great Britain to the improvement of various breeds of cattle?—Yes, I agree.

9814. What effect, do you suppose, the closing of British ports to the export of British pedigree animals, particularly to the continent of America, would have had upon the breeding policy in Great Britain?—I agree that that would have been disastrous. But this case of the Ongoles was a particular case, and I approve of it.

9815. Do you want this embargo maintained?—I want to maintain it for sometime yet, but I think we could soon get to a state of things where we could take off the embargo. My difficulty is that, when it is taken off, I want some control as to the number of cattle and, particularly, what cattle may be exported.

9816. Do you not think reasonable control from the beginning would have been better than a hard and fast embargo?—From the beginning, yes; but when that export began, there was no Agricultural Department to advise on this sort of thing. When we first got control, it was far too late to control it.

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9817. Can you support these views by any figures of the estimated numbers of reasonably pure Ongoles exported?—I think I can get the figures. What I can safely say is this, that the breed has improved during the last 15 years a great deal, which is due to the closing of the ports.

9818. What has happened to the blood that went overseas; is there an Ongole breed in Brazil, for instance?—I imagine there is.

9819. Have you looked to that country at all for the means of a possible improvement of the indigenous cattle?—No.

9820. You have not thought of the possibility of importing bulls from Brazil?—No.

9821. You have not dealt with question 17 of our Questionnaire; it deals with Agricultural Industries. As the result of what I have heard recently, I should like to break up this question into two divisions: first, subsidiary industries proper, and secondly, spare-time occupations. With regard to those subsidiary industries of which the raw material is agricultural produce in one form or another, is any important extension of industries of that nature taking place at the present time in the Presidency?—No, I think not.

9822. Have hydro-electric schemes been developed in the Presidency in recent years?—No.

9823. Is there any project for hydro-electric development?—Yes, there are one or two projects.

9824. Do you think there is some hope that cheap power might induce manufacturers to venture on setting up factories?—Yes, I think there would be, but I foresee difficulties.

9825. Well, there are always difficulties?—Cheap power would help, there is no doubt about that.

9826. Do you think it would be a great advantage to the rural areas if hydro-electric power had the effect of dotting factories over the countryside rather than concentrating them at the ports?—I think that might be an advantage.

9827. It might have an important influence on raising the standard of living; might it not?—It would.

9828. Can you speak at all as to hydro-electric possibilities?—I am a bit sceptical about them; my difficulty is this, that it is a question of cost, to a great extent; it is a question of the cost of your power line. It is going to be a very costly thing to take your power line in this country from village to village, so to speak, for several reasons.

9829. Well, there is the obvious technical reason of stepping down in small units?—Yes.

9830. But, apart from that, of course, dotting your factories about the countryside is to be desired; instead of having to lead your power at great loss, you use your power near the source of production in the countryside?—Yes.

9831. Is any research going on in the Presidency, bearing on this question of working up agricultural products into finished articles or partly finished articles?—No, none at all.

9832. On the question of spare-time occupations, which is quite a different question, should I be right if I said that in your irrigated tracts your cultivators have no important amount of spare-time?—Yes, you are correct in saying that, particularly in the double cropped lands.

9833. It is different in the dry tracts?—Yes, very different.

9834. What has been done in the way of investigating and recommending spare-time occupations in this Presidency?—Very little indeed; the Industries Department have done a certain amount of work with silk and things of that sort, but the Agricultural Department have done nothing.

9835. Nothing at all?—No.

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9836. Have you any views that you wish to express on this question?—No, I do not think so. It seems to me that it is a matter primarily for the Industries Department with their technical knowledge.

9837. It is no doubt present to your mind that where there is spare-time, it can be, as it were, employed at a profit, even though, as compared with factory labour, it appears *prima facie* to be uneconomic?—Yes.

9838. In other words, if you were doing nothing, you could save yourself a certain amount of expenditure by making yourself something which, if you do not make it, you would have to buy?—That is so.

9839. Although if you placed a factory wage value on your spare-time, you find it would pay you better to go and buy it?—Yes. The one difficulty I have in my mind with regard to any idea of subsidiary industries, what are usually called cottage industries, is the difficulty of marketing the goods when you have got them. In this country there is great difficulty in marketing the goods.

9840. In the case of cloth-making, for instance, the market is the man's own back?—Yes, that is a particularly good one, but it is more difficult with regard to basket-making and that sort of thing.

9841. Have you anything to say with regard to sericulture?—No, we do not deal with that; the sericulture work is done by the Industries Department.

9842. On question 18, Agricultural Labour, have you a labour shortage in any of your rural areas here?—There is not a great labour shortage anywhere; the plantations in certain areas do compete with the landholder for labour, but I do not call it a serious matter.

9843. Is there a serious surplus?—No.

9844. Is there any unemployment in any district?—No.

9845. So that, in your view, your labour here is well distributed over the work to be done?—Yes, I think we are well off in that respect.

9846. *Professor Gangulee*: What is your exact definition of the agricultural labourer; are you speaking of a landless man?—He may be landless; he may not have any land at all, or he may go off to labour in his own slack season, particularly to the planting districts.

9847. *The Chairman*: With regard to question 19, Forests, do you think there is adequate touch between the Agricultural Department and the Forest Department?—I think there is; again, we work on very close terms; I can always get what I want out of the Forest Department.

9848. Has it ever occurred to you that by attaching forest officers for a short period to the Agricultural Department and employing them in districts where forests can render service to agriculture, for a matter of a few months only, a more understanding attitude of mind among forest officers might be engendered?—I agree.

9849. Is that ever done here?—It has never been done.

9850. Would you look with favour on such a suggestion?—Yes, I would.

9851. Are the forests being exploited as reserves of fodder against famine?—Yes, in times of famine forest areas ordinarily closed are opened.

9852. But it is too late to wait for famine, is it not; you have to make your hay or silage beforehand?—Yes. That is not done: these areas are merely thrown open for the cattle to graze in; there is no system of making hay.

9853. There is no system of establishing a famine fodder reserve?—No.

9854. Do you think it might be a good thing?—It would be a good thing if it could be done.

9855. Have you ever suggested it?—No; I have not.

9856. When was the last serious fodder famine in this Presidency?—In the year 1925.

9857. Can you give the Commission any estimate of the number of cattle that died in that famine?—No; I cannot.

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9858. Was it an important number?—It was an important number.

9859. Do you think, having regard to the large areas of forest (some of it at considerable altitudes) in this Presidency, a well organised system of famine fodder reserves might have saved large numbers of cattle?—Yes.

9860. To the great profit of the ryot?—I agree it could be done.

9861. It would be a good thing?—Yes.

9862. Have you been able to use the prickly pear as a means of staving off the worst effects of fodder famine in this Presidency?—Yes; we have done a lot of work on that; we have published a bulletin on the subject. We have used prickly pear; it is undoubtedly a useful thing in bad famine times.

9863. Was it a success?—Yes; I would call it a success; it is not very popular, but it is a success; it keeps the animal alive.

9864. On page 53 in answer to question 20. Paragraph (a), you say “Existing market facilities as very far from being satisfactory. The history of the Tiruppur cotton market will serve to show the difficulties which exist.” Then you go on to give an account of the efforts to establish a market in the Coimbatore district. What selling arrangements in fact existed before the attempt was made? In other words, what selling arrangements exist now? Is there a well-established market?—No; exactly the same selling arrangements which I have described under the heading of “Cotton” on page 55, paragraph 5.

9865. The Commission has read through this very detailed and interesting account of this attempt to establish a market. Do you say this attempt broke down owing to the deliberate design of those who were interested in preventing a market being established?—Yes.

9866. Do you suggest that provincial legislation should be passed which would make possible the formation of a market according to the plan originally suggested?—Yes.

9867. Have you made representations to that effect to Government?—Yes.

9868. On page 54 you say, “The market is to be for grains and other agricultural produce as well as for cotton under the new scheme.” What was the object of the merchants or commission agents in introducing other crops into this market, if that was their doing?—Simply to make it a general market instead of a cotton market only, as we wanted.

9869. Do you deplore that?—I do not object to that so much, but I think it would be very much better to have a separate cotton market.

9870. On page 54, on our question as to “Existing market facilities and systems of marketing and distribution for different kinds of agricultural produce,” I should like to ask you a general question: Is it your view that sufficient facts have been accumulated and sufficient work carried out on those facts to justify firm views as to the marketing practices in this Presidency?—No, I would not go as far as that; I think we do know pretty well what goes on, but I would like to have it examined by a special officer before anything really definite was done.

9871. Do you think that would be a field in which an agricultural economist might very safely be employed?—Yes, certainly. May I say in connection with that that we are doing some work of that sort at the moment for the Central Cotton Committee; we have chosen and they have approved one or two small areas in the cotton-growing districts in the Presidency, and our men are trying to get at the exact economic conditions at those places as test places. We are getting on very well with that.

9872. Is it the fact that some of those results have been published, and some have not?—We have sent them up to the Cotton Committee, but I do not know whether they have actually published them.

9873. Do you think the producer fares worse in his marketing of food crops than he does in his marketing of export crops?—Yes; I think on the whole he does.

9874. Is it the case that the presence of buyers, representative of the large export firms, affords some measure of protection in the case of money crops?—It does, undoubtedly.

9875. They rule the market?—Yes. They rule the market and you get fairer competition.

9876. In your experience in this Presidency, does the moneylender control the money crop of the borrower as completely as he controls the food crop of the borrower?—Yes, I think he does.

9877. He controls both?—Yes.

9878. And if the debt is sufficiently substantial, the whole of the crop, whether a food or a money crop, will pass through the moneylender's hands?—Yes, as long as the debt is sufficiently large.

9879. So that it is really in the fact that the true market price for his foodgrains is less easy to discover that the explanation lies?—Yes; that is so.

9880. You mention certain charges that the cultivators pay. What other dues or charges are there which the ryot pays by the time he arrives at the point of selling? Are there any dues at the outskirts of the town?—There is probably a municipal toll.

9881. He pays that?—Yes; there are no market dues, of course.

9882. Does he pay that on the wheel or on the value?—On the wheel.

9883. Then he gets to the market? What is the first charge he pays there?—The first charge is for having his stuff weighed.

9884. Then does he pay for standing accommodation for his cart during the day?—There are certain places where he has to pay for it, but not everywhere; certain municipalities make rules about that.

9885. You have taken him to the point where he has paid for having his cotton weighed. What is the next charge?—The next charge is for the commission agent.

9886. Is there a charity cess?—There is, very often; nearly always if there is a temple.

9887. Is that resented by the ryots?—I do not think it is resented; I do not think they resent the temple cess at all.

9888. *Mr. Kamat:* Is not that a very small amount?—It is; I think he looks on that as a religious duty.

9889. *The Chairman:* Are there any other charges to face?—No, I think that is the end of it.

9890. But it is usual, I suppose, for disputes to arise after the rate has been fixed and the cart unloaded?—Yes, and he gets the worst of them.

9891. Because he cannot very well reload his cotton, and go off with it, and so he is bound to acquiesce?—Yes.

9892. Do you think a properly controlled market would go a long way to secure a fairer return to the grower?—I do; it would remove a lot of these charges, and he would get fair weights and fair prices, and would not have to pay these extra charges. I envisage a cotton market committee to which he could appeal in cases of dispute.

9893. Do you think the time has come when public opinion is ripe for the licensing of commission agents or middlemen?—No, I do not think so.

9894. You do not think any suggestion of that sort would be useful?—I do not think we are ready for that.

9895. Is it your view that variations in weights and measures are a disadvantage to the cultivator?—I think they are a great disadvantage.

9896. Do you think that public opinion is ripe for the standardisation of weights and measures in the Presidency?—Yes, I think so; I do not know what it would be popular, but I think the time has come when we could get it done.

9897. On page 56, you are talking about the marketing of ground-nuts; you say this crop is largely exported. In what state does it leave the cultivator's hands? Simply dried?—Simply dried in the shell.

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9898. Where is decortication carried out?—Mostly in France; it goes home in the shell to a great extent. Some of it is decorticated out here in factories.

9899. Do you know anything about the process of decortication?—It is simple; the shell is very brittle; it goes through rough rollers with just sufficient pressure to crack the shell but not the kernel inside.

9900. Is that known as the dry method?—Yes.

9901. Is any ground-nut decorticated by the wet method?—Not to my knowledge.

9902. Do you know that there is a complaint from buyers overseas with regard to that?—Yes. The ryot very often does it for getting better weight, but not for decortication purposes; he wets his ground-nuts thoroughly for the purpose of adulteration.

9903. *Dewan Bahadur Raghavayya*: To a large extent he used to do it?—I do not think he used to do it for decortication purposes. He wets his ground-nut only for the purpose of getting a better weight.

9904. Perhaps you will find out whether it is done. The cultivators may not be aware of the effects of wet decortication?—Yes.

9905. *The Chairman*: On page 56, paragraph 9, you say that, in the case of sugarcane, commission agents working on behalf of merchants go about the districts, during the season and successfully form a ring, you go on to say. "The producer deals through the village moneylender to whom he pays commission for the privilege of sale, godown rent, a contribution to the village deity and interest on small sums of money advanced through the season." I do not quite see how the commission agents form a ring?—They form a ring to control the price; they will not buy beyond that price.

9906. Their concern, as commission agents, is to get their commission?—That is true, but it is not exactly like that. Their commission is not always paid on the amount of money that they handle, but on the quantity that they buy; that is to say, if they are giving a bigger price, they do not get a bigger commission.

9907. But do you suggest they get a smaller commission?—They get a smaller commission or a fixed commission.

9908. If the percentage going to the agent does not correspond with the total paid then it ceases to be a commission in the ordinary sense, does it not?—In the ordinary sense, yes.

9909. Is it definitely the case in this Presidency that these commission agents are not paid on a percentage basis?—They are not paid on a percentage basis.

9910. On what basis are they paid?—On the basis of so much for every ton they buy. They are paid on volume, not on value.

9911. What interest in the world has the commission agent got to form a ring when he is paid a fixed rate on weight?—Because, very often, he is not only the commission agent but he is doing business on his own.

9912. *Mr. Kamat*: Have you any co-operative sale societies for the sale of jaggery?—I do not think there is a single one yet.

9913. *The Chairman*: Do you suggest that the cultivator is entitled to protection against any one who poses as a commission agent but is, in fact, a merchant?—I think he should have protection.

9914. What would you suggest should be done?—I am afraid I have no practical suggestions to make, but I should like to see that protection given to the cultivator.

9915. What objection do you see to the licensing of commission agents in regard to a crop like sugarcane?—No objection, except that it would be an unpopular measure.

9916. With the commission agents?—Yes.

9917. Do you think that would create alarm and disquiet among the ryots?—No; the ryots would like it.

9918. Will you tell the Commission whether it is the custom of the ryot in this country to hold his home-grown food-grains for consumption throughout the 12 months?—As a rule, yes.

9919. So that, if he markets his food-grains, on the assumption of the practice you describe being general, he is only marketing the surplus?—Yes; unless he is very much indebted.

9920. In which case, he has to sell everything and borrow money to buy food?—If he is very much in debt, he has to do that.

9921. Are the physical arrangements for storage in the home adequate?—Can a ryot keep grain in good condition for 12 months?—Yes. Different methods are adopted in different places; each district in the Presidency has a different method of storing. Some is stored in the ground in pits, some is stored in big pots, and some is tied up into stacks wrapped round with rice straw, which is a very good way.

9922. These methods are very practical?—Very practical indeed.

9923. In paragraph 16 on page 57, you say, "The margin upon which such intermediaries operate, a commission agent will make from 1½ to 3 per cent. on transactions, and the merchant will get from 5 to 6 per cent." Do you think we may take it that those statements are founded on sufficient data?—Yes, I am sure of that.

9924. May I take it that, on this question of marketing, your view is that you have come now to the point where all such facts as are already at your disposal should be brought together, deductions drawn, and action taken, if necessary and that you should also proceed to get further data representative of marketing conditions throughout the Presidency?—That is the position exactly.

9925. Are you waiting until you can get an agricultural economist before you can do that?—Not necessarily; but I think the two things should go together.

9926. Is anything being done at the moment?—Nothing; the Marketing Act in this Presidency has been dropped.

9927. In answer to question 20, on page 57, paragraph 2 (b), you are talking about propaganda in the matter of adulteration of crops and the consequent reduction in their aggregate market value. Have you got taluk development organisations in this Presidency?—No.

9928. Nothing of the sort?—Nothing.

9929. Apart from the co-operative organisation, what is the smallest organisation?—There is nothing except the co-operative organisation.

9930. Nothing at all?—No.

9931. There is no district association?—No.

9932. And no taluk association?—No.

9933. Do you think that Taluk Development Associations are sound?—No, I do not think they are sound; they depend too much on just one or two particularly keen people, and directly they give it up, the whole thing dies. I would much rather have a good co-operative sale society.

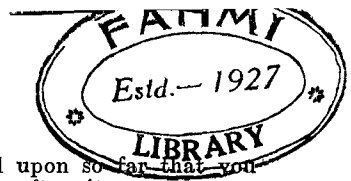
9934. But you took such a gloomy view of the co-operative movement earlier?—I do; but that does not mean that it should not be pressed on. I want it to be developed; I think that is the way out.

9935. *Professor Gangulee*: Have you any agricultural associations?—There are none.

9936. You had one?—We had one or two and there are one or two which may still be said to exist, but they are as near dead as may be. They die for the reason that they are started by one or two enthusiastic men, and directly they leave the place the whole thing dies.

9937. *The Chairman*: I notice that our questions on Co-operation have been left unanswered. I think you made it plain to the Commission that you have not concerned yourself with the details of the working of the co-operative organisation?—Yes.

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9938. There is nothing that has not been touched upon so far that you wish to say about co-operation?—No; only that very often it seems to me that what happens to the co-operative societies and agricultural associations is that they are all run by the enthusiasm of two or three people, and they entirely depend upon them; when these enthusiasts go, the whole thing falls flat.

9939. But I do not think any movement in human society is dependent upon the mass mind as such. Do you not think there are always leaders?—There are always leaders but in these organisations it seems to me you get nothing to lead; nobody is anxious to do anything.

9940. Is not that largely a question of education by the few who are able to get a move on?—I think myself that most of these difficulties we have been discussing really boil down to the question of education.

9941. Question 23 deals with General Education, apart from agricultural education. You have touched on general education in answer to our question on agricultural education, but there are one or two questions dealing purely with general education which I should like to ask. Would you agree that one of the principal causes of the relapse into illiteracy which takes place among boys who have their education stopped at the age of 10 or 11, is the fact that they return to entirely illiterate homes in villages in which there is no reading material?—I agree.

9942. Do you think it follows from that that any forward move in education, designed substantially to raise the percentage of literacy, ought to be accompanied by a determined attempt to push adult education?—Yes, on the whole I agree; but I should rather like to see it go straight on, so to speak; I should like to see something designed to catch the boys when they leave school and go back to their villages rather than an attempt to educate people who are 30 or 40 years old; I would rather catch them when they are 17 or 18, and continue their education.

9943. Do you not think that when you are trying to move a mass which is so entirely inert as the rural population of India undoubtedly is in the matter of education, you must push wherever you get a grip on it?—Yes.

9944. Do you not think that a plan designed to increase literacy amongst school children, that is to say, to keep children long enough in school to make them literate and to maintain their literacy when they leave school, and at the same time to push adult education, offers the best hope of achieving success?—I agree, but I have not much hope for adult education.

9945. Why not?—I do not think it would be popular enough to entice the adults to come.

9946. What experiments have been tried, within your knowledge, in this Presidency in that connection?—I do not think any experiments on adult education have been tried.

9947. On what, then, do you form your view on adult education?—Simply on my knowledge of the people. I do not envisage the adult ryot taking the trouble to go to school.

9948. *Dr. Hyder*: Has any attempt at adult education been made by the Missionaries working in the rural areas?—I do not think so; they confine themselves mostly to children and the younger people; I do not think they have done very much with regard to the adults, and that for the same reason, that they do not find it popular; the adults will not go to school.

9949. *Mr. Kamat*: Are there any night schools in this Presidency?—The only night schools that I have any knowledge of are the few we run ourselves on our farms for the boys of the farm labourers.

• 9950. *The Chairman*: I find it difficult to understand your argument on page 58; you say, "Capitalist farmers might be a success in countries which are young and where land fit for cultivation is available in plenty. In India the tendency of farmers with surplus capital is rather to increase their holdings by purchase of more land than to devote it to more and more intensive cultivation." So that what is going on, in your view, is an attempt to

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increase the size of the holdings in a country where it is extremely difficult; is that the point?—Yes. The point is that a man likes to have land and own it, even if he does not cultivate it; it gives him a certain status.

9951. I gather that you are quite definitely of opinion that the ryot in this Presidency is not unreasonably conservative?—I am definitely of that opinion.

9952. If you have got a thing that is really worth his while to adopt, you will not find difficulty in inducing him to take it up?—That is very much so; there is no man who will not be willing to take it up, once you convince him that it is a good thing.

9953. On page 59, you are talking about various types of landholders and their several influences on the countryside. You say, "The efficiency of the worker has been lowered by such discontent [directed against the landlord] and this together with the attenuation of the purse of his master, is leading to the deterioration of wet cultivation." I wanted to be certain that I understood why the attenuation of the master's purse limits or destroys wet cultivation?—Because the master wants to reduce the cost of that wet cultivation.

9954. I thought it was the landlord you were talking about, or is it the owner employing labour?—It is the owner employing labour.

9955. I see; so that your view is that this constant sub-division, by its effect in reducing the means at the disposal of the landowner, and its further consequence, in limiting improvements and even in removing the capacity to prevent deterioration is reducing the fertility of the soil and laying a further burden upon the agricultural labourer?—That is my view.

9956. Does not the agricultural labourer in that case work for a wage?—Not always; he may work for his food; he is often paid not in money but in kind.

9957. But I still do not quite see why the attenuation of the purse of his master should worry the labourer?—He will not be treated as well and he will not get as big a share of the profits if he is working on the profit-sharing system.

9958. I had not realised that he works on a profit-sharing system?—He may do.

9959. Do you wish to say anything about sanitation and general hygiene in their relation to the welfare of the rural population?—No, I do not think so.

9960. How about water-supply?—Do you think the villages in this Presidency have a good water-supply?—On the whole, yes.

9961. You have no improvements to suggest there?—No definite improvements to suggest.

9962. Is dysentery rife in the Presidency?—No, the main things we are worried with are malaria and hook-worm, particularly hook-worm.

9963. How about guinea-worm?—I do not think that is a disease we know anything about. Hook-worm is the great thing. It has been said that 98 per cent. of the people of the Presidency have hook-worm; I do not know how true that may be.

9964. And that particular parasite enters into the body through the feet?—Yes.

9965. Is it definitely your view that the incidence of water-borne diseases in the Presidency does not indicate an unsatisfactory water-supply?—Yes; I think I am prepared to say that.

9966. How about the question of housing, the actual construction of the houses? Has any attempt been made to improve the house as a dwelling place and a nursery?—By the people themselves, do you mean?

9967. By showing the people how they can do it themselves?—I do not know that there has.

9968. What do you say about housing in rural villages in the Presidency?—One thing that is very noticeable is that directly people get a little more

prosperous and get a little more money, they will put tile roofs on their houses; that is the first thing you always see.

9969. Just to keep the rain out?—Yes. But people are generally very conservative in this country about the type of house they live in.

9970. Where do these tiles come from?—Mangalore, all along the coast.

9971. Are they carried a long way?—Yes, a very long distance.

9972. They are very heavy, are they not?—Very heavy, but there is a very big trade in them.

9973. What sort of cost is involved in roofing an ordinary village house?—I can get you that information.

9974. I was only wondering whether some of the many substances which at any rate in my own country are so very much cheaper and almost as effective, such as tarred felts, which may very well be made out of local fibres, would not afford a water-tight roof at about one-third the price?—I do not think it would be cheaper than tiles.

9975. I cannot say, as you have not been able to tell me how cheap the tiles are?—My Agricultural Engineer can get you the prices. I will see that they are supplied.

9976. I was wondering whether some general investigation on that line would be worth while. Do you think it would?—Yes.

9977. *Mr. Kamat* : Is there not a tile factory here in Coimbatore?—Actually in Coimbatore?

9978. Yes?—I did not know there was. There are some very close to us, of course; they are along the whole West Coast here.

Dewan Bahadur Raghavayya: There is one in Coimbatore.

9979. *The Chairman*: Your suggestion was that tiling was a luxury or the first sign of increasing prosperity. I wonder whether it is unnecessarily expensive?—I do not think so; tiling is very cheap. Tar is an expensive thing in this country. We do not make it; there is no coal.

9980. *Dewan Bahadur Raghavayya*: Is it not the fear of incendiarism that makes people resort to tiles in spite of their costliness; there are other roofings which are much cheaper; e.g., the palmyra and the thatch which are water-tight?—Yes, but that sort of roofing needs constant renewal, whereas tiling is done once and for all.

9981. *The Chairman* : Was the answer to question 26 on page 60 prepared by you or *Mr. Visvanatha Rao*?—It is my own.

9982. What is the average period of revision for the settled areas in this Presidency? Is it 30 years?—It is 30 years, I think.

9983. Can you tell us what proportion, if any, of the Presidency is permanently settled?—No, I cannot tell you.

Dewan Bahadur Raghavayya: One-third is permanently settled or zamindari, and two-thirds is ryotwari.

9984. *The Chairman* : On page 61, when you ask for a revival of the practice of issuing returns of inter-provincial, rail-borne trade, do you think that the form in which that information was given up to 1922 was satisfactory?—No; the Board of Agriculture in 1924 recommended improvements and I want the returns in the improved form recommended by the Board.

9985. Do you happen to know whether it is suggested now that when this practice is restored these improvements should in fact be accepted?—I do not know.

9986. On page 61, recommending a Provincial Statistical Department, you go on to say: "A Provincial Department would have a wide field of usefulness with regard to accuracy and it could address itself to the task of working out in detail and giving effect to lines of improvement suggested by bodies like the Prices Enquiry Committee, the Weights and Measures Committee, the Indian Cotton Committee, the Sugar Commission, and the Industrial Commission. At present recommendations made by such committees are apt to be

ignored for lack of funds and staff." Are you not suggesting a very wide function for a Statistical Department?—Yes, I agree. It seems to me to be the right department to do that sort of work.

1997. To stimulate other departments of Government to give effect to recommendations of Commissions and Committees?—Not exactly that, but to carry out the recommendations that are made; weights and measures, for instance, would be dealt by it.

1998. I see; recommendations of those bodies coming within the category of statistics?—Yes; as, for example, if we were to decide to standardise weights and measures in this Presidency, I think that my statistical department would be the very people to be called upon to describe what the different weights and measures existing were, and where they were found and so on.

1999. Have you any views to express as to the wisdom of introducing compulsory education?—I do not think the time is ripe for compulsory education in this country; it would be extremely unpopular and I do not like compulsion at all. All my experience as Director of Agriculture points to the conclusion that compulsion is not the right way. I am entirely against compulsion.

1990. Have you any views about the education of females?—Yes; I think much more should be done; I think a lot could be done to help agriculture if we educated females.

1991. There again, do you think if you could bring about even a sprinkling of literacy amongst rural womenfolk you would at once make a substantial contribution towards maintaining literacy once attained?—Yes.

1992. *Sir James MacKenna*: Are there many districts in the Presidency in which the Agricultural Department is not yet functioning?—Yes, quite a number of places.

1993. Have you got a skeleton scheme for taking up these areas later?—Yes.

1994. Sanctioned by Government?—Not sanctioned by Government, no. What I do is; I ask for more demonstrators each year; as I get them I decide where they should go. I have a scheme of my own; it is left to me to decide where I shall put them.

1995. You have no difficulty in getting your recommendations accepted in so far as the staff is available to develop the work?—As the staff becomes available I can fill up the places; the difficulty is to get the staff.

1996. Would it not be better to have a scheme sanctioned by Government in advance, so that as the men became available the scheme could be developed, rather than to proceed by annual sanctions for extension?—Yes, as long as it is not made too hard and fast.

1997. You have been a member of the Board of Agriculture for many years. Have you any opinions as to its composition and usefulness or as to any way in which it can be improved?—I feel very strongly that the Board of Agriculture has been a most useful body in many ways and my idea of the central organisation we were talking about is really an expansion of the Board of Agriculture. I think that it is the nucleus for the Central Committee now.

1998. What about the sectional meetings that you used to hold?—They were extremely valuable, and I am very sorry they were stopped; I should like to see them held regularly.

1999. Do you know why they were stopped?—Purely on grounds of economy, as far as we are concerned.

10000. Then you refer to a cess in order to finance the Central Agricultural Association?—Yes.

10001. Have you considered how that would work out in collection? What crops would pay?—No; I presume it will be oil-seed.

10002. Well, I can tell you it would be rice, and I can tell you also that the incidence would practically altogether fall on one Province; that would be a rather serious obstacle, would it not?—I agree.

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10003. You have been here practically since the sugarcane breeding station was opened?—Yes.

10004. What is your view of its utility first to the Presidency as a whole, and secondly generally?—I suppose the sugarcane station here has probably done more good in India than has ever been done by any other single piece of work. That was largely due in my opinion to its being so wisely laid out by Dr. Barber; it is a memorial to Dr. Barber's work in this country; it is an excellent example of work extremely well done; and it is an example of what can be done, as I said earlier, when you get the very best man that can be had. I think most people would agree with me that Dr. Barber was one of the best men we have ever had in India.

10005. And that is being reflected in the manner in which the work is being carried on by his successor now?—Yes.

10006. Has the station been of much use to the Madras Presidency?—No; it has not been of much use to us, because they are not breeding thick canes.

10007. I understand you propose to open another station of that kind for your own purpose?—Yes. I have got the land; the Coimbatore station will merely be for the actual crossing; we shall take the seed and go straight on with the testing ourselves.

10008. You will take the seed from the existing station?—Yes.

10009. And you will develop a thick cane for yourselves?—Yes.

10010. There is no fear of a conflict of interests; in fact, one station will be supplementary to the other?—I anticipate that, yes.

10011. *Professor Gangulee:* With regard to the last point you have raised, as to compulsory education, what has been the experience of other countries in this matter of compulsory primary education? Do you know?—I am afraid I do not; I do not in any way pretend to be an educational expert.

10012. You do not think that public opinion in this country will veer round to legislation for compulsory primary education?—No, on the whole I do not.

10013. In countries like India, legislation generally precedes public opinion. We may not have valid public opinion at present in favour of compulsory primary education, but in such circumstances, as for instance in Japan, legislation helps to create public opinion; are you aware of that?—Yes, possibly.

10014. In a country like India where public opinion in this matter has not yet crystallised, legislation should precede public opinion?—I do not altogether agree.

10015. You carried out soil surveys in five different districts, did you not?—Yes.

10016. That survey includes both dry and irrigated tracts?—Yes, everything.

10017. Spread all over the Presidency?—Spread all over the Presidency, yes.

10018. And you found that phosphate depletion was the general characteristic?—Yes.

10019. Do you also take into consideration the nitrogen question?—Yes.

10020. What is the tendency as to nitrogen?—The greatest deficiency on the whole is phosphate; the next deficiency is nitrogen; but the phosphate is the greatest deficiency and all our work seems to show that you must combine these two. If you put in nitrogen, but leave out the phosphate, nothing happens; directly you put in phosphate you achieve results. I can give you a lot of instances of that. When you pay the visit that you are going to make to the chemical laboratory I will show you very striking charts illustrating that fact.

10021. I suppose it upsets the balance of plant nutrition?—Yes.

10022. Therefore you would attach as much importance to phosphatic as you would to nitrogenous manures?—I attach even more importance to the phosphatic manure; I cannot use my nitrogen without my phosphate, and therefore it is most important. It is our limiting factor in this Presidency; it upsets the balance.

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10023. So you are in favour of checking the export of bones; would you prohibit export entirely or would you put some heavy duty on export?—Personally I would prohibit it entirely.

10024. Do you think the country will be prepared to consume the quantity of bones that are now available?—I would not care if it did not.

10025. Would you hope that eventually this country would consume the whole quantity?—Eventually it would; and even if it never did, I would not mind very much.

10026. I understand you are preparing synthetic farmyard manure?—Yes, we are doing a lot of work on that.

10027. You think there is a great deal of scope in that direction?—I do.

10028. Is that already in the form of a commercial product? Have you been able to introduce synthetic manure into the farms?—No, we have not gone as far as that; the stage we have got to is to find out how to do it; we are now trying to devise a practical method that any ryot can use on his land. We are discovering that it is very largely a local problem depending on what waste material we have got; it has got to that stage.

10029. With reference to your educational problems, you of course have here your Agricultural College; you had, I think, 68 applicants last year out of which you selected 25?—No.

10030. That is what I gather from your evidence.—Last year, but not this year. The last time we selected, in July, we had over 200 applicants, and we selected 40.

10031. How much accommodation is there in this College for students?—We can take 40 a year with these new buildings; we used only to be able to take 20 a year; that is, three lots in three years, which makes 60. Now we can double that with this building; we can take 40 a year, that is to say about 120 in three years easily.

10032. The fact that you had 200 applications shows there is considerable demand for agricultural education?—No, I do not agree with you; they came because a series of very lean years, when there was no money and the Agricultural Department was not extending, had come to an end; during the last three years we have had rather generous grants from the Government; there were more appointments to be had; in addition to that the Co-operative Department were throwing open for the first time a certain number of appointments to men trained in this college. The result was there were more Government appointments and more people came to the college to get those appointments. In my view it has no bearing on agricultural education at all.

10033. They came with the hope of getting positions?—Yes, for no other reason. When these students come to be chosen we always ask each one, "What are you going to do when you get your degree and leave this college?" All the honest ones say, "I want a position in the Agricultural Department." The dishonest ones say, "I am going back to my land." When they have finished their course and taken their degree, I ask each one, "What are you going to do?" The answer is, "I want a job in the Agricultural Department." If I look up the records and say, "But look at what you said when you came in: you said you were going back to your land"; they will say, "Yes; I said that because I thought you would not take me unless I said that."

10034. Supposing the Revenue Department recruited men for the posts of Tahsildars and Revenue Inspectors from the Agricultural College, that would afford an additional attraction?—Yes, more would come; the more Government appointments there are to be had the more students we shall get.

10035. It is a good thing from the point of view of the Revenue Department that their Tahsildars and Revenue Inspectors should have some knowledge of Agriculture?—I quite agree; I would like every member of every department to have a knowledge of agriculture.

10036. The degree that you give is recognised by the University of Madras?—Yes, we are actually affiliated to the University of Madras; we are part of it.

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10037. You give the degree of B.Sc. in Agriculture?—Yes; Bachelor of Science in Agriculture.

10038. Not Master of Science in Agriculture?—No.

10039. With reference to your curriculum, do you give the students a course in farm economics?—It is not in the regular course, but it is a subject that is dealt with; they are taught a little economics and a little co-operation too, but it is not a regular course.

10040. There is no Professor of Economics?—No.

10041. You have two middle schools, one at Taliparamba, and another at Anakapalle?—Yes.

10042. You say one was more successful than the other?—Yes.

10043. Could you tell us why?—Yes, I can; the one at Taliparamba was put down in a place where there was a real, though small, demand for the school; the other one was put down at a place where there was only an immediate demand, and it was a mistake. They were experiments; it is one of those negative results. I may appear to be criticising one of my predecessors; I do not wish to do so, because I have no doubt that if I had been in his position I should have made the same mistake; but we did as a department make a mistake in putting that school in a place where there was not sufficient demand, though we thought at the time there was sufficient demand. That is my explanation.

10044. That is the school at Anakapalle?—Yes.

10045. That institution has not been able to create any demand by its existence?—No; it has not. That is why I say it has failed.

10046. What is the future with regard to the Taliparamba school; will it be popular?—I think it has a chance of gaining in popularity, yes.

10047. Is the number of students increasing?—It is not increasing, but it is holding its own.

10048. What is the qualification for teachers employed in these schools?—In my middle schools most of the men are men trained here at this College.

10049. So men trained by you are the teachers?—Yes; these two schools are entirely under me, not under the Education Department, being experimental.

10050. Directly under you?—Yes.

10051. What is the salary of teachers?—It is not a fixed salary. Taking fairly senior men, it is about Rs. 200. I chose the teachers; one is a farm manager; I thought he would be a good teacher and he is.

10052. You have told us a great deal about nature study and you realise its importance. Have you had some sort of co-operation with the Director of Public Instruction in this matter of introducing nature study in ordinary schools?—He knows my views, and they have been plainly stated on one or two committees, but I am afraid we do not altogether agree.

10053. You have no control over normal schools where they train teachers. Have you an advisory board there?—No.

10054. You have nothing to do with it?—I have nothing to do with it.

10055. On page 37 you say that big landholders do not co-operate in the cause of agriculture. Can you explain this abnormal phenomenon?—No; I cannot explain it.

10056. Here you have a well-equipped college and an excellent farm; you are doing your best; you have 13 lakhs to spend every year out of revenue; and yet those landholders do not take an interest. Can you explain that?—I cannot.

10057. Have you had any conference with the big landholders of the Province? Have you invited them here?—We have invited them here, but we do not get very many of them to come.

10058. You had not much response?—No.

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10059. I find that you have 31 stations; are you quite satisfied with the existing methods of propaganda and demonstration?—I am satisfied; I think very strongly that we are on the right lines, if I may say so.

10060. Do you find any change in the agricultural outlook among the cultivators in the areas where successful demonstrations are held?—Yes.

10061. Then, I draw this conclusion, that in those areas where successful demonstrations are held you find that the cultivators take more interest in the education of their children?—No; I cannot say that I do. I would expect that, but I cannot say that I see any marked improvement in that direction.

10062. You feel the necessity of having some effective non-official agency to assist the Department in demonstration and propaganda, do you not?—Yes, a non-official agency such as the co-operative societies, certainly; I want co-operative societies to take up the demonstrations; some of them are doing so. I think a lot could be done un-officially in that way. I do not quite understand what you mean by non-official.

10063. The point has already been raised with regard to such institutions as the Taluka Development Associations in the Bombay Presidency which are run by non-official agencies. Do you not feel the necessity for such non-official agencies here?—Our experience of that sort of thing has been so hopeless in this Presidency that I do not. As I said earlier, all our agricultural associations and things of that sort have failed, and I do not think there is much hope for them.

10064. You state that the agricultural associations failed. What support, assistance and guidance have these associations received from the Department?—Every possible support we could give them; we attended their meetings and did everything we could in reason.

10065. As regards the cropping system, do you find any difference in the system employed in small holdings and the system employed in the large holdings?—No.

10066. In the method of cultivation?—No.

10067. Take, for instance, the rotation of crops; do you find one system in small holdings and another in large holdings?—No.

10068. Could you give us an idea of the size of an average holding in this Presidency?—I should say about 6 acres: but an average does not mean much in a big Presidency like this.

10069. As regards the question of the cost of manures, is not the item of railway freight really the cause of the increase in cost?—It is one item, undoubtedly.

10070. I understood you to say you did not think railway freights should be reduced in any way; you think the railway freights are quite reasonable?—I do from the railway point of view; after all, the railways must pay their way.

10071. But we are considering it from the agriculturists' point of view?—As an agriculturist I should like to have my stuff carried for nothing, but I do not think it is a reasonable request.

10072. If the railway freight on manures could be reduced do you think that would help towards the introduction of manure?—Yes, of course it would.

10073. On page 46, paragraph 6, you say that opposition has been fostered by politicians with reference to the Pest Act. Are you referring to politicians in the Council or outside the Council?—Within the Council.

10074. Such Pest Acts have been adopted in other agricultural countries?—Yes.

10075. Further on you suggest that the enforcement of the Pest Act would increase the area under food and fodder crops. Why then should there be

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this opposition from educated people?—Mr. Chairman, If I am asked questions bearing on the policy of the Legislative Council, I should like to answer them *in camera*.

10076. Very well, then; we will leave that. With regard to the dairy industry, you say that milk recording should be done by all large Government institutions? Have you introduced a system of milk recording here?—Yes, we have a system, and the Buckingham Carnatic Mills have been doing so on our advice but unfortunately they have stopped it.

10077. Have you not tried to introduce that among the cultivators?—No; you cannot expect them to do it. My object is to try and get a real figure for what the different breeds of Indian cattle will actually give.

10078. Is it in your experience that pasture lands are being gradually put under cultivation?—It is, undoubtedly, in certain districts.

10079. There is that tendency?—Yes.

10080. So that you anticipate that the time is fast approaching when cattle-breeding and dairying will have to depend largely on stall feeding?—Yes.

10081. Hence the importance of investigation with regard to silage and such matters?—Yes.

10082. You have not been able to give much attention to the investigation of fodder supply?—Not from the animal nutrition point of view, no; we have never had the staff.

10083. Nor from any point of view?—Only from the point of view of trying to grow it. We grow fodders on all our farms, and demonstrate what fodders ought to be grown. We have introduced a number of fodder plants; guinea grass and elephant grass have been introduced very widely by us, but there we stop; we have done no research on the subject. We have never had an agrostologist, though we have asked for one.

10084. Do you think there is scope for introducing new fodder crops?—I do not think we can introduce any new ones.

10085. As regards the Forest Panchayats, what are their functions?—It is entirely a new thing; the idea is to put in the hands of these Panchayats large areas of forest that are kept for grazing or may be thrown open to grazing and for fuel reserves, to be controlled by village Panchayats instead of by forest officers, so as to teach the people to handle these questions themselves. The usual cry is that the forest officers close areas autocratically though it would not matter if they were thrown open. It is difficult to make the villager understand the real reason. The idea of handing them over to the village Panchayats is to make them understand the real reason for forest conservancy and at the same time to try to teach them to plant trees and to look after these things generally.

10086. On page 59 you refer to changes in the method of spending of the cultivator; you refer to his expenditure on marriages, ceremonies, charities, etc., and then you say, "These changes will make him a *plus* instead of the *minus* economic unit he now so often is." Do you suggest that he is at present a *minus* economic unit?—Very often he is. That is why I say "he now so often is."

10087. Mr. Calvert: In the last Annual Report you say that cross-breeding with half-breeds will be continued. I think from the samples we were shown that cross-breeding has proved a failure when continued?—We do not admit that.

10088. You think it is worth while going on?—It is worth while; after all, we have had very good results though we have had failures; we are not convinced that it is a failure; we want more knowledge on the question.

10089. Is this cross-breeding an agricultural problem, or is it merely an urban milk supply question?—It is very largely a question of urban milk supply.

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10090. It is not an agricultural problem?—I would call it an agricultural problem.

10091. But it does not affect the uplift and welfare of the village communities?—It does not exactly touch that problem.

10092. In discussing the question of paddy, you think the ultimate object of the whole work is to improve the varieties of paddy, the test of improvement being increased monetary return to the cultivators. Do you mean by that the net return?—Yes.

10093. Are accurate balance sheets being kept to distinguish between net and gross returns?—Yes.

10094. Are they available?—Yes.

10095. I have not quite understood how you keep your strain of seed pure. You say that little of the seed now sown is actually distributed by the department; then how do you keep your strain pure?—We need not do anything to keep the strain pure, if it is a pure strain to begin with; there is practically no cross-fertilization in paddy; it cannot cross with anything else as long as it is pure strain in the Mendelian sense.

10096. There is no harm in its being mixed up with other paddy?—No; it is a very lucky thing that paddy will not cross-fertilise easily. There is about 2 per cent. cross-fertilisation in this crop. That does not apply to millets; we have great difficulty in the case of millets because they cross-fertilise freely.

10097. If your paddy growers sell to the moneylender the whole of their paddy and then buy back for seed later, they will not get a pure supply?—No, therefore we must keep a separate control over seed supply, which we do.

10098. I gather that your department has handed over to the Industrial Department all work connected with wells, water-lifts, well-boring, and such things?—Yes.

10099. Are you satisfied with that?—Yes, I think it is an industrial matter.

10100. You think the Industrial Department can be trusted to give adequate attention to these things?—Yes.

10101. As regards education in this College, when a man goes to study research he takes up research as a profession; when he studies dentistry he practises as a dentist; when he studies for the bar, he practises as a barrister. What is there in the Agricultural College which makes it an exception?—I cannot tell you.

10102. Is it the course?—For one thing, I suppose it is a fairly cheap way of getting a degree. After all, we give them education free; we do not charge them any fees.

10103. Are there no fees at the College?—No fees in the College; it is free education, although they pay for their messing, books, etc.

10104. *Dr. Hyder*: You are speaking of the Coimbatore Agricultural College?—Yes.

10105. *Mr. Calvert*: Has it anything to do with the fact that the course is not suited to the petty holdings?—No, I do not think so.

10106. You seem to me to have got too theoretical an education which is of no practical use to anybody?—We used to have a practical course here but nobody would come to it. For many years we ran a two years' course of practical farming. When first the department was being formed we badly wanted men and we gave the men who passed that course appointments in the lower subordinate service. As the department got older and bigger we decided that that was wrong, that we wanted a much better type of man, and we stopped recruiting men from that class. Immediately the supply of students to that class ceased, and we had to close down the class simply because we could not get anyone to join it.

10107. Do the bigger landowners send their sons to the College?—No, not here.

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10108. Has any attempt been made to induce them to send their sons to the College?—No organised attempt has been made; one cannot suggest how to do it.

10109. Is there any course of instruction in this Presidency suitable for the sons of cultivators holding or owning up to 15 acres?—At the present moment all that we can do is to send them to one of our farms and teach them there. We take anybody there and teach him. There again there is a very small demand, but we do occasionally get a demand for it. There used to be such a course of instruction, but it failed and we gave it up.

10110. On this question of demonstration, given the option, which would you prefer, concentration in a village and trying to convert that village to adopt the improved method, or alternatively, dispersing your efforts over a number of villages?—I would prefer to concentrate on a village.

10111. Are there, in this Presidency, any better-farming co-operative societies, designed to induce the whole of the people to copy your improved methods?—No.

10112. If you had an organisation like that, attempting to organise the whole population of the village to follow your advice, would you give that organisation preference over the individual?—I am inclined to think I would. I look at it in this way, that by concentrating at one place you create, so to speak, centres of infection.

10113. If you can get half a dozen people they are far more likely to adopt your methods than one person?—Of course, if I got the whole village, I should be very satisfied.

10114. On page 44 you say, "There is little scope for the introduction of new crops in this Presidency." I gather it may be put in this way, that the method of cropping on large holdings is practically the same as the method of cropping on the small holdings, or that the owner of the small holding grows the same crop as that of the owner of the large holding?—Yes.

10115. Is there, under this present system, any hope whatever for the 2½-acre or 5-acre man?—Yes, I think there is some hope for him.

10116. Your prospective benefit works out at Rs. 3 per head, it is Rs. 9,40,00,000 for about 30,00,000 cultivators?—What are you quoting from?

10117. From the *Popular Account of the work of the Madras Agricultural Department*?—It is only a rough guide.

10118. If your prospective gain is only Rs. 3 per head, or Rs. 15 per family, is there any hope at all for the 2½-acre man?—I think there is some hope for him.

10119. Only 15 rupees of hope?—Yes.

10120. Would there not be more hope if you could increase intensive cultivation?—I agree.

10121. Could not that be done by introducing new crops that you can think of, or that you can introduce in this Presidency? What about potatoes?—We grow quite a lot.

10122. It is on a comparatively small area?—Yes, they will not grow on the plains.

10123. Has your propaganda reached the 5-acre man?—Yes.

10124. Has it reached the man below him?—Yes, we deal with the small man.

10125. What exactly is the possible improvement? Is it an improved distribution of the existing crops, or a bigger area under better paying crops?—No. I think that our hope is to improve cultivation on the existing area.

10126. I notice you rather deprecate the increase of money crops at the expense of food crops?—I do.

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10127. And yet, most of your work has been done on the money crops?—No, most of our work has been done on the food crops; we have done more work on paddy than on any other crop.

10128. The proportion of your improvements is much higher on sugarcane and cotton; it is 40 per cent on cotton and 20 per cent on sugarcane. For paddy it is only 6 per cent?—That is true, but that is not altogether because we have concentrated on cotton. You must remember that American cotton caught on, so to speak, enormously in this Presidency. We introduced it at the time of the boom; it fetched enormous prices and everybody was anxious to grow it. We were successful in introducing Cambodia; it went like wild-fire; that accounts for the figure you are quoting; people took that up very readily.

10129. About 6 per cent of the paddy crop is under your improved varieties. Would you take the total percentage of the total gross area under your improvements as about 6 per cent?—Yes, I think so.

10130. It seems to me you are extremely pessimistic; you think there is no hope at all for the poor people?—I do feel rather like that on this question.

10131. *Sir Henry Lawrence*: Is that a correct impression?—That is a correct impression; I am pessimistic about it.

10132. *Mr. Calvert*: On this question of seed, you have the alternative of a private seedsman and a co-operative society. Are the people here willing to pay a premium for pure seed?—No, I do not think so; we do not charge them a premium.

10133. The only profit for the private seedsman would be out of the premium?—I do not think you can do it with the private seedsman.

10134. In your attempts to distribute the pure seed, do you sometimes suffer losses?—No, never.

10135. You have no conspicuous financial losses?—As a matter of fact, we have a small gain; we never lose; we can get rid of all the seed.

10136. What area can we take per plough? 12 acres?—Smaller than that.

10137. You mention here 6,000 improved ploughs are in use. I was trying to find out what area that number would cover. Would it be 12 acres per plough?—Yes. We do not sell the ploughs; the cultivators have to deal direct with the firms.

10138. One point about mass production, if you have got to have mass production, you must standardise your ploughs for all India to about six types. Is that possible?—I think it is possible. All India is rather a big area. If you say for the Madras Presidency I would certainly say yes. I do not know anything about the conditions outside this Presidency, I am sorry to say. I imagine it is possible. If you say Madras instead of All-India, I would unhesitatingly say yes.

10139. You would then for mass production have six types of ploughs, to meet all conditions?—Yes.

10140. Has your college here a co-operative society for students?—We have a small one, not for the students but for the officers.

10141. From these figures here, I gather that in Madras there is a landless tenant class?—Yes.

10142. Then there is the smaller owner who takes on land?—Yes.

10143. What cultivation unit does he aim at?—Is it about 10 to 12 acres?—It is less than that.

10144. What is the limit?—A yoke of oxen.

10145. You find him unwilling to take more land, involving two yokes?—Yes, on the whole.

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10146. Can you say, from your experience, whether tenancy is an obstacle in the way of agricultural improvement?—I certainly think it is, because if you are going to have tenancy for a limited number of years, with the probability of being turned out of the land at the end of that period, it is no good your trying to induce the man to put in manures and so on, to improve the land. You are confined to showing him simple methods like transplanting paddy. It is a limiting factor.

10147. Your best outlook for progress is the self-cultivating owner?—Undoubtedly.

10148. And your tenant cannot go in for intensive cultivation?—No.

10149. You mentioned to the Chairman something about goats. Has there been any special enquiry into the economics of the goat?—No.

The Commission then adjourned till 11 a.m. on Monday, the 15th November, 1926.

Monday, November 15th, 1926.

COIMBATORE.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE,
K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E.,
C.B.

Rai Bahadur Sir GANGA RAM, Kt.,
C.I.E., M.V.O.

Sir JAMES MACKENNA, Kt., C.I.E.,
I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja Sri KRISHNA CHANDRA GAJA-
PATI NARAYANA DEO of Parlaki-
medi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU
GARU, C.S.I.

Rao Bahadur B. MUNISWAMI NAYUDU
GARU.

} (*Co-opted Members.*)

Mr. J. A. MADAN, I.C.S.

Mr. F. W. H. SMITH.

} (*Joint Secretaries.*)

Mr. RUDOLPH D. ANSTEAD.

Further Oral Evidence.

10150. *Mr. Kamat*: You say in paragraph 14 of your answer to question 1, "As regards men for research work, I do not think that really suitable men can be found as a general rule (of course there are exceptions) in this country and it is necessary, in the first place, to recruit European research officers to start the work and train their own Indian assistants who can ultimately take their places." As a matter of fact I believe that, in every country, research workers are rather rare; is not that the case?—Yes.

10151. Then we are told in another place that at the present day really first class research men, senior men, I mean, are rather difficult to get out to India and that we can only get second best men. Is that right?—Under the present conditions, that is true.

10152. You say that it is not possible, by sending men to Pusa, to get the very best post-graduate training. Is that right?—That is my opinion.

10153. And therefore it is absolutely necessary to send Indians to England after they have had some experience here?—That is my opinion.

10154. Have the Madras Government a regular scheme for sending such Indians, after they have acquired experience in your department, to England for their training?—Not regularly; we have just sent one for the first time on this new principle.

10155. Is the man who has been sent of the rank of Deputy Director of Agriculture, or is he a junior man?—He is a senior Research Assistant in the paddy section.

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10156. He is the only man who has been sent up to now?—Yes.

10157. In order to maintain continuity of research, is it not necessary to have a scheme for sending men regularly from time to time?—I think so. I should like to see a regular scheme adopted.

10158. Have you prepared any such scheme for the consideration of the Government, or have they not taken this matter into consideration at all yet?—I have suggested this scheme to the Government.

10159. And it is under the consideration of the Madras Government?—I presume so. I have suggested it to them and they allowed me to send this particular man.

10160. You seem to take a rather gloomy view of the agricultural graduates trained at your college so far as capacity for commercial farming is concerned?—Yes.

10161. And it appears to me also that you are not very much in favour of what are called agricultural bias schools?—No. I am not.

10162. You have decided views on the subject of technical schools?—Yes.

10163. You know that in Bombay technical schools of the Loni type have been established for sometime and the Bombay Presidency has gone ahead with this experiment? Are you watching that experiment?—Yes.

10164. Have you formed any opinion at the present stage as to the merits of those technical schools?—I have never been in Bombay to see; but I think we want something rather different from the Loni type of school.

10165. What is your idea of the school you want?—My idea is to institute purely technical schools teaching practical farming with only just sufficient science to enable the student to appreciate the reason of the operations carried out; the whole teaching should be in the vernacular, so that when the boy passes out, he cannot possibly enter Government service.

10166. What is the difference between this type of school which you describe and the Loni type?—I think there is a difference, because I want the boys who come into these schools to leave the high schools above the fourth form. That is not exactly the Loni idea.

10167. If the instruction is purely through the vernacular, how do you get over the difficulty of explaining the scientific terms?—I do not think that is a very big difficulty. If necessary English words can be introduced for technical terms and I think that a small committee of educationists could easily translate all these terms and convert them into the vernacular in some way that could easily be understood. I find no difficulty about that at present. For instance, they call sulphate of ammonia by a common name. I do not mind what name they use so long as they really know what they are talking about.

10168. Sulphate of ammonia, that is not what I mean by a scientific technical term?—I only give that as an example. I think there will not be so much difficulty as people are apt to imagine. That is only my opinion.

10169. With regard to demonstration and propaganda, you are depending at present on one Demonstrator for two talukas. Is that right?—Yes.

10170. And you have no other machinery? You have no other non-official agency, for instance, of the type of the Bombay Taluka Development Associations here?—No.

10171. And you are against these Associations?—Yes; I am, for Madras.

10172. Then I wonder how you propose to reach the masses throughout the district and carry information about your improved methods or research to the very doors of the ryots?—If I had enough Demonstrators I could do it.

10173. Do you hope that the Local Government will ever be able to find the finance to give you an adequate staff to carry the knowledge of improvements to the very doors of the masses?—Certainly.

10174. You hope to find that finance from the Local Government?—Yes.

10175. But why are you against enlisting the sympathy of a non-official agency like the Taluka Development Association if you can get it?—What

experience I have in this Presidency is of the local Agricultural Association which failed hopelessly.

10176. That was precisely the experience of the Bombay Presidency. This new scheme was started there with this difference, that the Government gave a subsidy to the Taluk Development Associations, and also a good deal of guidance and direction through their Co-operative Department. If you were satisfied that the Government subsidy in Bombay had proved a successful remedy, would that alter your view?—I do not think it would. I should have to know a good deal more about them than I do now. My difficulty is that my experience shows they depend almost entirely for success on the energy of one or two men, and when those men disappear the whole thing collapses.

10177. Quite so, but at the present moment your machinery for propaganda and demonstration is hopelessly inadequate, in my opinion. That being so, would you not accept even an inefficient non-official agency if it comes to your help?—In the sense that it is better than nothing?

10178. Certainly?—Yes. One has always to accept that. But I do not like to accept inefficient things.

10179. You have here for cattle improvement a Deputy Director in charge of livestock?—Yes.

10180. And I understood you to say the other day that he had only 12 premium bulls for cattle breeding. Is that correct?—Yes.

10181. Do you not think that 12 premium bulls for a Presidency, the agricultural population of which is something like 3 crores of people, are inadequate?—Totally inadequate, I quite agree. But it is a new idea only just started and I hope to see thousands of bulls on the premium system some day. The system has only been in operation for three years.

10182. You mean this officer has been appointed only for the last three years?—No. I refer to the system of premium bulls.

10183. Here again if I might be permitted to refer to Bombay experience, I think they have something like 160 premium bulls and they find that number inadequate?—Yes.

10184. And the Punjab is maintaining something like 2,000. Now, if you go on making experiments on this small scale, taking into consideration the millions of cattle there are, do you not think that this is merely playing with the problem?—I do not agree. The system is that, if anybody takes the bulls, a municipality for instance, we grant them a premium for their upkeep. That, I think, is a good system, and one we are developing. Government finds the money to pay the premium. We should certainly like to have 2,000. It is only a question of money and time.

10185. With reference to castration, you say at present young bulls of one or two years of age roam freely in the villages and that is one of the reasons why there is promiscuous breeding. Are you in favour of legislation in order to enforce castration at an early age?—I do not like compulsory legislation, on general principles. I find it makes things unpopular and raises all sorts of side-issues. I do not like compulsion by legislation unless it is absolutely necessary. It may be necessary as a last resort.

10186. Is that the ground on which you are also against compulsory primary education?—Yes.

10187. The other day I understood you to say that you were against it because the time had not arrived yet?—In that case I do not think it has. I think it would be even more unpopular.

10188. Am I correct when I infer that, so far as the Pest Act of Madras is concerned, you are in favour of compulsion?—Yes, because in that particular case, though I do not like it, it is the only thing which can be done. It is in that case the last resort.

10189. If you are in favour of compulsion in a minor matter like the Pest Act I do not understand how, on principle, you can reconcile that with your

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opposition to compulsion in a fundamental matter such as primary education, which concerns the literacy of the masses, which is so necessary for the dissemination of knowledge of agricultural improvements?—I think I can explain that. In the case of the Pest Act for cotton I can think of no other method. I may say I am in good company as to that. Every big cotton growing country in the world has found that it is the only thing to do in that particular case. If I could find some other method I would abolish compulsion to-morrow.

10190. That merely means you are choosing your own method of compulsion. Have you carried out economic surveys of any tracts or villages in this Presidency?—No.

10191. *Professor Gangulee*: Has not Dr. Slater carried out a number of such surveys?—I have not; my department has not.

10192. *Mr. Kamat*: Do you agree that the Agricultural Department should know by definite data the economic progress of the village population and the economic condition of the people?—Yes, I do.

10193. Would you then advocate that some members of the staff of your department should occasionally undertake such economic surveys?—Yes; I would like to modify my reply to that and to say that I certainly think that this economic enquiry ought to be made. I am not sure that it should be by my department, but given the staff I have no objection to doing it.

10194. You have no objection?—I would rather it was done separately and a special staff provided for it.

10195. At the present moment, from such knowledge as you have, do you think the standard of living of the agriculturist is going up or going down?—Going up.

10196. Are you decided in that opinion?—Yes.

10197. Has his purchasing power also increased?—I believe it has.

10198. Would you give me an idea by what percentage it has gone up; would it be, say, 5 or 10 per cent.?—I could not put it in figures; there is no means of knowing exactly. I base my opinion on the fact that in different places I see people tiling their houses, wearing better clothes and that sort of thing.

10199. But that does not give a definite idea as to the rise in the purchasing power of a particular locality; it only means, of course, that to a certain extent the standard is rising?—That is true; but until an economic enquiry is made I do not see how that figure can be arrived at.

10200. Might I refer you to this Popular Account of your Department and to some of the very interesting tables which you have given at the end of Appendix A with regard to the nature of improvements on various crops, the acreage under those crops and the resulting gain per acre to the ryots. You also give in another column the possible remedies?—Yes.

10201. Now you claim that by the spread of knowledge of your new improvements in the Madras Presidency the total additional produce is something like 2½ crores?—Yes, per year.

10202. All that gives some indication, if your estimate is correct, of the new additional wealth created by agricultural improvements?—Yes.

10203. Are you quite satisfied with the volume of that increase? Are you quite satisfied with your progress?—I think so. I do not mean that I do not want to go any further. But considering that this department was only founded in 1903, I am fairly satisfied with the progress.

10204. Would you consider there is a very satisfactory rise in the purchasing power of the ryots?—Yes.

• 10205. You would?—Certainly.

10206. *Sir Henry Lawrence*: That Report is dated 1922, is it not?—Yes.

10207. *Mr. Kamat*: 2½ crores in the total seems to be a very satisfactory figure. But I suppose you have got something like three crores of people taking part in agriculture in this Presidency. Is not that the case?—Yes.

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10208. 2½ crores divided between three crores of people comes to how much? Is it about 12 annas per head per annum?—Yes.

10209. In consequence of the achievements of the Agricultural Department the ryot has an increased purchasing power of 12 annas per annum?—I do not think it is a fair argument to divide the amount by the total population like that. It is not as if it were share and share alike. Some people get less than 12 annas and some people get Rs. 15. The longer we go on, the more they will reap.

10210. Unless you distribute it on a *per capita* basis how are you going to arrive at the average rate?—That is not the way to calculate it. What I say is this: if I take a group of people it is something if they get Rs. 15 to Rs. 20 each, even though others get nothing.

10211. Do you not think that for the general prosperity of the ryot we must seek some other solution in addition to this solution of improving their agricultural methods, some such solution, I mean, as a subsidiary occupation?—Yes, I am prepared to agree on that point.

10212. I mean to say that you should not concentrate only on agricultural improvements but you must also give attention to the promotion of subsidiary industries as spare-time occupations?—I agree, but that is not my business.

10213. I want to know what the Madras Government have done with regard to the question of spare-time occupations?—They have no scheme as far as my department is concerned. I cannot speak as to other departments.

10214. Do you agree it is high time to consider this question, that in addition to research and certain improvements of crops, it is also necessary to find out suitable spare-time occupations for the villagers in this Presidency?—Certainly.

10215. Do you think that a separate special officer should be appointed to institute an enquiry and find a solution?—Yes, but I think that should be done by the Industries Department. They are organised for that. That is my personal opinion.

10216. Taking up that point then, has the Director of Industries considered what subsidiary industries are suitable?—I cannot speak for the Director of Industries.

10217. It has a bearing on your department and the prosperity of the ryot?—All I can tell you is that the Madras Government have been recently discussing some such scheme and that the Director of Industries is making some preliminary survey through his department. I am speaking about another department now and I am not absolutely sure of the facts.

10218. Can you give me an idea of the pressure of population on cultivable land?—It varies; in the deltas it is high; it is not so high in the dry areas.

10219. To your knowledge has the pressure been increasing during the last decade?—No; I should say it is getting to a stationary point.

10220. You mean it is stationary?—It is not increasing very rapidly.

10221. It is not increasing?—I think not. One would have to examine the figures on that point.

10222. May I ask you a question which is not directly concerned with your department, *viz.*, whether, considering that the present proportion of population that depends upon agriculture is 71 per cent. you visualise the time when a certain proportion of that 71 per cent. may be absorbed into general industries if such industries were started?—Yes, I think it is bound to happen if industries are started.

10223. In view of the pressure of population do you look upon the establishment of industries with favour or disfavour?—On the whole with favour.

10224. In the interests of agriculture itself you would desire that some proportion of that 71 per cent. should be absorbed by the general industries?—

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Absorbed in industries which deal with agricultural products; that is the way in which I would put it. I would look on it with particular favour, if I may say so; it is a thing I have advocated for years.

10225. *Professor Gangulee*: Such as the oil crushing industry?—Yes.

10226. *Mr. Kamat*: And similar industries?—Yes.

10227. Has any attempt been made in the Madras Presidency to start Land Mortgage Banks either through the co-operative societies or by any other means?—Yes, through the Co-operative Department.

10228. What is your opinion as to the success which has so far been achieved?—I have very little experience; I am afraid I have no knowledge of the subject. It is entirely in the hands of the Co-operative Department.

10229. You have not heard the result?—It is only hearsay. Some have succeeded and some have not.

10230. *Rao Bahadur Muniswami Nayudu*: How many Demonstrators are employed in this Presidency?—113.

10231. What is your view as regards the number of Demonstrators required?—My aim is to have at least one Demonstrator for each taluk..

10232. They deal with the village people?—Yes.

10233. And they converse with them in the vernacular?—Yes.

10234. What are the qualifications of a Demonstrator?—He must pass through this college and take an agricultural degree of the University of Madras, or a similar degree in some other University.

10235. May I know the latest figure as to the number of pupils you have recruited for this college? I think you recruited 40. How many of them know Tamil and how many Telugu?—I cannot tell you straight off. I have not got the figures with me, but I will get them for you.*

10236. Can you tell me how many know Telugu?—Very few; it is with great difficulty that we get Telugu students.

10237. Have you any proposals for increasing the number of Telugu-speaking Demonstrators?—No; I am always short of them. I should like to have more suitable men from the Telugu districts. Speaking generally we do not get the right sort of Telugu-speaking men.

10238. May I take it that you have no proposals at present for increasing the number of Telugu-speaking people?—I have no proposals.

10239. As a result you have to dump the non-Telugu people on the Telugu areas?—I have to.

10240. Is that not unsatisfactory, because they cannot converse with the Telugu people?—I agree; I want more Telugu men.

10241. Would you therefore consider the employment as Demonstrators of people educated in the vernacular middle schools?—No. Demonstration is difficult work and I want the best men, really good men. They must at least have a University degree.

10242. Then would you contemplate using the vernacular as the medium in the degree course?—To begin with, the Madras University would not allow it. English is one of the subjects they insist upon.

10243. Would you favour the starting of a separate agricultural college under the Andhra University?—No.

* Figures supplied later by Mr. Anstead of the linguistic distribution of students at the Agricultural College, Coimbatore (December 1926):—

Tamil	.	.	.	.	.	.	.	.	.	.	37
Telugu	.	.	.	.	.	.	.	.	.	.	12
Malayalum	.	.	.	.	.	.	.	.	.	.	28
Kanarese	.	.	.	.	.	.	.	.	.	.	3
											—
											80

10244. So you would continue to put in non-Telugu people for demonstration work in the Telugu areas?—That is all I can do, unless some men come from the Telugu districts. I see no reason why they should not.

10245. Do you not think that the situation of this college is a handicap to Telugu-speaking people coming in?—Possibly; but they come from all parts of the Presidency.

10246. Would you favour the opening of an Agricultural College in the Telugu districts?—I do not think so, not yet. I would rather spend the money on something else.

10247. Would it be impossible to employ in the Agricultural College teachers with a good command of the vernaculars to teach all the subjects that are taught in a college?—It would be impossible under existing conditions because, as I have already stated, this college is affiliated to the University of Madras. What course is to be adopted and how it should be taught is settled by the University. They have no provision for teaching in the vernacular.

10248. That is why I suggested that you might consider the opening of a college under the Andhra University?—To get over that difficulty, yes; but it would be a luxury to have two colleges, and you could spend that money usefully on something else.

10249. You should see it from the point of view of public service and not merely as a luxury?—I want the students to go back to the land. I look upon one college as a necessity; I look upon two colleges as a luxury. All we can do to meet this difficulty is to encourage such students by every means in our power.

10250. Why do they not come; you must be able to tell us?—I have never been able to understand why they do not come.

10251. With reference to the agricultural middle schools, you require fourth form standard, at least, as a qualification for students?—I think so.

10252. As regards students who fail in those schools, would you consider them fit to be employed as deputy demonstrators to help the Demonstrators in their work?—No, they would not be good enough.

10253. In Bombay students who come out of the vernacular middle schools are employed as *kamgars*?—I know they are; but I do not agree with that policy.

10254. What do Demonstrators do?—They do a great many things; they go round, get into personal touch with the ryots, suggest improvements, demonstrate and explain new methods and so on. They are responsible for distributing improved types of seeds, letting the cultivator know where he can get manures, demonstrating special crops; and, if it is a sugarcane district, teaching the use of the *sindiwahi* furnace and improved methods of preparing jaggery.

10255. Do you require an agricultural graduate to distribute seed?—I do, yes.

10256. Why?—I can see no other method of distributing seed except through the present organisation of the department. There are no seed merchants or co-operative societies to undertake that work; it therefore becomes part of the work of the Demonstrator. To carry out all the work involved in the distribution of seed I must have a graduate.

10257. Do your Demonstrators control seed farms?—A large number of seed farms, especially in the cotton area, is run by groups of ryots and looked after by the Demonstrators.

10258. Let us confine ourselves to rice. There is practically no difficulty in running seed unions in the case of rice?—Rice is a food crop, and if you have no control, in years of famine the members who promised to make their seed available for distribution for seed are apt to eat it. For that reason seed farms are still required.

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10259. It is one thing to look after a seed farm but, so far as propaganda and advertising the need for improved seed are concerned, do you require a graduate? Could not a student of the middle school trained in the vernacular do it?—Possibly he might, but that would involve duplicating the staff. My present staff can do that; besides, I do not like the idea of losing control. It is very important that it should not be taken out of my hands and put into the hands of men poorly trained and, I presume, poorly paid. It is very important that we should keep the seed pure and see that it does not get mixed. I do not like the idea of it being taken out of my hands.

10260. I do not want any persons to be taken out of your hands or out of your department; but I am suggesting an intermediate set of officers between the Demonstrators and the actual ryots, who will help the Demonstrators in the matter of distribution of seeds, while the Demonstrators will be useful for supplying the higher technical knowledge that may be necessary?—I do not think I am in favour of it; you are going to have poorly trained men and poorly paid men, and you will be putting extremely important work into their hands. The difficulties are obvious. I do not like the idea. I understand what you mean; I have thought out a scheme like that myself, but I do not like it.

10261. Do you think that men trained in your special agricultural middle schools would be efficient teachers in elementary schools?—I do, and I am very happy to say that I have got one man so trained doing that work now.

10262. If your department and the Education Department co-operate, and you recruit elementary school teachers from students trained in your special agricultural middle schools, do you think that would stimulate a larger number of students to join your agricultural middle schools?—I quite approve of that; but I do not think the Education Department will approve of it.

10263. Supposing they approve of it?—Supposing they do, I strongly approve of it.

10264. You are also aware that for the purpose of training elementary school teachers Government are maintaining training schools at headquarters and are giving stipends to the students. Supposing the whole of that cost is diverted to maintaining agricultural middle schools where general education as well as agricultural education will be given, would you consider that a better system of supplying elementary school teachers? They will be teachers having an agricultural bias?—You are now training teachers in training schools. Do you want these training schools to have agricultural courses?

10265. I want the training schools to be converted into agricultural middle schools?—I do not think that is quite right. The teachers trained in the training colleges will have a higher standard of general education than the students trained in the agricultural middle schools. I should like to see in the teachers' training college a certain amount of training introduced which would enable those teachers to teach nature study. Do I make myself clear? The teachers going to the training college are taught to teach. In the course of being taught to teach, I want nature study to be included, so that when they come out they will be able to teach nature study; please understand that by nature study I do not mean agriculture. I want them to be taught nature study as very, very distinct from agriculture, which is a professional affair.

10266. Would you welcome the employment of students who underwent a course in your agricultural middle schools, as teachers in elementary schools?—Yes; that will be good enough.

10267. Would you combine with agricultural instruction some sort of teaching in general subjects?—Yes; in my agricultural schools I teach the boys to read and write with proficiency; I think students who pass through my agricultural middle school are quite good enough to act as teachers in elementary schools, though they are not good enough to teach in a high school or a middle school.

10268. I think you can make your agricultural middle schools popular if only you can get the Department of Education to agree to employ students

trained in your agricultural middle schools, as teachers in primary schools?—Very likely; but that would be defeating the object of the agricultural middle schools. The primary object of the agricultural middle schools is not to train teachers, but to train farmers. You are getting away from my object of getting people back to the land.

10269. May I point out that many of the teachers who settle in villages come into contact with farmers?—True.

10270. Thereby you will encourage them to teach as well as farm?—Yes; there are merits in that.

10271. *Mr. Calvert*: But the training for farming is quite different from the training for teaching?—That is quite true; that is what is worrying me through all these questions; that is why I cannot agree; that is just the point.

10272. *Rao Bahadur Muniswami Nayudu*: You know that some agricultural middle schools have been started by mission authorities in Chingleput; have you seen them working?—Yes.

10273. What is your opinion of them?—My opinion is that the mission's object is very different from mien. The mission's object is not to train farmers; the mission's object is to train teachers, teachers teaching a particular thing. My object is not the same. Therefore, we do not get into very close touch. One of my troubles with missions (much as I admire the work of the missions) is this: they are often dealing with the depressed classes, men who have no land and never will have, and I see no object in teaching such men to be farmers. What I would rather have turned out of the mission schools is good general labourers. That is where we differ as a rule; I do not see what these men are going to do after they leave the mission schools. The missions say that they are going to teach and become school masters. That is all right, but it is not what I want to do; that is my difficulty with mission schools.

10274. You told us that this year there was a large number of applicants for admission to the Agricultural College because the Co-operative Department had promised to absorb a number of students after they completed their course in your college. Have the Co-operative Department ever taken one from your college?—I believe not.

10275. Do you expect to get such a large number next year?—Their only object in coming in was to get posts. I expect the Co-operative Department to keep their promise. They have not done so yet; but I expect that they will.

10276. Do you know that a few of the graduates of your college have taken to law without finding any employment whatever?—Yes; they have.

10277. Do you think that having regard to the number of men required for Government service, there is justification for continuing this college for some years to come?—Certainly.

10278. How many do you expect to be taken into Government service?—The appointments I will have to make run to 14 or 15 a year at the utmost.

10279. May I know what is the cost per head of the student population?—I cannot carry all the figures in my head; I could work it out.

10280. I think you have the Administration Report with you?—Yes, but I do not think the figure is there.

10281. *Mr. Calvert*: Could you get us that figure?—I can get it, but it has got to be worked out.*

10282. *Rao Bahadur Muniswami Nayudu*: Can you not give us the expenditure on the teaching section alone of the Agricultural College?—There again I have not got the figures in my head.

* Figure supplied later by Mr. Anstead: the approximate cost per student per annum at the Agricultural College, Coimbatore, is Rs. 570 based on a total strength of 150 students. This is very approximate as it is difficult to separate the cost of teaching from the cost of research moreover the cost varies with the number of students.

10283. You charge Rs. 1,200 per head in the case of students coming for training from outside the Presidency?—Yes.

10284. *Professor Gangulee*: Students coming from Indian States or any other part of India?—Yes. This College is supposed to be for the Madras Presidency.

10285. *Rao Bahadur Muniswami Nayudu*: Supposing you charge fees to students resident in the Presidency, would you expect students to join the college?—No, I do not think they would join.

10286. *Mr. Kamat*: In the Poona College we do not charge any fees for students coming from Madras?—Yes; I know that.

10287. *Rao Bahadur Muniswami Nayudu*: With regard to village roads, may I take it that very large numbers of villages have no road communications at all?—Yes; that is quite a common thing.

10288. Do you agree with me that if each village were provided with a road, the economic position of the ryot in regard to purchase and sale would be considerably improved?—Certainly.

10289. And would you say that Government or the local authorities should take steps to see that every village is provided with a road as soon as possible?—Yes.

10290. Have you any idea of the resources of the local bodies, so as to be in a position to say whether they could carry out such a scheme?—I have no information about that.

10291. *Sir Ganga Ram*: Do you find the provincial roads better than the roads in the charge of the local bodies?—Yes.

10292. *Rao Bahadur Muniswami Nayudu*: May I know what provincial roads you are talking about?—Provincial roads generally.

10293. But they are maintained by the local bodies?—What I find is that when I get to a District Board road it is often a bad one.

10294. *Mr. Kamat*: Is it not a fact that the Local Government here, after enquiry, found that the District Boards were short of funds for the improvement of roads?—I believe so.

10295. They are not to blame for that?—I did not say that; I do not apportion any blame; I only say I find the roads bad.

10296. *Rao Bahadur Muniswami Nayudu*: May I bring it to your notice that in the Madras Presidency almost all the roads except the Imperial roads have been handed over to the local bodies and are maintained by the local bodies?—I believe so.

10297. Then, what provincial roads are you talking of?—I am talking of the big main roads kept up by Government.

10298. But none of the main roads are maintained by Government; they are all maintained by local bodies?—Very well, then, such roads are getting worse.

10299. What do you mean by saying that they are getting worse?—My experience generally with roads in the Presidency is that they are in a worse state now than they were ten years ago. That is the impression I have got when travelling about.

10300. Have you any idea of the budget of any District Board?—I am not apportioning blame; you were asking me about facts, and my opinion is that the roads are worse.

10301. It is common knowledge that the cost of maintaining the roads has considerably increased since the War?—Probably.

10302. Unless the finances of the District Boards are considerably improved the roads cannot be maintained properly?—Probably; but the District Boards have power to raise funds by taxation, I believe, and I also believe they have not done that.

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10303. *Sir Ganga Ram*: Have they got no such cess as a road cess?—There is no road cess as far as I know.

10304. *Sir Henry Lawrence*: In regard to Appendix A of the publication* that you placed before us, you say the net gain to the Presidency from your operations is 2½ crores per annum. That means, by an expenditure of 10 lakhs of rupees per annum, the Agricultural Department has improved the income of the Presidency by about 2½ crores?—That is exactly the object of giving that figure; that is the argument I was putting forward in that publication.

10305. With a larger expenditure, you would effect a larger improvement?—That is the inference I hope will be drawn.

10306. I would like you to develop a little the cattle improvement policy of your department. I have got here, in the report from Mr. Aitchison, a statement that the cattle of the Presidency are much worse than the cattle in any other Presidency in India. Do you accept that?—No, not altogether.

10307. Do you consider that the general conditions of the cattle here are satisfactory?—They are capable of a great deal of improvement.

10308. Then Mr. Aitchison makes an exception in the case of your two breeds, the Ongole in Nellore and the Kangayam in Coimbatore. Can you give us any idea of what proportion of the total cattle of the Presidency will be represented by these two breeds?—I could not give you the figure straight off.

• 10309. What is approximately the total cattle population of the Presidency?—That, again, I could not give you straight off.

10310. Is it 20 or 30 millions?—It is something like 20 millions; I should think.

10311. Have you any estimate of the total number of Ongole cattle?—It is very difficult to get the figure at the present moment. We are having an Ongole survey made to get that figure.

10312. Is the Ongole breed limited to the Nellore district and the Kangayam to the Coimbatore district?—Those are the great centres in which they are bred.

10313. That is, 2 districts out of 25 or so?—Yes. Those are the two best strains of cattle in this Presidency.

10314. It is a fair inference that these cattle do not represent more than 10 per cent. of the total cattle population of the Presidency?—It would be something like that.

10315. One line of advance is to improve those two breeds?—Yes.

10316. Is it the proposal, then, to get those two breeds accepted throughout all the other districts, in addition to the Nellore and Coimbatore districts?—Yes, where they will be suitable. The Ongole cattle will not do everywhere. Wherever we find they thrive, our idea is to get them introduced and distributed.

10317. They are in the plains district?—Yes.

10318. They will not do for paddy tracts?—No; these big, white cattle that you see being used in the Central Cattle farm are Ongole.

10319. For paddy areas and hilly areas, you must have smaller varieties?—Yes, the Kangayam or something similar.

10320. Do you regard it as your problem to raise the efficiency of the great mass of the cattle or to have selective breeding of these two particular varieties?—To have selective breeding of these two particular varieties, I think, would be the best plan; the other problem, to take the whole mass of the cattle, is too big. If we could have a lot more of these and have them distributed over all the areas for which they are suitable, we should have gained a great deal, and that is what we are aiming at.

* Popular Account of the Madras Agricultural Department.

10321. Then you have a different line of advance in your distribution of cross-bred bulls, say in the neighbourhood of Madras?—Yes.

10322. I understand that your scheme of work was put before the Board of Agriculture last year, in 1925. Is that so?—Yes.

10323. And the Board of Agriculture accepted your scheme as satisfactory?—Yes.

10324. Does that represent both the schemes, cross-breeding and selective breeding?—The whole of our scheme worked out here was accepted by the Board.

10325. Was there any opposition to the cross-breeding scheme?—I was on leave when the Board met; I believe there was very little opposition, if any.

10326. I have here their resolution. One portion of it says that the Board approves cordially the schemes outlined by the representatives of the Punjab and Madras?—Yes.

10327. And you accept that as an approval of your distribution of cross-bred bulls as well as of your selection?—Certainly.

10328. Then, in some portions of the literature placed before us, reference is made to the beginning of various experiments which were then closed down and the various herds dispersed?—Yes.

10329. A number of different experiments were in progress for a short time, and those experiments have been shut down?—Yes.

10330. I take it that no very definite, conclusive policy has been adopted in the past?—Not at the very beginning.

10331. Your results, so far recorded, are somewhat haphazard and inconclusive?—May I put it this way, by reminding you that it was only ten years ago that we were allowed to have a Deputy Director of Livestock to take up this work; before that it was done in an altogether haphazard manner. Under the recommendations of the Board of Agriculture we were allowed a special officer for this work, so that the work is quite young.

10332. But there are no definite conclusions that you can draw from experiments done in previous years?—They were made in a haphazard manner.

10333. Now you want to begin from the beginning and arrive at some definite conclusions in course of time?—Yes, and be quite sure of our facts as we go on.

10334. It will take time?—A long time.

10335. And money?—Yes.

10336. Do you consider that there is a demand for the continuance of these experiments from the people who are interested in this cattle-breeding?—I do.

10337. Do you find that your cross-bred bulls are accepted willingly by any section of the people?—I do; you will find a very large number of cross-bred bulls in Madras city, for instance; they are rapidly replacing the Ongole breed as a milk herd; many milkmen in Madras go in for them and in the Nilgiri Hills you will find a very large number of cross-breeds; there is a demand for them.

10338. *Professor Gangulee*: Is there any demand from the ryots?—There is a demand among the milkmen in Madras, but not so much from the ryot; when we are dealing with cross-breeds we are dealing with the milk problem for the urban population.

10339. *Sir Henry Lawrence*: You have evolved here on the Coimbatore farm, Co. 205 variety of cane for distribution in Upper India; is that variety of a quality suitable for cultivation on land by your canals in Madras?—That cane is of no use to us at all in the south; we want a thick cane, not a thin cane; we want a different type of cane altogether from that.

10340. For cultivation under irrigation in South India, it is not suitable?—No.

10341. You are quite certain about it?—Quite certain.

10342. Do you know anything of its distribution in Upper India and how far it is successful?—I believe that it is very successful. You understand, I take it, that the sugarcane station here is not mine; it belongs to the Government of India, and is not under my control, so that I do not know about it in any great detail. I am not, of course, so interested in the success of the canes in Northern India as of those in my own Presidency; but I am ready to believe from what I have read and from what I have heard from different sources that that cane has been a very great success in Northern India.

10343. For cultivation in conditions where the soil is different and where the water-supply is less plentiful?—Yes; in fact it was deliberately bred for that purpose, and canes must be bred for different localities to suit those localities. That is what is being done at this station, to breed canes to suit particular localities; that is so with the work not only on sugarcane, but on all other crops.

10344. Does any friction arise from a Government of India station working alongside your farm here?—None whatever; we are always very good friends.

10345. There is no dual control?—No.

10346. And the work can be carried on efficiently?—Yes.

10347. As regards rice, you are effecting great improvements in the varieties of rice seed that you are distributing. Is that the main problem before you? I see in some report that only a comparatively small proportion of your total rice area is transplanted; the great part is sown broadcast?—Most of the rice here is transplanted; we have broadcasted rice in this Presidency grown on rain-fed lands; we have both problems.

10348. Can you say what is the proportion of broadcast and transplanted rice?—Not straight off without referring to the Season and Crop Reports or the Statistical Report. I am sorry I do not carry these figures in my head.

10349. I think it was stated in one of these reports that the greatest improvement possible at the present moment was to reduce the seed rate of rice from 150 lbs. to 30 lbs. or something like that, per acre?—That is so; that is the seed rate we advocate for transplanting. The usual practice is to transplant in bunches of 10 to 15 seedlings; instead of that we advise them to plant the seedlings singly or in twos or threes, as they will then tiller better; you will get just as good a yield, if not a better yield, by singly transplanting the seedlings instead of planting them in bunches. To do that, you must have a good, well-grown seedling in the nursery to begin with, and in order to get that you must sow your nursery carefully. It is obvious that if you are going to transplant singly you do not want as many plants to the acre as you would if you were to put them in in bunches. You transplant the seedlings economically, either singly, or in twos or threes, and you will get as good, if not a better crop. It costs you no more to do that than to transplant in bunches; indeed it costs less, because you do not have to use so much seed; and the point of the thing is this, that the seed which you do not use for this purpose is available for food purposes.

10350. Has that improvement been taken up largely?—It has been one of our great successes; it is spreading very rapidly.

10351. *Sir Ganga Ram*: When you take upon yourself the credit of having raised the value of the produce by 2½ crores, will you please analyse this figure into three heads: how much is due to increase of yield; how much is due to the rise in prices, and how much is due to the introduction of new crops, through the exertions of your department? Will you analyse the figures under these three separate heads and supply them afterwards?—I can do that.

10352. Have you studied the recommendations of the Irrigation Commission's Report?—I have read them.

10353. So far as the Madras Presidency is concerned?—Yes; but I have not devoted any great study to it, because I have nothing to do with irrigation.

10354. Have you studied them generally?—I have read them.

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10355. Have you noticed in that Report that 0·4 of an acre irrigated is required per head for immunity for famine?—Yes.

10356. I think the calculation is made on the basis that you provide protection for 10 men out of every 40?—Probably.

10357. And therefore, can you explain the reason why there have been so few serious famines?—Because it seems to me we are able now to deal with a famine. The famines after all are local; they do not affect the whole of the Presidency; what has made famines much less serious and much easier to deal with is that now we have railways and good transport for taking food rapidly from one place to another.

10358. You mean importing from outside?—Yes, importing it from Burma.

10359. How are they going to get the money to pay for imports? You are in favour of reducing what you call money crops. If the money crops are reduced and the money does not come in, how are they to import?—May I suggest to you that if I were to grow more food crops in the Presidency instead of money crops, when a famine came I should have more food and I should not have to import it.

10360. *Dr. Hyder*: Is that quite right? In a famine year, there would be no crops anyway unless you have a carryover of food from year to year?—That is not my point. Your famine is a localised famine. You have district A which has famine. You have district B which has no famine. You can bring rice to district A from district B which has no famine. If there is not enough rice in district B, you have to go outside, to Burma. If I could increase my rice in district B which has no famine you need not go to Burma but you could put it into district A which has famine.

10361. So you store up for the future?—Not necessarily.

10362. You do not have famine all over the Presidency at the same time. You have never had it?—Not over the whole Presidency.

10363. In 1876?—That was before my time, and transport facilities have improved since then.

10364. *Sir Ganga Ram*: Is it within your knowledge that these recommendations of the Irrigation Commission have been carried out by the Madras Government?—No; I cannot say. As I said, I am not on the Irrigation Board.

10365. It is an allied subject of your department and therefore you ought to take an interest in it?—I cannot tell you what has been done.

10366. Do you know about the financing of the hydro-electric survey?—Yes, I know something about it.

10367. You have studied that?—Have you ever thought how you could use those falls for the betterment of the people?—I believe we could.

10368. In what way? By means of hydro-electric schemes?—I see a great difficulty about hydro-electric schemes. It seems to me that one of your great difficulties will be the enormous cost of your power lines.

10369. Never mind the cost?—If you are not going to mind the cost, certainly there are possibilities in hydro-electric schemes.

10370. For what purpose?—From the agricultural point of view, pumping water and running gins.

10371. I am only asking about the Agricultural Department?—Pumping water.

10372. Have you ever seen the place where your four big rivers run into the sea in this Presidency?—Yes.

10373. Have you ever observed it?—Yes.

10374. Is there any record of how much water goes to the sea through each of these rivers?—I do not know.

10375. Is that record to be found anywhere in the Madras Presidency?—I should not think so.

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10376. You observed the place just where the rivers fall into the sea? What kind of bed has the river got; is it rocky?—It is bringing down a lot of silt.

10377. But is the bed rocky or sandy?—I do not know.

10378. You say you have observed it?—When I say I observed it I mean I know where they run in.

10379. Are the banks permanent?—No.

10380. Rocky?—It is all sand.

10381. I thought you had no sand. When you turn out your students here do you give them any engineering training?—Yes.

10382. What kind of training?—We have a workshop here and they are given a training in agricultural engineering, the working of oil engines, etc.

10383. That is not so important. If a boy has got land here and he wants to sink a well, would he know how to calculate the power required to pump up the water?—Yes. He is taught that. There is a class in agricultural engineering which deals with all that sort of thing.

10384. You find employment for sixteen of them a year. What percentage go back to the land?—Practically none of them goes back to the land, or very few. One or two have gone back to the land.

10385. Is there any demand for such students by the big landlords?—None whatever

10386. They do not care for them?—They do not employ them.

10387. Why do they not employ them?—I cannot tell you.

10388. Is it not a fact that they have no practical knowledge?—No, I am not prepared to admit that.

10389. Then why do they not employ them? If they found they were useful they would employ them?—Well, would they? One thing is that the big landlords do not co-operate with the Agricultural Department.

10390. *The Chairman:* Are you satisfied that the students themselves desire such employment?—No; they do not.

10391. *Sir Ganga Ram:* Do you not think some scheme would be advisable to give them post-graduate training on practical lines under Government and then try to find them private employment?—No, that would be very wasteful.

10392. That would be an advantage to the country?—I cannot quite see that.

10393. I find from your figures that the whole of your department is costing about 12 lakhs a year?—13 lakhs.

10394. And do you know what the incidence of the land revenue is per head? I will tell you; it is Rs. 1-10-9. Now the 12 lakhs divided among the population only come to two pice per head?—Yes.

10395. Have you at any time represented to the Minister that that means 1/50th part of the land revenue? Have you ever represented to the Minister that he should claim a proper share of it?—Very often.

10396. You are aware of these figures?—Yes; I am.

10397. Two pice per head?—Yes.

10398. And the incidence of the land revenue is Rs. 1-10-9?—Yes.

10399. And therefore your department ought to claim a greater share?—Yes, certainly.

10400. You speak of nature study. Do you mean that plots of land should be attached to the schools?—Not necessarily. I think a plot of land is an advantage to nature study, but I am certain that nature study can be taught in a town; where there are rural schools I certainly would encourage small plots for nature study, but in towns where land is not available I would still teach nature study.

10401. Do you not think that cultivating separate school plots would be unnecessary and would merely be taking them away from doing useful work

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in their father's fields?—No. You want a little school garden in which to encourage the children to work in their out-of-school hours.

10402. Have you any Crown lands in this Presidency, that is to say, lands belonging to Government?—Yes.

10403. What have you?—Forest land.

10404. Cultivable land, Crown waste?—Yes, cultivable waste.

10405. Have you ever attempted to get these lands on lease for the students?—I do not know that it is such a sound proposition as some people think. The cultivable waste lands are waste because they probably would only just pay in a good year; and if you are going to ask students to farm that type of land, it is not a very encouraging proposition. You have got to give them good land if they are to make a living.

10406. Do you mean to say that all the Crown lands are bad?—I do not say they are bad, but they are not the best lands. I do not think if I were a student I should particularly want cultivable waste. It would be pretty hard to earn a living out of it, especially for a young man.

10407. Do zamindars regard proximity to forest areas as an advantage or a source of annoyance?—I am afraid I do not understand that question.

10408. The cattle are liable to be caught while grazing and that sort of thing. In some parts they consider the proximity of land to land under the Forest Department to be a source of annoyance?—I do not think so.

10409. Do the Forest Department keep a reserve of fodder for famine?—No; they do not.

10410. In Bombay the Government keep a large quantity of fodder?—In the form of hay?

10411. Yes. You do not do it?—No.

10412. Do you use any denatured salt as manure for coconut trees?—No.

10413. But in Bombay they do?—I know.

10414. Is that an advantage or not? What is your opinion?—I am not prepared to accept the Bombay results as being applicable to this Presidency. I am making some experiments of my own.

10415. You are carrying out experiments?—Yes. But I would not recommend it. You will find that Bombay are among the few people in the world to say that it is doing good and I am not prepared to accept their results here without further experiment.

10416. If the denatured salt was cheaper (of course I am not talking about the composition) would you say that the owners of cattle would be willing to take it and give it to the cattle?—We always give salt to our cattle, yes.

10417. How much per head; 2 oz., 1 oz. or how much?—I cannot tell you, but we always give it.

10418. It is an advantage?—Certainly.

10419. But of course you buy the ordinary salt which is useful for human beings?—Yes.

10420. Do you think it would be possible to mix it with a chemical so as to make it unfit for human consumption and fit only for cattle?—Would not that be extraordinarily difficult?

10421. I want to know whether that process would encourage the ryot to give more salt to the cattle?—I take it that it would encourage it in that it would be cheaper.

10422. Yes?—I do not see how you can denature salt in such a way that it cannot be used for human beings, but will be fit only for cattle.

10423. Can you suggest any improvement on the indigenous methods of storing grain?—No, I do not think so. In fact we are adopting the last method in the Paddy Breeding Station.

10424. In the Punjab the Agricultural Department takes upon itself the duty of supplying pure seeds. Why should you not do that?—We do it.

10425. I thought you left it to the merchants to do it?—No.

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10426. You have your own agency, or at least some method of distributing it?—Yes; there is no one else who does it. There are no seedsmen. I have to do it myself.

10427. What do you mean by that? You must have some department?—My own department; the Agricultural Department do it.

10428. Do you sell it at bazaar rates or at a little profit?—At bazaar rates.

10429. And who stands the loss?—There is no loss.

10430. The cost of the staff?—The Government.

10431. I once planted in my village cotton trees which came from South India. Are you familiar with those trees?—There are several types of tree-cotton in South India.

10432. Giving good results?—It is a very poor type of cotton.

10433. Not a paying concern?—It is not; it is short stapled.

10434. You have no frost here?—No frost here below Ootacamund.

10435. You introduce artificial manures which at best give 20 per cent. nitrogen. Have you ever thought of tapping nature's store, which contains 80 per cent. nitrogen?—By which I presume you mean making fertilisers from the air?

10436. Either fertilisers or any other method?—Hydro-electrically?

10437. Never mind how?—That matter has been considered by the Board of Agriculture and thoroughly threshed out; the conclusion arrived at was that you cannot compete with Norway in this country.

10438. How many times do you plough for *chulam*?—Once or perhaps twice with an iron plough and two to four times with the country plough. It depends on the land.

10439. Do you know that the more you plough the more you tap nature's store of nitrogen?—That is why one ploughs at all; the whole idea of ploughing is to tap nature's store.

10440. The more you plough the more you are tapping it?—I do not agree.

10441. Have you tried it? I do not want your mere opinion?—It is scientifically unsound.

10442. According to what science?—Soil science.

10443. We have got a proverb in the Punjab according to which the more you plough the more you get?—Proverbs are proverbially untrue.

10444. We do not use an ounce of fertiliser but simply by observing that proverb we get a production which is double yours; I will guarantee double your production?—As a matter of soil fertility there comes a time when there can be no more crop.

10445. Is that supported by any science?—Certainly.

10446. What is it?—Any text book on soil science will explain the point.

10447. *Dr. Hyder*: There are one or two points which I should like to clear up. Is it not the universal experience of mankind that they cannot indefinitely increase the quantity of agricultural produce from a certain area and there must come a time when the increase is not proportionate to the cost it involves?—Yes, the law of diminishing returns comes in.

10448. That is the answer to Sir Ganga Ram?—Yes.

10449. With regard to the export of manures, apart from other aspects of the matter and purely from the agricultural aspect, would you look with favour upon any measure which aims at prohibition of export or would you levy an export duty?—I would favour absolute prohibition in the case of fish and bones and an export tax on oil-cakes; that is what I have in view.

10450. With regard to crop-cutting experiments, are they carried out by your department or by the Revenue Department?—By the Revenue Department. We have no staff with which to do it.

10451. Then I understand that these crop-cutting experiments are not done by you?—We have not done them for a number of years for that reason.

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10452. It is an important matter from the statistical point of view, is it not?—It is necessary. My position is that my present staff cannot do crop-cutting experiments. If I am to do it I must be given a special staff; this I have asked for from time to time. The staff would not be engaged all the year round on that work; it only comes in certain months during harvest time; the rest of the time they could demonstrate. That is the proposition before the Government, but it has not materialised.

10453. Coming to another matter, I suppose you would be in a better position to estimate the total agricultural production if you had staff for the purpose of such experiments?—Certainly; my estimates would be more accurate.

10454. Now with regard to farm accounts, could your Demonstrators compile model farm accounts and get from every taluk one or two people who could fill them in?—It would be very difficult to do so; when you begin to ask for the accounts of the cultivator he immediately grows suspicious and thinks you are going to have his taxes raised and therefore the returns he gives are not correct. If I may develop that point a little, I think a lot of the kind of work you are aiming at could be done by the students of the University. There is a chair of Economics in the University.

10455. As a question of research?—Certainly. If graduates were given scholarships for this purpose they could do it very well. The cultivators are rather suspicious when officials ask them for their accounts; they think there is something behind it and they do not state the actual facts.

10456. *Professor Gangulee*: It would be necessary for people engaged on this research to co-operate with the Agricultural Department?—Yes.

10457. *Dr. Hyder*: You want more money for development here and more money for development in the central institute?—Yes.

10458. You might have one day an Imperial Agricultural College like the one at Trinidad?—Possibly.

10459. Can you suggest methods of raising additional funds for these purposes? Would you be in favour of a cess or an acreage rate? Which method do you think would be more advantageous?—I must admit that I have been in favour of a cess. Sir James MacKenna was good enough to point out that I was probably wrong; I have not given an immense amount of thought to it. An acreage rate has certain advantages. Personally I was for the cess.

10460. Suppose a certain amount of money is raised on the export of rice?—Yes.

10461. That money is to be devoted to research on paddy; it would all go for the benefit of Burma; so Burma could have no grievance?—Quite.

10462. Would you not like to have a permanent fund, that is, a certain amount which would always be available, rather than a fund which would be dependent upon the surplus available for export which might disappear and would always vary from year to year?—Yes, I would.

10463. There might come a time after five or seven years when your income and expenditure might not balance?—Yes, I see the point.

10464. With regard to the sending of young Indians to foreign countries, I take it that you would only send such students as are likely to be useful in research?—Yes.

10465. And I take it that you would send members of your department who have got some practical experience?—Yes.

10466. Do you not think it would be better to catch bright young students, first class graduates of the Madras University who have received a broad training in natural science and have specialised in science, and send them to some University or institute in a tropical country like Trinidad, rather than send people whose habits of mind are settled?—No, I do not agree to that; I want experience in the department first. I would rather not send a man until he has had seven or eight years' training, so that I can be perfectly sure that he is the man I want for the job.

10467. Then send him to England?—Whatever place is best for the particular purpose. We have just sent a man for training in paddy-breeding under Professor Biffin; I have sent him to the man and not to the place. Rothamsted happens to be in England and is the best recognised agricultural station in the world; but if necessary the student may be sent to Germany or America or wherever the best training for the job could be had.

10468. To learn the process of research, not necessarily research in paddy in particular?—Not necessarily for paddy. In this particular case I want him to learn genetics and nowhere else can that knowledge be acquired better than under Professor Biffin at Cambridge.

10469. *Dewan Bahadur Raghavayya*: You have referred in your evidence to the co-operation in different measures which you have received from different departments?—Yes.

10470. May I know what is the attitude of the Revenue Department to your work and to your department?—The Revenue Department is a department with which we very seldom come in touch at all.

10471. Is it not the largest department and the most in touch with the ryot population?—True.

10472. Should you not think of utilising the Revenue Department in pushing your own objects, for instance, in your propaganda work, in seeing that the results of your laboratory work reach the ryot?—I do not quite see how that could be done.

10473. It may be done this way. Supposing as Professor Gangulee mentioned on Saturday, the Revenue Inspectors and the Tahsildars could be recruited from men who have taken degrees in your college? Another way of securing greater co-operation and greater interest in your work from revenue officers is to give them training in agriculture; a short training it may be, but sufficient to awaken their interest in agriculture?—That could be done; yes.

10474. More than 30 per cent. of the men working as Tahsildars and Deputy Tahsildars are graduates; and you agree that they could be given an agricultural training which would awaken their interest in agriculture, and would improve the work of your department?—I agree to all that in general principle.

10475. Do you not further think that, occupying the position he does, the Collector of the district should be more in touch with the work of your department than he is at present?—The attitude of the Collector in a district towards the work of my department makes a good deal of difference; it is very important that the Collector should be interested in agriculture; where the Collector is interested I can do a lot; where he is not interested I cannot do so much. I am very happy to say that a great many of the Collectors are extremely helpful to me.

10476. At present the Collector is not in any way connected with the work of your department, except perhaps that he officially visits some of your experimental stations?—That is so.

10477. Could not the correspondence of the Deputy Directors of Agriculture to headquarters pass through the hands of the Collector? Would not that stimulate the Collector's interest in Agriculture?—No, I do not think so; I should think he would look on it as an addition to his work and a nuisance. It would have the effect of overburdening him with work and the advantages would not be very great. We get from the Collector information and help on all points where we require it.

10478. That is not my experience as a Collector in regard to work connected with the Police or the Forest Department?—But this is not his work; he cannot look with favour upon any addition to his duties; he has a lot of work to do as it is.

10479. There must be certain duties that he should do, and this will be one of them?—I am not in favour of adding to the burdens of the Collector.

10480. *Dr. Hyān*: The Collector is primarily concerned with law and order and revenue?—Yes.

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10481. *Dewan Bahadur Raghavayya*: But he is also concerned with the economic condition of the people. You are not in favour of compulsory education?—No.

Do you know that there is a very big movement for universal compulsory education in the Presidency, that the District Education Councils receive many applications for the opening of new schools, and 15 of the Municipal Councils have adopted compulsory primary education as their policy?

Mr. Calvert: That is in the urban area?

Dewan Bahadur Raghavayya: Yes, and in the rural areas the number of schools giving primary education has been increasing very rapidly.

Professor Gangulee: Do you get a sufficient number of teachers?

Dewan Bahadur Raghavayya: That, I think, is the difficulty; there is a number of training institutions, and I believe their number is being slowly increased.

The Chairman: Do you notice, Dewan Bahadur, that the witness has not answered your question?

10482. *The Witness*: I did not realise that it was a question. You were making a statement of fact. Do you ask me whether I approve of it? Is it not an argument in favour of my view? Those districts in which there are many applications for new schools have reached the stage when there should be compulsory education. They come forward and ask for it; that is exactly what I would like; I would not use compulsion in those districts which have not reached that stage. The point is they should come forward and ask for it when they are ready for it; but do not compel those who have not reached that stage.

10483. *Dewan Bahadur Raghavayya*: Your argument is that there will be universal education without compulsion?—Ultimately, without compulsion.

10484. Will that be soon?—I cannot say how soon.

10485. I notice that the average size of a holding in some of the districts in North Arcot and South Arcot, for instance, is below 3 acres?—Yes.

10486. And there are 5 million *pattadars* in the Presidency holding among them 9 million acres of land, which averages less than 2 acres per *patta*. Do you not think the question of consolidating holdings, or creating economic holdings by the consolidation of small-sized holdings, is one which has got to be very seriously considered?—I think it has. I think it is going to be extraordinarily difficult, but I am not opposed to doing it.

10487. You are not opposed to compulsory consolidation?—I am opposed to any form of compulsion; I think it can only be done by education and persuasion. I think if you start compulsion, you will raise serious opposition and you will have to abandon it. Either do it voluntarily, or not at all; that is my opinion.

10488. From your experience of the working of the co-operative societies in this Presidency, do you think the co-operative societies could be used to start the movement for consolidation?—I am sure they could; you have the agency there. It is for that department to do it, not for the Agricultural Department. It is a co-operative job.

10489. You were complaining that minor irrigation works were being neglected?—Yes.

10490. Do you think if you entrusted the restoration and repair of those works to non-official bodies like the co-operative societies and village *panchayats*, the work would be done well and efficiently?—No; it would be done in some places but not in others. We come back to my old statement that some are doing good work and some do nothing; and if we entrusted it to them, we should not get much done.

10491. Do you not know that even now, where co-operative societies and village *panchayats* have come into being, the *ryots* undertake the work if the revenue officers encourage them to do so, and carry out those works much

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more economically than would otherwise be the case?—Exactly; that is my point; if the revenue officers take some interest it makes them do a lot. I want to see that they always do take that interest; not only very often, but in every case. There should be a separate revenue officer attached to the Irrigation branch of the Revenue Department for the purpose.

10492. Have you made any systematic investigation into the quality of the soils of these 2½ million acres of cultivable waste in this Presidency?—No, not a special survey of it, but we have made five complete surveys in five different districts of the Presidency, and in that will be included this cultivable waste.

10493. Not necessarily?—It may or may not be.

10494. Your investigation is confined to delta districts?—Yes; but the soil of cultivable waste would be included if there were any.

10495. But the bulk of the cultivable waste will not be?—We have made a large number of soil analyses, and if you want an analysis of any definite soil we have probably got it.

10496. It may be poor soil, but if it is soil which can be cultivated, do you not think a scheme of land colonisation, not necessarily by students, but by educated youths, should be investigated and started if it is feasible?—Yes, certainly investigated, and started if feasible. But my point is that the waste land at present out of cultivation is often out of cultivation owing to the fact that it is poor land. To give that land to a batch of students, or whomsoever you want to put on the land, is not a particularly generous kind of gift.

10497. Is not the non-cultivation of these lands really due to the fact that cultivation is not carried on on scientific lines and that the necessary amount of capital is not brought to the aid of cultivation?—Not in all cases, I think.

10498. But in some cases?—In some cases, I agree. I have no objection to having it investigated and started if feasible. My doubt is as to its feasibility.

10499. Have you tried to cultivate tapioca on the East Coast, as you have grown it on the West Coast?—We have grown it on the West Coast; but it does not grow well on the East Coast. You will find that it needs rather rich soil.

10500. On the West Coast of the Presidency it grows generally on poor soils?—But then what apparently is poor soil on the West Coast is not always poor; if you put water on that soil it may be extremely rich. The difference in fertility of the same type of soil on the East Coast and the West Coast is very largely a matter of rainfall. In Malabar you have an average of 120 inches while on the East Coast you have got an average of 23 inches. If you take the same type of soil on the two coasts, that on the West Coast would be found to be more fertile on that account.

10501. In the Circars in the North of the Presidency, there are some large areas which are subject to water-logging and submersion?—Yes.

10502. Is there any scheme for the reclamation of those areas by pumping out the water, as is done on the West Coast of the Presidency?—I believe not.

10503. In regard to the appointment of Indian officers under the Agricultural Department, I cannot reconcile what you told Dr. Hyder with what you have stated on page 34, paragraph 14, of your written reply. In the written statement you say: "It is necessary in the first place to recruit European research officers to start the work and train their own Indian assistants who can ultimately take their places." I understand that the stand you now take is that you will recruit graduates either from your own College or from the Arts Colleges, employ them in your own department for a time, and if they are promising you will send them to another country or to any expert under whom they can get a proper training for the work they have to do. That strikes at the root of your opinion expressed in the written statement that European officers should be recruited for research?—I fail to follow that.

10504. In your reply you accept the policy of Indianisation, and you say that the way in which you would recruit your research officers is to take

Indians and train them for a certain time here in your department and then send them out to places where they can get the best advanced training?—Yes.

10505. Then, there will be no need for your European research officers?—Your starting point must be the European officer, because you have not got enough sufficiently trained Indians.

10506. Are not your present Indian officers, who are experts, and are doing research work in different departments, trained already?—They have been trained by European officers.

10507. Granting that, are they not capable of training the Assistants under them, so as to make them fit for going out for advanced training in other places?—Not sufficiently well.

10508. Your starting point in this Presidency was European officers, a big staff of European officers and men with pretty big names. They trained as Assistants these Indian officers, who have now taken their place?—I do not think that the Indian officers who have taken their places can train other Indian officers sufficiently well. I still want to send them home. The starting point is the European officer.

10509. *Mr. Kamat*: You say you want to train Indians who can ultimately take the places of the Europeans. By "ultimately," what do you mean?—In course of time.

10510. About how long?—I am not prepared to lay down any hard-and-fast time. If you want to know how long I think it will be before you can really and efficiently replace the whole of the European research workers in this country by Indian trained officers, trained sufficiently well, I should put the figure at round about 30 or 40 years.

10511. By that time you think that an Indian may take the place of the Director of Agriculture?—Yes, I think so, but probably not till then.

10512. *Devan Bahadur Raghavayya*: Am I to take it that even the preliminary training which an untrained man in your department should get in this country has to be given by European officers?—In research, yes; post-graduate and research training should, I think, at present be done by European officers, as far as possible; there are exceptions, but they are very few.

10513. *Sir Ganga Ram*: There is a certain amount of well irrigation in this Presidency?—Quite a lot.

10514. Is it done by bullocks or by oil engines?—It is done by both.

10515. Can you say how great an area they command?—Yes; if you will be good enough to refer to the statistical Season and Crop Reports, you will find all you want to know about it. I cannot carry all these figures in my head.

10516. Is it a paying proposition to pump up water?—That entirely depends on the well.

10517. Or on the nature of the crop?—It very largely depends on the well, it does not pay to put up an engine and pump on a well which pumps dry in a few hours. If it is a good well and has a big supply of water, it will be a paying proposition.

10518. To what depth do you pump? What is the depth of the wells?—From 30 or 40 to 60 feet; it does not matter.

10519. It must matter?—Of course there is a limit to the depth from which you can pump water; you can pump up to the limit to which your pump will yield water.

10520. Is there any special kind of crop that you can grow? In Chatterton's book on Lift Irrigation you must have read that with well irrigation you can get Rs. 2,000 per acre by growing certain crops. What are those crops?—I should like to ask him, what they are?

10521. Have you read the book?—Yes; he is probably referring to sugarcane, but his figure is far too high.

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10522. Have you got any analysis of borings? Do you take borings of the soil?—Boring is done by the Industries Department.

10523. Where can I get the information as to the results?—You mean the samples?

10524. The nature of the soil down to 300 feet?—The Industries Department do the boring.

10525. That is not under you?—No.

10526. Can you tell me the analysis of the soil before and after growing each crop? What chemical properties does it retain, and what chemical properties does it lose?—I can tell you what food crops take out of the soil.

10527. What does paddy take out of the soil?—I can give you that figure; it is one of the things I happen to have in my head. I will take a crop of paddy, straw and grain of 2,000 lbs. per acre.

10528. What is it per acre?—32 lbs. nitrogen, 15 lbs. phosphoric acid, and 27 lbs. of potash.

10529. Have you got these figures for every crop?—Not for every crop, but for all the important crops.

10530. How much is it for *cholan*?—I think my Chemist would be able to answer that question.

10531. How do you propose to replenish all that loss?—By manure.

10532. But these people could never use so much manure. How does the poor ryot replenish the soil? Of course his soil also loses the same chemical properties?—Yes.

10533. How does he replenish it?—He has got to go back to the methods of doing it, which we attempted to show you this morning.

10534. May I know what other method he can adopt except artificial manure?—Better methods of cultivation, better preservation of village cattle manure, increase of the cattle manure by making synthetic farmyard manure, turning all his refuse and, as far as possible, night-soil, into manure that can be handled, and introducing artificial fertilisers.

10535. Have you got any returns of imports and exports of food grains?—Yes.

10536. I see from the papers that you export onions to Karachi and Rangoon. Do you grow large quantities of onions?—Quite a lot.

10537. One crop or two crops?—One.

10538. When does it mature?—Just about now, I think.

10539. I will tell you why I ask the question. In the Punjab we import a large quantity of onions, which are called Karachi onions. We grow only one crop of onions in April, and it becomes useless in the month of October. I think you might consider the question of exporting onions to the Punjab. Do you produce sufficient potatoes for your requirements?—No.

10540. Do you import them?—Yes.

10541. Why cannot they be grown here?—We have not got sufficient area in this Presidency suitable for potatoes. They will not grow on the plains; they are grown on the hills.

10542. *The Raja of Parlakimedi*: Are not potatoes grown as a garden crop?—Yes, they are grown as an irrigated garden crop, but that hardly pays.

10543. *Sir Ganga Ram*: Do you import potatoes from Italy?—They come from Italy through Bombay; our biggest import comes from Bombay, and it probably comes from Italy.

10544. Supposing you got an enormous amount of funds, could you give us a three years' programme of research?—Yes, certainly; if you tell me what amount of money I can have, I will tell you how I propose to spend it.

10545. Could you tell us what amount of money you would like to spend on what research?—Yes.

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10546. We were shown these marvellous results obtained by your department at the cane breeding station. Can you tell me how much water they use?—That is a question which, I think, must be referred to the people who are running the station.

10547. Could you tell us what depth of water they require, how many inches?—I am afraid I cannot tell you that.

10548. Does anyone control the quantity of water they use?—The Irrigation Department control it, and they have their own wells.

10549. Do they control it?—Yes.

10550. Your breeding station would not be allowed to take more than is allotted to them?—They would have the water stopped like anybody else.

10551. Can you give me any information as to the depth of water required for maturing *cholam* and other crops, supposing the crop were on wet land?—We could tell you.

10552. Can you make out a statement of that?—Yes.

10553. Please make a note of that. If, by means of power created by falls, you could pump up water over the whole of this Presidency from the rivers, at a cost not exceeding Rs. 100 per acre, would that be a good proposition?—I should think it would be an excellent proposition.

10554. Would not that appreciate the price of land?—Yes.

10555. What is the price of dry land now? Is it Rs. 40?—Say, Rs. 40.

10556. Supposing it became wet land, what would its value be?—For paddy land, it may go up to Rs. 3,000 to Rs. 4,000 per acre in the deltas.

10557. That would be the extreme limit. If ordinary dry land were converted into garden land, by how much would the price increase?—It would increase from Rs. 40 an acre to Rs. 300 to Rs. 400 an acre.

10558. *Dr. Hyder*: Have you large and perennial rivers in the Presidency, besides the Godavari and the Kistna?—Yes, there is the Cauvery.

10559. They are perennial rivers?—Yes; they are very big rivers. Of course, there is very much more water in them in the monsoon, but they are perennial rivers.

10560. *The Raja of Parlakimedi*: You have just told us that the Telugu districts are not taking full advantage of this college. I think the distance is also a factor to be considered, is it not?—I do not think so. We have a good system of railways in the Presidency, and the distances are not very great. If you will look at the map at the end of my Administration Report, you will find that Coimbatore is fairly central.

10561. In comparison with the northern parts of the Presidency is that so? What about the people coming down from Ganjam?—It is a little way from Ganjam, but it is not an enormous distance; I do not think that is a factor that keeps people away.

10562. It does in certain respects. Would you have any objection to having sister institutions teaching up to two years provided at different centres?—Up to the second year? It is a three years' University course, which I cannot interfere with.

10563. They can come to your college for their final year's course?—I do not think it would be possible to teach them for two years in local institutions and finally for one year in this college.

10564. You might give them some sort of tuition?—I do not think so.

10565. There is an intermediate course up to a certain stage?—Here it is the final University degree course; there is no intermediate course here. You cannot take the final course and get a degree until you pass your intermediate, but we do not teach an intermediate course in the college; there is no agricultural intermediate course; we tried to get one, but failed; the University would not give it to us.

10566. I am suggesting two more colleges for the benefit of the Northern Circars and the Tinnevely district; that is my idea. What do you think of

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it?—I have been told that this college is so costly, and more costly than it ought to be for the few students we have; if the proposal is to have two more such colleges, it would make it still more costly.

10567. If the funds were available, would not that be the best idea?—It seems to me that to have three colleges to teach 40 students a year is a very expensive proposition.

10568. As regards demonstration farms, have you any objection to increasing their number?—I want a very much larger number of them, but I must have the staff for them. A Demonstrator can only look after a limited number; the two things should go hand in hand; if we have more demonstrations, we must have more Demonstrators.

10569. Do you in the farms which you now have concentrate upon the important crops grown in their areas?—Are you speaking of experimental stations?

10570. Yes?—I concentrate on the important crops in the area. Each farm is there for a definite object, and has a definite programme of work before it.

10571. Is not demonstration conducted on the farm?—No, you cannot demonstrate on an experimental station.

10572. Do you ever invite the enlightened ryots and landholders to the station?—We do, but they seldom come; they apparently think that we do something on an experimental station which they could not do on their own land. That is why we have adopted the system of demonstrating improvements on the ryots' own lands.

10573. In this college, apart from sugarcane and cotton why do you not experiment upon oil-seeds or ground-nut?—We are doing that somewhere else. I have an experimental station devoted to ground-nut.

10574. And castor and gingelly and so on?—We have not done that yet. You must remember that this central farm is mainly for teaching and not experimental purposes.

10575. The study of oil-seeds is very useful for agricultural students?—We are not experimenting, we are teaching. As far as Coimbatore farm is concerned, we have a specimen of every crop in the Presidency as far as it can be grown here.

10576. For teaching purposes?—For teaching purposes, so that the student knows what each crop looks like.

10577. Could not Government scholarships be earmarked for different communities, including the depressed classes, in the different centres of the Presidency?—I have two scholarships for the depressed classes in this college.

10578. How many have you altogether?—Two for the depressed classes, one for Mohammedans, two for what we call poor and deserving students, of whatever community, and one for the best student of the first year class. He wins the scholarship for the next two years.

10579. For soil analysis have you got all the necessary equipment?—Yes.

10580. Do you take up any cases of soil analysis on behalf of private applicants?—Yes.

10581. Have there been any?—A good many.

10582. From different parts of the Presidency?—The ryot does not usually have his soil analysed. Most of the work comes from the planters. We charge a fee, of course.

10583. What is it; is it nominal?—No, it is Rs. 25.

10584. That depends on the soil?—It depends on the kind of analysis you want made. It costs more to make a chemical than a physical analysis.

10585. *Devan Bahadur Raghavayya*: Is it not Rs. 5 for a *bonâ fide* ryot?—Yes, he gets a discount for the ordinary analysis. But if you want a full chemical and physical analysis it costs Rs. 25 and the *bonâ fide* ryot gets a concession, paying one-fifth of the fee only.

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10586. *The Raja of Parlakimedi*: For departmental employment do you not reserve all the best students available in the college?—When I give appointments I take the best, yes.

10587. But the percentage of the best is such that generally all the best students are taken up by the department. They are not available to private employers?—You mean to say that I am competing with the private employer?

10588. The number of men required for the department is so great that all the best men are taken up?—No. This January I have taken 40 students. I am not going to have 40 appointments next year. I may get 10 and I will be lucky if I get that. I should take the ten best, if that is the question you ask.

10589. Among the students there are different grades and the best are taken by the department?—Naturally I take the best I can get.

10590. *Mr. Calvert*: The best you can get on the pay?—Yes, on the pay.

10591. *The Raja of Parlakimedi*: For instance, if a private man requested you to lend the services of one of your best students on all the conditions enforced by the department, would you spare one?—No, I cannot. But I tell you what I would do and have done in a few cases. If you tell me that you are going to employ a man on your estate and you would take one of the best students, in the next examination in June I would let you have the best student willing to come to you before I began to take any at all, and I would promise you that if you are going to give him a good job I will tell him that I will not give him a Government post. I have done that in one or two cases but the students themselves regard it as a hardship that I should do it, I am afraid.

10592. *Professor Gangulee*: But has any landlord in this Presidency appointed one?—There are just one or two men who have been appointed.

10593. *The Raja of Parlakimedi*: Do you try to visit all parts of the Presidency yourself?—Yes, as far as possible, after attending to my administrative duties. I try to get out every month.

10594. Do you go as far as Ganjam?—I have been to Ganjam.

10595. How long ago?—Three years ago. I cannot get round the whole Presidency in one year. My administrative duties tie me very much.

10596. You think the area is very much larger than you can cover?—It is, if I have all the administrative duties to do. I cannot do both. The Director of Agriculture is loaded up with a tremendous lot of office work; he sits on committees and has a lot of administrative work. Anything that relieved me of that would be welcome.

10597. Would you not increase your Assistant Directors or Deputy Directors to do the work of gathering information as to what is wanted in different parts and so on? I believe that is the reason why you tour about now?—I visit the districts to see that the work is being properly done.

10598. And to gather information?—Yes; as I go round inspecting I also ascertain the requirements of a district. I go first of all to see that my departmental officers are doing their work and I try to meet as many people as possible, talk to them and find out what they want. I ought to be able to do a lot more touring, but office work keeps me very much tied to headquarters. Anything that would remove office work from me and let me tour I should welcome.

10599. *Mr. Calvert*: What would you suggest?—The only suggestion I have to make is a personal assistant of the standing of an officer of the Indian Civil Service to whom I might be allowed to delegate a lot of office work.

10600. *The Raja of Parlakimedi*: Do not you receive complaints from your Deputy Directors and Assistant Directors that they also cannot cope with the work because of the large area under them?—No, not so much on account of the area. They say that more and more office work is called for and there is too much office work. We now come under the pre-audit system; consequently there is a lot of additional correspondence about that, and they complain.

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that it takes too much of their time and they cannot travel as much as they would wish. I think the area is all right in most cases.

10601. Increased office work is the trouble?—Yes, it has a tendency to increase.

10602. So you feel that there should be supplementary appointments? Would you welcome supplementary men?—I would welcome myself a personal assistant of a higher grade than the present one. I would like an Indian Civil Service man who might take over a definite part of the office work.

10603. Does your department take full advantage of the information available at the revenue offices?—I hope so.

10604. When you go round you also make it a point if possible to meet the District Collector or the Sub-Collector?—Always. I always make it a duty to meet the Collector if I go to his headquarters or his camp and if possible to meet the Sub-Collectors.

10605. Is there a standing order for all grades of officers to meet their equals and so on?—There is no order on the subject, no.

10606. Is there a general understanding at least?—I cannot speak for other officers. Personally I always do it and I believe all the Directors of Agriculture have done it. I know my predecessor did it.

10607. Because you must admit that the revenue officials come more in contact with the ryots and they are bound to know their requirements?—I agree, and the revenue officials are very good. When I want information I go to them and I get it. I have no difficulty about that.

10608. Then on page 37, in answer to question 2, I take it that it is just a general statement when you say: "The big landholders here do not co-operate in the cause of agriculture and cultivation is always better in ryotwari areas"?—It is not a general remark; it is a statement of fact, I believe.

10609. Have you not come in contact with cases in certain zamindari areas where the zamindars are really carrying out very much better work than the work done in ryotwari tracts?—Very seldom; I know of very few cases.

10610. But there are cases?—There are cases, yes. There are always exceptions to every rule. In that sense it is a general remark. I see what you mean. I do not mean to say that there are no exceptions, but the exceptions are very few.

10611. If the department really co-operated with the landholders in meeting their necessities and complied with their requests, do you not think the exceptions would have been very much more numerous?—In what way?

10612. If you complied more freely with the requests of the landholders?—I never get a request which I do not comply with if I can. The trouble is that I do not get such requests. That is what I mean. Most of the landholders do not even live in their villages and how can I get in touch with them?

10613. There are many in this Presidency at least who do live in their villages?—Most of them do not. They are absentee landlords.

10614. I suppose it is different in different districts?—It is..

10615. As regards promoting co-operative sale of produce in villages, what is your opinion about making your demonstrators take up that work also?—The demonstrators have much more work than they can manage now and I do not think you can add co-operation to their duties; we have already a department for that.

10616. To teach the ryot the benefits of co-operation?—We do preach co-operation everywhere.

10617. What are the prospects of the best student of this college when he has obtained all the official qualifications possible?—In Government service?

10618. Yes?—His prospects begin with the post of an Agricultural Demonstrator or a Farm Manager of an estate or an Assistant on the research side.

10619. That is the highest he can reach?—That is the lowest he can start with.

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10620. What is the highest?—Director of Agriculture, I suppose.

10621. That requires foreign training, does it not?—There is nothing now under the present system that I can see to stop him from going to the top and becoming the Director of Agriculture.

10622. Even without going abroad?—I see nothing to stop him at present, if he is good enough and brilliant enough.

10623. *Professor Gangulee*: It is a question of efficiency?—He has got to pass the efficiency bar somewhere. The Imperial Service having now been converted into a Provincial Service, there is nothing between him and the top.

10624. *Rao Bahadur Muniswami Nayudu*: As regards organic manure potentialities, have you conducted experiments as regards the relative merits of cowdung manure and synthetic manure?—I do not know that definite results are available as yet, but what happened is that we tried each side by side.

10625. Do you think cowdung is the better manure?—Yes.

10626. In preference to the other?—Cattle manure, if properly made, is the best of all manures; if it is only village rubbish it is not particularly good and artificial manure may be better.

10627. What about penning sheep?—That is an excellent farming practice.

10628. Is it better than cowdung?—I will not say that.

10629. *Sir James MacKenna*: Is it not a fact that to-day the research which we have seen in the Research Institute is being done by Indians who were trained under Europeans?—Yes.

10630. And the specialist officers are Europeans?—Not all of them.

10631. Paddy is under a European?—Paddy is and cotton is, but sugar is not and millet is not.

10632. In any case the policy is that those who are to take up work independently ought to be sent either to England, America or Germany according to what work they are doing?—That is what I wish.

10633. Would you say that method of training is better and more desirable than other methods? Would you say that that method of training is desirable whether an Indian officer has been trained by a European or an Indian?—Yes, it is still necessary.

10634. As far as the training is concerned the present Indian staff has no complaint?—Certainly not.

10635. Is it not a fact that the best scientific workers at home are always anxious to have the benefit of foreign research, whether in Germany, America or elsewhere?—Certainly.

10636. So that sending students abroad is no reflexion on their capacity?—Certainly not.

10637. *Professor Gangulee*: May I refer once more to your work on soil survey? I think the Madras Presidency is the only Presidency which has carried out this work in several districts? Under whom was it carried out?—It was begun under Dr. Harrison. He was the first Agricultural Chemist. Dr. Norris followed him. Mr. Viswanath is the present Agricultural Chemist.

10638. You have surveyed five districts?—Five districts.

10639. It is a big area?—Yes.

10640. How long did it take?—We began the work in 1908.

10641. Can you give the Commission an idea of the cost involved?—No.

10642. You consider soil surveys are necessary for the proper guidance of cultivation in matters of farm practices?—Absolutely essential.

10643. Practically throughout India?—Yes; once it is done, it is done for ever.

10644. Did you undertake both mechanical and chemical analyses of soils?—Yes.

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10645. In view of phosphatic deficiency I should like to know the approximate quantity of phosphatic manure used in the Presidency. You give figures for one circle?—It is extremely difficult to get that figure. It is sold as bone and super and in other forms and a lot is sold to planters.

10646. On page 33 you say, "Dr. Hutchinson's work on the effect of sulphur bacteria on making phosphates soluble in composts was a fundamental problem and is capable of infinite development." There you raised the point that it was rather difficult for you because there was no organisation for following it up. What are the impediments under the existing system?—The point I wish to make is this. You have a piece of work like this done at Pusa. Dr. Hutchinson says: "This is a good thing; I wish all Provinces to take it up." But there is this difficulty: supposing the Director of Agriculture or the Agricultural Chemist does not agree or will not be worried with it, what is going to be done to persuade him to do it? Does the local Director sufficiently realise the importance of the thing as he would if he had a central organisation which was considered to be a body of experts to advise him? In such cases it would be advantageous for them to meet and discuss the matter; that is my point.

10647. The central advisory body would impress on the provincial officer the necessity of this work, if Dr. Hutchinson did not succeed in doing so himself?—That is my opinion.

10648. The central advisory board would convince the provincial worker: is that it?—That is my personal opinion.

10649. You would not invest the central body with any executive power, but merely with advisory power?—Merely advisory.

10650. Like your Board of Agriculture?—Yes.

10651. Turning to the question of seed distribution, am I right in concluding from your replies that there is no effective organisation outside the Agricultural Department for that purpose?—There is nothing.

10652. You had no response whatsoever from the co-operative societies?—That would be too sweeping a statement.

10653. You cannot rely too much on that source?—I cannot.

10654. With regard to demonstration and propaganda, the success hitherto obtained is not quite encouraging, that is to say, your efforts have not made much impression on the majority of Madras cultivators. Do I understand you aright?—I do not quite follow you.

10655. For seed distribution you agree there is nothing except your department?—Yes.

10656. With regard to demonstration and propaganda, I want to know whether I am right in thinking that your efforts have not made much impression on the ryot, on the man with six acres?—I do not agree. I think that is the very man we are getting hold of.

10657. What about the ryots with large holdings?—No, we are getting hold of men with small areas.

10658. The general impression I gather from your note in regard to agricultural education designed for rural areas is that you do not think that any significant progress will be made in the near future. Of the two schools that you started one succeeded. So that you do not present a happy picture in the matter of agricultural education in rural areas?—I am pessimistic about it.

10659. So the position is this: while on the research side you have certainly made distinct progress, the organisation for seed distribution, education, demonstration and propaganda is very deficient. Am I right?—Yes, exactly.

10660. In the case of research you feel the need of a central advisory body. Do you think that a similar body may be of some use in instituting better organisations for demonstration and propaganda and rural welfare work in

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general?—I find it very difficult and I do not know whether any central body could help.

10661. You feel the need for a central body in respect of research?—That is a different body.

10662. I want to know whether there is any necessity for a central body for propaganda and education?—No, I can do my propaganda myself if I get sufficient men and money.

10663. What are your views as to the possibilities of utilising the local bodies created by the Local Self-Government Act such as the Local Unions, District Boards and so on? Do you look to these bodies as being of some assistance to your department?—Very little.

10664. You do not anticipate the time when these can be made very effective bodies?—Not for a very long time, if ever.

10665. As regards the question of the utilisation of cultivable fallow land, which was referred to by Sir Ganga Ram, do you not envisage a time when it will have to be faced?—Undoubtedly; but settlement on such lands should not be effected by giving students or labour colonies grants.

As for difficulties, I may quote here what a group of Danish peasants once told me: "God made the seas, we made the land."

10666. *Mr. Calvert*: Is there a separate faculty for agriculture in the University?—No faculty.

10667. Who draws up your curriculum?—We have what is known as a Board of Studies for Agriculture in the University. The Board of Studies for Agriculture in the University controls the curriculum.

10668. Who does the examinations?—The Board of Studies nominates the examiners.

10669. What is the composition of that Board?—Partly agricultural and partly non-agricultural.

10670. Is this Board of Studies appointed entirely from within the department?—No, outside people also.

10671. Is the majority from the department?—No, the minority. I am on it; the Lecturing Chemist Mr. Sivan is on it, and others from the department.

10672. Who is the Chairman?—The Chairman happens to be the Lecturing Chemist at the moment. The Board of Studies elects its own Chairman.

10673. Do you have external examiners?—Yes; we have two kinds of examiners, one internal and the other external. The internal man is only allowed to examine in the practical work; the theoretical papers are set by outside men.

10674. What do you mean by outside men?—We borrow from the Madras Presidency, Mysore and Travancore.

10675. The practical paper is set by the Lecturer?—Yes.

10676. Does the Lecturer see the draft paper set by the outsider?—No; it was the case at one time, but that has been stopped.

10677. *Dr. Hyder*: Have you not got a system of moderating papers?—There is a Board of Examiners, and they have to pass the examination papers.

10678. *Mr. Calvert*: Are you satisfied with the control of the examination?—Yes; I think it is well controlled.

10679. *Mr. Kamat*: To Sir Ganga Ram, you said that boring work in this Presidency was under the Director of Industries?—Yes.

10680. Have you an Agricultural Engineer?—Yes, we have.

10681. Does he not understand boring?—No.

10682. I think in Bombay the boring work is done by the Agricultural Engineer?—We had that system at one time; we found it did not work well, and we have transferred it back.

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10683. Who looks after improvements in the design of implements: is it the Agricultural Engineer?—At present that post is not filled; I am awaiting the appointment of a Research Engineer; at present we have not touched that problem.

10684. Have you any Indian firm manufacturing implements, like the Kirloskars who manufacture ploughs and sugar mills?—None very large; very small ones we have.

10685. As to the training of Indians, is it not a fact that instead of resenting it or feeling it a reflection on them, Indians are going to England and foreign countries for higher training?—Yes; I am glad to say many of them do.

10686. And you told us that it would take 30 or 40 years for them to fit themselves for higher posts such as that of Director of Agriculture; that is your estimate?—Yes.

10687. Is it correct for me to say that in the adjoining State of Mysore, all the higher posts in the Agricultural Department are held by trained Indians?—Yes, now.

10688. And with efficiency?—In my opinion, no; I would not say the Mysore Agricultural Department was efficient.

10689. What the Indians here aspire to is to speed up the process you have in mind?—Yes.

10690. *The Chairman:* I think you agree that silage may solve a very considerable part of the ryot's problem in relation to cattle?—Yes.

10691. How much silage have you in the pit at the dairy farm at this college now?—I am afraid I shall have to ask and find out.

10692. Do you know whether the making of silage is taught at Coimbatore?—Yes; it is taught at Coimbatore.

10693. Then I may take occasion to disabuse the mind of a witness, who has put in a note and will appear before the Commission, on that particular point. Do you think that the finished product of your college here lacks commercial experience when he leaves the college?—Undoubtedly; he has no commercial experience.

10694. If he has to go back to the farm, then it is a great handicap?—I agree.

10695. If he goes back to the farm, he must of necessity acquire commercial experience before he is on his farm very long?—Yes.

10696. But if he goes into the public service, he does not acquire such commercial experience?—No.

10697. Do you think that advice on technical matters from one who has no commercial experience would be as palatable to the ryot and is as likely to be accepted and followed by the ryot as would advice from one whose experience and knowledge are not merely technical but commercially practical as well?—No; the latter would be very much better.

10698. Have you considered the possibility of having a farm attached to the college on which the commercial side of farming would be taught?—No; we have not considered that.

10699. Would you recommend any such thing?—I should like it, but one difficulty would be that it would imply increasing the cost of the course to the student. Anything that implies increasing the actual cost of training should be ruled out, because the course will become too expensive for the students. I would rather like it to be post-graduate training; I would like to have a man after I had appointed him going in for such farming. Do I make myself clear? I was thinking of the large amount of increase in expenditure involved in the substitution of a four years' course for a three years' course. If we did that it would not be popular because it would increase the cost of education. If, on the other hand, after we have appointed a man to the service and he is being paid by the State for his job, we could give him more training on the lines you suggest, I would like that very much.

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APPENDIX II.

Figures showing the benefits obtained from the application of manures in the Madras Presidency.

I.—VIZAGAPATAM DISTRICT.

Paddy.—Green manure and bonemeal.

The following results have been obtained on ryots' own land:—

Year.	Area.	Cost of green manure.	Quantity of bonemeal used.	Value of bonemeal.	Yield obtained.
	Acres.	Rs.	Cwts.	Rs.	lbs.
1923 . . .	16	60	nil	...	37,228
1924 . . .	16	60	4	24	43,624
1925 . . .	16	60	7	42	49,200

The yield from this land prior to the use of green leaf and bonemeal is not known, but judging from the adjacent lands, it must have been about 32,800 lbs. The increased profit produced by the manurial treatment is about Rs. 8 per acre.

II.—GUNTUR DISTRICT.

Paddy.—Phosphatic manures by themselves and in conjunction with organic manures.

The following results have been obtained on ryots' own land:—

Year.	Manure.	Yield per acre.		Value of manured crop.	Extra cost of cultivation and manures.	Net profit.
		Grain.	Straw.			
1926		lbs.	lbs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1	No manure . . .	504	2,050	...	...	...
	3 cwts. super . . .	2,352	2 500	75 0 0	19 15 0	55 1 0
2	No manure . . .	1,092	1,500	...	...	...
	2 cwts. bonemeal . . .	3,832	4,920	39 14 0	13 0 0	26 14 0
3	Green leaf . . .	1,680	2,500	...	...	...
	Green leaf, 1 cwt. super. . .	2,184	2,500	19 8 0	6 11 0	12 13 0
4	10 cart-loads cattle manure. . .	2,000	3,000	...	...	...
	10 cart-loads cattle manure, 1½ cwts. bonemeal. . .	2,553	3,000	21 6 9	7 2 0	14 4 9
5	10 cart-loads cattle manure. . .	2,055	2,500	...	...	...
	One bag ground-nut cake, 1 cwt. bonemeal. . .	2,235	2,500	8 0 0	nil	8 0 0

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III.—BELLARY DISTRICT.

Paddy—Green manure, oil-cake, and bonemeal, with economic transplanting and an improved strain of paddy.

Strain.	Manure.	Yield of grain per acre.	Extra cost.	Value of increased crop.	Net profit.
		lbs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Local . .	Local and crop broadcasted.	2,520	..	..	..
G. E. B. 24 .	Improved . .	3,733	32 6 0	60 2 0	27 12 0
K. 18 . .	Do. . . .	3,538	32 6 0	59 9 0	27 3 0
Co. 1 . .	Do. . . .	2,400	23 4 0	35 8 0	12 4 0

Sugarcane.—Ammonium Sulphate and Superphosphate.

			Rs. A. P.	Rs. A. P.	Rs. A. P.
1925	Local	173½ maunds of jaggery.	..	..	..
	Ammonium sulphate and superphosphate.	216½ maunds of jaggery.	..	..	119 2 8
1926	Local	200 maunds of jaggery.	..	..	..
	Ammonium sulphate and superphosphate.	280 maunds of jaggery.	32 0 0	192 0 0	160 0 0

IV.—MADRAS DISTRICT (CHINGLEPUT).

Paddy.—Green leaf and bonemeal.

Year.	Manure.	Yield per acre.	Value of manured crops.	Extra cost of cultivation and manures.	Net profit.
		lbs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1925	Green leaf and cattle manure.	2,812	..	..	..
	Green leaf, 2 cwts. bonemeal.	3,135	nil	16 0 0	16 2 0

Mr. Rudolph D. Anstead.

V.—TRICHINOPOLY DISTRICT.

Paddy.—Phosphatic manures.

Year.	Manure	Yield per acre.	Value of manured crops.	Extra cost of cultivation and manures.	Net profit.
1	2	3	4	5	6
1925		lbs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1	No manure	1,111	...	...	...
	Green leaf and bonemeal 84 lbs.	1,611	5 0 0	25 0 0	20 0 0
2	No manure	900	...	...	...
	Green leaf and Trichi phosphate 80 lbs.	1,350	4 4 0	22 8 0	18 4 0
3	Cattle manure	984	..	...	...
	Cattle manure, green leaf and 84 lbs. bonemeal.	1,458	3 2 7	26 3 2	23 0 7
4	Cattle manure	1,575	..	..	...
	Cattle manure, green leaf, 84 lbs. bonemeal.	2,435	1 12 0	43 0 0	41 4 0
5	Neem cake	844	...	...	...
	Neem cake and bonemeal 84 lbs.	1,709	3 4 0	43 4 0	40 0 0

VI.—WEST COAST DISTRICT.

Coconuts.—General Manuring.

	Cost of cultivation per tree.	Value of produce per tree.	Net increase per tree.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
No manure	0 1 9	0 2 9	0 1 0
Green leaf ashes and fish	0 13 4	2 6 0	1 8 8

Mr. Rudolph D. Anstead.

VII.—The following is a typical result obtained in Experimental Station—
Samalpota Experiment Station:—

Paddy.

	Yield.		Value of extra yield.	Cost of manure.	Net profit per acre.
	Grain.	Straw.			
	lbs.	lbs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Average 1924-25 No manure .	3,120	4,070	...	...	...
1925-26	2,068	2,440	...	...	..
Average 1924-25 Green leaf and bonemeal.	3,533	5,205	25 9 3	9 0 0	16 9 3
1925-26	2,295	3,370	15 4 8	9 0 0	6 4 8
Average 1924-25 Green leaf .	3,403	5,033	18 4 11	2 8 0	15 12 11
Average 1924-25 Fish . . .	3,450	4,913	20 1 10	19 0 0	1 1 10

VIII.—The following result was obtained on the Lalgudi Co-operative
Society Demonstration Farm with paddy:—

	Cost of treatment.	Yield per acre.	Value of crop.	Extra profit.
	Rs. A. P.	lbs.	Rs. A. P.	Rs. A. P.
Phosphatic manure	39 5 7	2,595	129 12 0	..
Local manure	48 4 1	2,118	105 14 5	32 12 1

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Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(a) So far as the Madras Presidency is concerned, Research work is fairly well organised, properly administered and sufficiently financed. The lines, however, along which improvements may be effected, are indicated below:—

(1) *Organised team work between different Experts.*—A greater co-ordination of workers on different subjects in the same Province is desirable. The Director has insisted on such co-ordination, and the circulation of the monthly reports goes some way towards making one expert know something of the work of another. All the same, one cannot help feeling that there might be more free interchange of ideas, instead of following the rigorous maxim, "each to mind his own business." No interference in one's work is suggested, but there are several points in which one expert can easily help another. Each attacks agricultural problems from a different standpoint, and it is suggested that one knows the view-points of another. If such watertight compartments should vanish, periodical informal gatherings of experts would be useful.

(2) *Greater co-ordination between Deputy Directors and the Experts.*—Similarly, there must be greater co-ordination between the District Agricultural officers and the Institute Research workers. A right move was made when, recently, a Deputy Director of Agriculture and the Agricultural Chemist, were deputed to collate field experiments, and reports on the methods of conducting experiments at the Government Agricultural Stations.

(3) *Co-ordination of work between similar Experts of different Provinces.*—In order that Chemists or Plant Breeders, say of one Province, may be conversant with the work of Chemists or Plant Breeders of another, it should be made possible for them to correspond frequently and without reserve. A scheme for achieving such an object is detailed in answer to question 4.

(4) *Continuity of Field Experiments.*—Experiments, especially field experiments, should be carefully planned—as a result of consultation between the Scientific Expert and the District Agricultural Officer. Experiments once started should be kept up until definite results, positive or negative, have been obtained. They should not be discontinued at the pleasure of a new officer. This view was strongly given expression to at the Sectional Meeting of Agricultural Chemists held at Pusa 5 years ago.

Several Farms were opened, apparently without much forethought and without definite policies, and closed down without any tangible results having been obtained. Instances are Bellary, Bantanahal, Sirvel, Bezwada and Anamalai.

(5) *Increased facilities for Study Leave for Studying in Foreign Countries.*—Beyond the provisions of study leave already in existence, it is desirable, that the deputation of officers for specialised courses, either in India or abroad, should be on the regular programme of the Department. Now that the Government of India and the Secretary of State have accepted the principle of Indianisation of higher services, it is essential that Indian Officers who have done some tangible work here, should have opportunities of learning in a larger field and having a wider outlook; otherwise, Indianisation might result, in the long run, in inferior work being turned out. The Indian state of Mysore, for instance, has been sending its young men to other countries, on some definite plan, for some years; and a certain sum of money is budgeted for such deputation. Our best men should be deputed similarly,

and they must be men of promise who will do good to the department and to the country, and not merely men who go to improve their prospects. When Indian officers are so deputed, it may also be a matter for consideration, whether, they may not be given a greater rate of allowance, on account of the increased cost of living for them in a foreign country, in addition to their having to maintain a family in India.

(6) *Minimum of Administrative work for Scientific Experts.*—While I realise that every Scientific Expert here is also the Head of an office, I would suggest that he should be relieved of a good portion of his administrative duties, so that he can devote more time to research work. This aspect of the question was seriously considered in Madras on several occasions, and various schemes were put up. The latest scheme was the appointment of a Director of the Research Institute at Coimbatore. The scheme aimed at a central office which will deal with correspondence, stores, accounts, returns, etc., and the Director would exercise a semi-control over the various Heads of offices located here. The proposal has not been accepted in its entirety, probably because the scheme was too costly, involved the waste of talent of a Senior Research man in non-technical office routine and interfered with the independence of Experts. What I suggest is this:—While each Expert should have complete control over his staff and also have a voice in the framing of his budget, all administrative details, like routine correspondence, periodical returns, stores, accounts, etc., may be safely left in the hands of an officer, well versed in office routine, say of the rank of a Superintendent of the Secretariat, or of an Accounts Officer of the Accountant General's office. This is not a costly scheme, and will greatly add to the efficiency of Scientific Experts; the output of scientific research would then increase in quantity and improve in quality. It is often disconcerting to see a distinguished scientist, wasting his time over files of paper which could be better dealt with by a non-technical man, instead of seeing him working in his laboratories with his sleeves tucked up.

Research workers who specialise in particular branches of learning must devote their lives to it. For the sake of an allowance of a sum of Rs. 150, Scientific Experts have had to relegate their research work, often times in the past, to their assistants and subordinates although, they were drawing their main salaries as experts. Whenever, by reason of seniority, an Expert becomes eligible for an allowance, it is more economical to give him the benefit of the allowance than take him away from his legitimate work.

(7) *Training of Staff.*—It must be the first duty of the Head of each Research section to train one or more of his senior assistants to take up his work at a moment's notice. The training of fresh men should also be on well-defined, carefully thought-out lines. A spirit of comradeship should be created amongst the staff of each section, irrespective of pay or grade, consistent with discipline. There should also be a gradual transference of responsible work involving initiative and designing, reference to, and abstracting from, literature and drafting of reports, to the more intelligent of the staff.

(8) *Routine and Research.*—In every Scientific section, the work may be roughly classified into two classes—one which requires considerable knowledge, original thinking and initiative, and the other consisting of routine. Those who show aptitude for research work should be encouraged in every way, for example, submission of a thesis for a higher degree, while those who are not up to the mark in a Research section should be transferred to the Executive or other lines where they may find more congenial work.

(9) *Provision for Post-Graduate Study of Agricultural Graduates.*—I know that Pusa affords provision for the admission into each section of a few students coming from all India. At the same time, most laboratories in the Provinces are so well equipped and adequately staffed that each scientific section can take at least two post graduate students for research work every

year. There has been some demand for this in the past and it is best that each Province is self-contained as far as possible. All that is required is a Government Order, formally sanctioning the admission of advanced students for post-graduate study.

(10) *Provision of Facilities for Work by Retired Officers.*—One of the main reasons advanced in the past before the Public Services Commissions for Indianisation was that the knowledge of these officers would remain in the country even after their retirement. When an officer completes his 55th year, he automatically retires. He may, in his spare moments, wish to continue his work after retirement, and it is also possible that the Head of the department or Government may give the sanction in special cases. What I wish to urge is, that a provision should be made for the purpose. These retired officers, with their vast experience and knowledge, would be honorary workers and would probably give honorary services to the department. In other countries, these retired scientists would, I believe, be recognised as Emeritus Professors and would have ready access to their old places of work.

(11) *Increased Recruitment of Agricultural Graduates into the Science Sections.*—There has been a tendency in recent years to draft fresh science graduates—not all Honours men—into the Research sections, to the exclusion of Agricultural graduates. This may be partly due to the paucity of hands to fill the Agricultural section but, with the larger number of Agricultural Graduates who will be turned out in future from the Agricultural College, the recruitment of graduates in general sciences in Research sections of the Agricultural Department might be discouraged. It is not pure science that matters, but it is the application of science to agriculture, and it is self-evident that, as a B. Sc. Ag. has learnt his sciences in their application to agriculture, he should be considered more useful for purposes of Agricultural Research. The ordinary science graduates have the whole world before them, while the Agricultural men have only the Agricultural Department to look forward to.

(a) (i) As regards Research into the scientific value of the indigenous theory and traditional methods of agriculture, it may be said that there are no indigenous theories, so to speak, but there is plenty of local tradition.

This tradition is built up into a large number of proverbs, known all over the country. There are proverbs for foretelling weather, for preparing the land, for different crops and for sowing, planting, irrigating, harvesting, etc. Some of them may appear to be based on astrological data, but are mostly derived from astronomical calculations and cannot be lightly set aside. Some compilations have been made of these proverbs, but the subject is not exhausted.

On the general principle that agricultural enquiry, experiment and demonstration must take place in chronological order, enquiries have been made for nearly 50 years in the Madras Presidency. Some of these, but not all, have been incorporated in bulletins, but there must be lots more which are buried in official reports and files. Much of the information was the personal knowledge of individual officers and, with the death or retirement of these officers, the knowledge is lost. The result is that every new officer begins to make his own local enquiries once again and he often thinks that he has learnt something new. It is desirable that these results of local enquiries—each of which by itself may seem to be an insignificant fact—should be codified and made available for the succeeding generation. If each Circle deputed a Senior Agricultural Demonstrator for the purpose for a time, he will be able to go through the old files, and probably also the Demonstrators' weekly diaries and submit memoranda sufficient for one bulky volume. The work done by the late Rao Bahadur C. K. Subba Rao and the information gathered by Messrs. C. Benson and Rao Bahadur J. Chelvaranga Raju, for instance, will certainly be worth collecting and preserving.

(b) The Legislative Council has been fairly liberal towards sanctioning budget grants for the Agricultural Department, and a moiety of grant was made available last year from the contribution of the Government of India to Local Government in Provincial Settlement. There is generally no lack of field or laboratory facilities. Shortness of staff may be partly responsible for the expansion being not so rapid as one might wish. In Research work, however, it is better to have a sure ground and proceed carefully, step by step, rather than take up too many unmanageable problems, none of which could be solved thoroughly. Thoroughness, accuracy and truth are the essentials for research work, and a wrong step will put back progress. Researches are not made to order, and a reasonable amount of time is required for arriving at results, and it must also be mentioned that, after all, an experiment may succeed or fail; and any attempt by Government or Legislature to hurry results will lead to haphazard unreliable work, most detrimental to progress.

(c) In a country often subject to precarious rainfall, the system of Dry Farming requires much more serious study. For instance, the rationale of the growing of chillies and tobacco without irrigation which is perfectly well understood by the Guntur ryots can be investigated into, with a view to its introduction into other similar tracts. In the Tamil districts, these crops are always grown as irrigated garden crops.

It is believed that bare fallowing after paddy, with partial dry digging, benefits the land, while growing a green manure crop after irrigating the land is said to spoil it, in Tanjore. Is the belief correct?

The whole purport of this long answer to this question is this:—The improvement of agriculture depends mainly, and finally, on research. The man engaged in research irrespective of his pay or grade, should be charged with the spirit of research and give his entire time to his legitimate work, untrammled by specified office hours. That is why he is provided with quarters close to his laboratory. The spirit should not be "This is enough for the wages I receive," on the other hand, it should be "Is this all that I can do and am capable of doing?". Not until such a spirit prevails over each Research section and over the individual members of each section, can one say that the maximum output of work has been turned out, in return for the money paid by the tax-payer who is, after all, the agriculturist.

QUESTION 2.—AGRICULTURAL EDUCATION.—My experience of agricultural education extends from 1889, when I joined the Agricultural College at Saidapet as a student. I have also a general knowledge of the institution from its foundation in 1876. I have, in addition, been connected with the Agricultural College at Coimbatore as Chief Assistant to the Agricultural Chemist, as officiating Agricultural Chemist and latterly as Lecturing Chemist, engaged mostly in teaching and with a fair amount of research work to my credit. I have a fairly good knowledge of the working of arts, science and professional colleges in the Presidency and am also fairly conversant with University matters. I am, therefore, submitting a separate short "Review* of the Progress of Agricultural Education in South India" which, I thought, may be of some use to the Royal Commission.

My long connection with the department, especially in teaching, makes me suggest the following changes in the recruitment of staff and method of instruction adopted at Coimbatore.

(1) Officers are specially selected for their teaching abilities, and even given an extra allowance for teaching, in most professional institutions like the Forest, Medical and Engineering Colleges, and I take it that the teaching staff of the Agricultural College is good. All the same there is a general feeling prevalent that Teaching sections are inferior to Research sections. I do not underrate the importance of research. Far from it. To my mind, teaching

* Not printed.

has not received the same amount of attention at the hands of Government, as the Research Sections. On the other hand, the very best men must be drafted into the Teaching Sections, because it is the students trained at the college who generally form the staff of the Research and Executive branches of the service in future.

(2) It is only in Madras, and all within the last 5 or 6 years, that the idea of putting a non-teaching man as Principal, has been adopted, all for the sake of an allowance of Rs. 150. A Mycologist, a Paddy Specialist, a Cotton Specialist draws his pay as a Scientific Expert, relegates scientific work to subordinates, and devotes a considerable portion of his time to routine administrative details. Even as a Principal, he does no teaching, and probably knows little about the students and what they learn. He has no control whatever over the teaching of different subjects, because the staff who teach these different subjects are each subordinate to different independent experts. Doing neither his own legitimate research work nor any kind of teaching, the Principal mainly does the duties of assignment of quarters, repairs to roads and buildings, general sanitation, etc. The Principals of the Medical, Engineering and the Presidency Colleges, for instance, have also administrative duties to perform, but they take up the responsibility as well for the teaching of some subjects.

Again, the Principals of the Agricultural Colleges in Madras in the past, and in the other Provinces at present, have administrative work, but still they are engaged in regular teaching as well. The present move to appoint a senior research officer as full-time administrative Principal, is not likely to solve problem, unless and until he is to do some teaching work as well. Not until one of the senior regular Professor of the College is Principal will teaching receive the attention which it should.

(3) Instead of the teachers in the different subjects being under the control of the different experts, all the teaching staff, including the officers of the Indian Agricultural Service, should be directly under the control of the Principal, who must have not only administrative capacity, but also a wide knowledge and outlook, with ability to supervise the nature of teaching imparted in different subjects.

(4) One more point, and that is to provide for periodical transfers of staff from the Teaching to Research sections and *vice versa* and also careful drafting of agricultural officers from the districts to the college staff, with a view to infuse fresh blood. Only then there will be a real feeling that all the officers of the department form one group, instead of the present water-tight compartments, namely, Teaching, Research and Executive branches. Far from the Teaching section being considered the *pariah* portion of the service, it should be considered the most important.

(i) For the present, the College at Coimbatore is sufficient; but with the development of new University areas, it is desirable that each University should have at least one agricultural college. The number of teachers at the Agricultural College, Coimbatore, is sufficient but more Demonstrators are needed for practical agriculture.

The students of the Agricultural College need further training in the economic side of farming. Apart from instruction in the general principles of Economics, the subjects of agricultural economics, marketing of farm produce, agricultural co-operation and farm accounts need special attention for successful framing. For advanced courses of a post-graduate nature, there is also need for a whole-time officer, and the creation of a chair for Agricultural Economics is necessary.

(ii) My recent experience in the Madras University was that the members of the Senate and of the Academic Council were anxious to add, to the Intermediate Courses in Arts, Technological studies of which agriculture was one. A syllabus was submitted by the Board of Studies in Agriculture and has been accepted. In my opinion, it is desirable and even essential, to

encourage the teaching of Agriculture as an adjunct to Arts and Science courses throughout the Presidency. The students, who take up agriculture in their Intermediate and High School courses, are not expected to become agricultural experts, but there is no doubt whatever, that they will acquire an agricultural bias, and that is a very great thing indeed, in the present educational system which is purely of a literary character (*vide* also answer to question 23 on General Education).

(ii) It is desirable that teachers in rural schools have an agricultural bias, but it is not always possible to get them. To my mind, the term "Agricultural Classes" covers a wide range. It may mean those who own large estates and extensive lands or those who own small holdings, or it may mean tenants or agricultural labourers. The last class is not generally educated enough to provide teachers. The first class consists of rich men who would not care to take up teachers' posts in rural areas, even if they are educated. The choice of teachers will, therefore, be from people with small holdings and from tenant farmers.

It may be stated, however, that, if farming will pay, even these classes will not care to accept poorly-paid teachers' posts in rural schools. At the same time, it is not to be supposed that there is a large class of people who are not, in one way or other, connected with land in the country. The real trouble is, the general disinclination to manual labour.

(iv) There has been an increase of admission into the Agricultural College, Coimbatore, from 20 to a maximum of 40, this year. The college has been built with lecture rooms and laboratories which, with a slight modification in the time table, could easily admit twice the number. There is a selection out of a large number of applicants. There is also a peculiar rule, obtaining only in this Presidency, whereby students of Indian States (comprised, after all, within the Presidency) have to pay annually an extraordinarily large sum of Rs. 1,200 as college fees, while all students from British districts are admitted free, with the result that such students go in large numbers to Poona or Nagpur. The large number of applications indicates that there is a demand. Why not admit more? The only additional expenditure would be a few more Demonstrators for the laboratories and agricultural field classes and a better provision for teaching practical agriculture. Even as it is, the provision for practical agriculture is inadequate, rather, not well-organised. The Central Farm must essentially be a College Farm—students' practical work taking precedence and financial considerations only of secondary importance—and must serve the same purposes for the teaching of Agriculture, as a laboratory is essential for the teaching of Chemistry.

Due to the transfer of the Cows' section of the Farm to the Deputy Director of Livestock who has his headquarters at Hosur, there is not that touch, which the agricultural staff at the College should have with the College Dairy, with the result that the training in Dairying stands in need of great improvement. With the very limited equipment of Dairy appliances, a student does not, working by turns, get dairy practice more than three or four times during his whole course.

(v) The main incentive at present is to enter service in the Agricultural Department. There are a few who join with the object of going back to the land.

(vi) The pupils are generally drawn from the agricultural classes.

(vii) *Vide* also answer to (iv).

The great difficulty of finding field work of various kinds for all the students of three classes, has to be solved. A great increase in the present equipment is first essential, both in cattle and in implements. Another alternative is also worth consideration, which seems to be in vogue in other countries, namely, to make a student work in some recognised farm for a specified period of time. It would appear that, in some cases, a farmer's certificate given to a student seems to indicate sufficient practical training

for purposes of admission to an Agricultural College. Such a system may not be possible until we have home farms, and farmers who can be expected to guide students and certify to their efficiency in practical agriculture; but, there are a number of Agricultural Stations which are scattered throughout the country. Students coming from different districts may be asked to spend a specified period, say 3 months, in one of the Farms near their native places, where they should be made to do mechanical field operations, for at least 3 hours daily.

Another alternative is, that students are sent, during portions of the college vacations, to specified Government Agricultural Stations to undergo Farm training, including the handling of implements and by changing the farm during the different vacations, they may acquire varied information as well. This duty of training students requires a little experience on the part of the agricultural staff of these farms and most farm managers can do this work efficiently. It will relieve the necessity of teaching the elements of practical farming, the use of implements, tools, etc., in the Central Farm. The practical agriculture which may be done at Coimbatore should partly be manual work, for instance, cultivating their own plots and partly, the preparation of Agricultural Reports—which was a distinct feature of instruction at Saidapet. This last work requires good guidance at the hands of teachers, and it is worth while considering. The details, however, have to be worked out carefully, at a Conference of the college staff and the Deputy Directors.

The instruction that is given in different applied sciences is mainly practical, as it should be. It is more or less thorough, and I would not like any lessening in sciences. The time devoted to agriculture is one-third of the time table, all the other six subjects getting two-thirds; and if agriculture is properly taught, I do not think that any modification is necessary.

Agriculture is a business. Training at a college does not involve the teaching of business transactions. It is a matter for consideration whether B. Sc. Ag's. may not suitably be given an additional year's practical training, under the immediate charge of the Deputy Directors, the students being given a subsistence allowance of, say Rs. 50, during their period of training. Such graduates, as show an aptitude for particular sciences, may be selected for training in the Research sections at the College. This system is similar to the training of Civil and Mechanical Engineer students in works and workshops, and of medical graduates as House Surgeons. Such additional training will give confidence to the students themselves, and to the employers as well, and there will also be a tendency for the more hopeful of the students to take to private farming.

There have always been two opinions on the question whether Teaching and Research should form one section or whether Teaching should form a separate section from Research. In my opinion, the advantages are in favour of the latter, especially if provision be made for the delivery of a certain number of special lectures by Research officers on the progress of research work in each section. Such lectures have been given occasionally, as a matter of courtesy, on the request of the Heads of Teaching sections, by some Research officers hitherto, but it is desirable that these special lectures are organised by the College Board, in consultation with the Director of Agriculture, and find a place on the regular time table.

It is also desirable that the designation of the Teaching staff at the Agricultural College, Coimbatore, is changed to the ordinary nomenclature adopted in all educational institutions, *e.g.*, Professors, Lecturers, Assistant Professors and Demonstrators.

(viii) (a) There has recently been much improvement in elementary schools on the subject of nature study, but the powers of observation of the teachers themselves are, in my opinion, not yet of sufficient standard. This is referred to in answer to question 23- General Education.

(viii) (b) School plots are excellent ideas, but very poorly organised. It would appear that the scheme of school gardens has received enormous attention in Ceylon, and a system of prizes exists, for gardens maintained by individual pupils as well as by the schools as a whole.

(viii) (c) There are no school farms as such, as there are no agricultural schools except those attached to Government farms; but, when Agriculture begun to be taught in the University Intermediate classes and also in high schools, school farms should develop on proper lines. No school or college will be officially recognised by Government or the University to teach agriculture, unless ample facilities are provided for teaching practical agriculture.

(ix) So far most of the students who have passed from the Agricultural College have entered service in the Agricultural Department. In the earlier years, they were absorbed in the Revenue, Settlement and Veterinary Departments and also in Minor Irrigation Works. Within recent years, the idea of drafting agricultural men into the Co-operative Department was boomed, and advertisements calling for applications, particularly from agricultural graduates, were widely published; but not even one man has been taken into this allied department.

Some of the reasons why agricultural students have not taken largely to private farming may be mentioned. These are:—

1. They have found berths ready for them so far in the Agricultural Department; but there is a limit to such recruitment.
2. Most students have not sufficient landed property which will bring them such profit as a result of agricultural improvements they may effect on their lands as will be equal to the present income from those lands *plus* the salaries of their appointments.
3. Some of them are not sufficiently confident of their own capacity to make farming profitable in the face of the uncertain nature of the Indian monsoons. The practical training suggested above under the last paragraph of my answer to question 2 (vii), should largely rectify this diffidence.
4. Absence of facilities and resources for private farming can be rectified by a preferential assignment to agricultural students, of deforested and other culturable waste lands, on favourable terms, supplemented by a system of advances for initial outlay. I understood that such a system has recently been introduced in the Punjab and Travancore.

(x) Economic stress will lead them to appreciate the dignity of manual labour, which is the first step to their taking to practical farming. It may be mentioned that most of the students have been drawn from the middle classes.

(xi) There is no provision for advanced study of agricultural students at present and it is very desirable that there should be scope for post-graduate courses for these students; and, as far as possible, each Province should make provision for such study.

(vii) and (xiii) This is largely the work of Local Boards and Social Service organisations. Some work in this line has been done on a very small scale in the Coimbatore district. The labourers, for whom these schools are meant, are tired after their daily work and have no inclination to attend a regularly conducted class. There is demand, however, amongst a good number of these adults in rural tracts for acquiring some knowledge. A few libraries of vernacular books have been started in half a dozen villages last year by the Coimbatore District Educational Council, and newspapers are sometimes read to those who care to gather, vernacular lectures on lantern slides are generally appreciated, whatever the subject may be.—Agriculture, Co-operation or Rural Hygiene.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—The success of demonstration and propaganda depends largely, if not solely, upon personality. Accustomed as villagers have been in the past to the tax-collecting Revenue Department and the awe-inspiring Police, Excise and similar departments, it has taken some time for them to realise that the Government can be so altruistic as to organise an Agricultural Department whose sole object is to make them more prosperous. The frequent visits of Agricultural Demonstrators and the distribution of villagers' calendars have largely popularised the Agricultural Department, and there are even villagers who look forward to the next visit of the agricultural officer. Propagandist work has to be done in a missionary spirit and, as long as agricultural officers talk the language of the ryots, move with them intimately, take interest in their little concerns and, in fact, enter into the spirit of the life of each village, to that extent, the work of the department will be popular. When, on the other hand, an officer halts most of his time in a dak bungalow and is satisfied with inspecting a field here and a field there as may be shown to him by the local agricultural demonstrator, or is merely satisfied with the checking of stores and manure depots, he will not be a success.

(b) The Demonstrators as a class are doing their work well, but it is desirable that there is more concentration of work in particular localities. It is not merely enough to tell a ryot to do this and to do that, but it is essential that the Demonstrator should remain long enough in the village and see it done, himself taking off his coat and joining in the labour.

It may be pointed out that the amount of travelling allowance paid to agricultural subordinates is not sufficient to meet their expenses, and the budget grants to the Deputy Directors' Circles will have to be increased. The rules may have also to be modified, so that subordinate officers may not be out of pocket when they go out on tour.

More Demonstrators are wanted, and arrangements may also be made for training a much larger number of demonstration coolies. Intelligent field labourers from neighbouring villages may be induced, by the payment of increased wages—they may be called village stipends—to work for a month or two in the nearest Agricultural Station, to observe and learn the improved methods adopted therein.

(c) If the methods suggested by agricultural officers are suitable, the ryot does not require any inducement to adopt expert advice. It is not always the case that an improved method will bring him a return which will cover the expenses, and a ryot is shrewd enough to ask whether it will pay. For example, the application of a manure mixture suggested by me has brought in an average increase of 10 per cent. in the yield of paddy grain which, for a scientific worker, may be considered a satisfactory result. 10 per cent. increase, however, on a yield of 3,000 lbs. amounts to 300 lbs., while a similar increase on a yield of 1,500 lbs. is only 150 lbs. of grain. The former pays the cost of the manure, the latter does not.

Subject to this general proviso, the ryot is not averse to change his practices. It has to be remembered that he has as often something himself, to enlighten the Agricultural Demonstrator with.

Since the establishment of the Agricultural Departments on their present basis various devices have been adopted with the view of making the ryot take interest in the work of the department, with varied degrees of success. Some of these may be mentioned:—

(1) One of the most effective methods for popularising agricultural improved methods is, in my opinion, the constitution of Advisory Boards in typical localities, consisting of officials and non-officials belonging to the agricultural classes. These advisory bodies have been found useful in some Provinces, in Ceylon and in the Indian State of Mysore but, for some reason or

other, the Madras Agricultural Department has fought shy of this kind of association with the ryots. The Mysore Agricultural and Experimental Union is a noteworthy example of the possibilities of co-operation between the ryots and agricultural officers.

(2) The Legislative Council elects an Agricultural Advisory Committee. I do not know what the functions of the Committee may be, but I know that very few members of the Committee have cared to visit an Agricultural Station or see the work which is being carried on at Coimbatore.

(3) The system of Honorary Visitors to the Agricultural College, Coimbatore, was introduced more than a decade ago. In the beginning, a small percentage of these visitors came to the college and wrote some remarks in the visitors' book, but the honorary visitors have now practically ceased to come. Most honorary visitors never made even one visit during their tenure of office. The system of honorary visitors seems commendable, but the right sort of men should be appointed by Government, and probably more facilities afforded to them to do the visiting.

(4) It is also desirable that a system of an organised, annual visit to the college by the members of the Legislative Council, on the invitation of the Minister, should be arranged, somewhat similar to the annual visit of the Rothamstead Experimental Station by the Members of Parliament headed by the Cabinet Minister for Agriculture. Most members of the Legislative Council have considerable interest in land and, apart from their being benefited personally, they will give a sympathetic consideration to agricultural questions which may come up before the Council, when they actually find that the work of the Agricultural Department is not an eye-wash.

(5) Visits of actual cultivators to the Agricultural Stations have been arranged from time to time and it is desirable that there are more frequent visits. I would even suggest that the Government make a small provision to meet the charges incurred in looking after the comforts of these guests when they come to visit the Agricultural Stations.

(6) To my mind, the department is not sufficiently advertised. It is generally the middle class cultivator who speedily adopts improved methods. At the same time, it is essential that the indifference of the richer, and generally the more educated, landed classes should soon change into active participation in the activities of the Agricultural Department. They have local influence and plenty of resources, and can afford to effect improvements both in their own interests and for the benefit of their tenants. They will have to change a life of comparative ease to one of ceaseless effort.

(7) The activities of the department have been largely restricted to ryotwari villages, and the permanently settled zamindari tracts are mostly untouched. It is desirable that zamindars evince more interest in their agricultural problems than they have done so far.

(d) The following instances of success in propaganda and demonstration work are given:—

- (i) The introduction of the seed drill in Tinnevely and ploughs of improved pattern all over the country.
- (ii) Adoption of a lower seed rate and the economic transplantation of paddy.
- (iii) The practice of growing green manure crops.
- (iv) Extension of areas adopting the application of indigenous manures like bonemeal, oil-cakes and fish guano and of fertilisers like ammonium sulphate and super-phosphate.
- (v) Introduction of improved seed strains of paddy.
- (vi) General improvement in cotton cultivation.

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- (vii) General improvement in sugarcane cultivation and jaggery making.
- (viii) Use of spraying machines to combat crop pests, both insects and fungi.

All the above are due to the activities of the officers of the Agricultural Department. Much more work has yet to be done, but the problems have so far been tackled with care. More staff is essential.

Failures:—

One cannot say that the ryot has yet adopted a better preservation of cattle manure.

QUESTION 4.—ADMINISTRATION.—(a) The present Board of Agriculture has more or less outlived its usefulness, and the Central Board of Agriculture suggested by Dr. Clouston which would consist of Administrators, Ministers and Experts, would be most unwieldy and, in my humble opinion, would not do much useful business, even of an advisory character.

The idea of a small Central Board consisting of 3 to 5 members, somewhat similar to the Railway Board, has been suggested. It has a few good points. When provincial autonomy has been granted to Provinces, this Central Board could at best only give advice, and probably high salaries will have to be paid to the members constituting the Board.

Except that some of the Experts had, immediately on their arrival 20 years ago, some months' training at Pusa, there was practically no allegiance of the Provinces to Pusa nor did the Provinces get much benefit from the Central Government all these years, even when Agriculture was not a Transferred subject.

The idea of a Central Board of Agriculture offering advice to Local Governments, whether the Ministers in the Provinces want the advice or not, will not be acceptable to the legislatures of the country. It would be argued that, starting as an advisory body, the Central Board may come to assume statutory powers. So far as the administration of Transferred subjects in the Provinces is concerned, the very fundamental principle is that these Ministers must learn the art of administration and, during that period, they may make mistakes, and it is better that they profit by their own mistakes rather than being counselled by an outside authority.

There are a few questions of international concern in which the Central Government may take the initiative, *e.g.*, crop protection from outside infection, Customs and Railway freight on agricultural goods, etc. In some cases, as for instance, with regard to the International Institute of Rome, it is quite possible that each Province may seek to have its own representation.

(b) The object aimed at cannot be achieved by increasing the scientific staff of the Government of India. Great benefits will accrue, however, by pooling the services of scientific officers, and one of the methods in which this can be done is as follows and is somewhat on the lines followed by the United States of America. Each State in the Union has, for instance, its own staff of Chemists and enjoys autonomy with full scope for tackling its own problems. At the same time, there is a permanent organisation called the Association of Agricultural Chemists, which periodically meets and publishes what are termed Official Methods, recognised all the world over.

There may be one Chemist in a Province in India and, while the problems pertaining to his Province have to be solved by himself, on his own initiative or conjointly with the Deputy Directors, it must be recognised that he has much to learn from the Agricultural Chemists of other Provinces. However clever he may be, as long as he does not come occasionally in contact with similar workers in other fields, he will run in his own narrow groove and develop a spirit of self-sufficiency which is detrimental to progress. Until now, such a stagnation was partly rectified by the opportunity which officers had of meeting their co-workers at meetings of the Board and Sectional Conferences, or in the case of European Officers, by coming into contact with workers on similar subjects whenever they go home on leave.

Now that provincial autonomy has been granted and the services are to be Indianised, it seems necessary to make some provision of a permanent nature whereby the Provincial Scientific Experts will be able to know what their co-workers are doing in other Provinces. What I have said above about Agricultural Chemistry applies equally to other branches of research. A tentative scheme for the co-ordination of these research workers is suggested below:—

I. There shall be a number of Sectional Associations which shall be permanently constituted for the following branches of Agricultural Research, as a beginning:—

1. Chemists, Soil Physicists and Bacteriologists.
2. Botanists and Plant Breeders.
3. Mycologists.
4. Entomologists.
5. Livestock Experts, and
6. Agricultural Engineers.

II. All officers of the Indian Agricultural Service, officers holding posts similar to the Indian Agricultural Service but outside that cadre, whether appointed in India or by the Secretary of State, on short term contract or on long-term, and officers of similar standing in Indian States, shall be *ipso facto* members of the Association.

III. Each Association shall elect one of their members to be the Secretary who shall be the convener and co-ordinating officer. He need not necessarily be attached to the Central Government.

IV. The duties of these Boards shall include the following:—

- (a) To encourage co-ordinate work in each subject, consistent with local conditions, as far as possible.
- (b) To consider and scrutinise the programmes of experts and offer suggestions.

(In the earlier years the consideration of the programmes of the Experts in the Provinces formed an important item on the agenda of the Board. It was dropped after sometime, apparently because the somewhat heterogeneous body of the Board did not feel justified in scrutinising the work of particular scientists. One need not fight shy or feel delicate over the matter of submitting programmes to a Council of Experts, and there need be no fear of interference. What is aimed at is team work, giving help to, and obtaining help from, others. There is no one after all who cannot learn something from his co-workers.)

- (c) To give prominence to research work which will lead to results of economic importance, in preference to pure academic work.
- (d) To arrange for team work in specialised lines of study in different Provinces and evolve official methods of experimenting, by appointing referees, the work being done in a concerted manner, avoiding at the same time, unnecessary duplication and overlapping.
- (e) To appoint referees for assessing research work submitted for publication.
- (f) To consider subjects as may be referred to them, from time to time, from Central or Provincial Governments.
- (g) To organise periodical conferences.

(As regards periodical conferences, those who have attended the two or three Sectional Conferences will testify to the fact that they learnt from co-workers more at these Conferences than at Board Meetings, more in informal talks than at these formally convened meetings, and more in that one week by personal touch than could be learnt by any amount of correspondence. The question of expense by way of travelling allowances will always crop up, but

if the highly paid scientific experts have to be kept up to date, the expense must be provided for. If the Conference of special Boards be convened at the same place and about the same time as when the Indian Science Congress holds its sittings, there may be a saving of expense to a certain extent, because several officers of the department are deputed to attend the Science Congress every year. This deputation has to be encouraged because, apart from their reading papers at the Conference, it does them—experts in applied sciences—a lot of good to come into occasional contact with experts in pure science.)

QUESTION 5.—FINANCE.—(a) One of the methods of financing provision for short-term credit to cultivators, which may be suggested, is the one similar to what is adopted by some manure firms to help the planter. The method consists in an agent of the firm making an estimate of the probable next year's outturn of crop of a coffee or a tea estate and making an advance to the planter to the extent of the value of that crop. The advance may be in the form of manures, tools and sometimes cash. The crop is pledged to the manure firm, and, as soon as the harvest is over, the firm either purchases the crop or sells it in the open market, with the knowledge and approval of the planter, at the proper time.

To work a similar credit system for the benefit of the large ryot population will be a fairly big concern, but, with the help of properly organised village panchayats and co-operative credit societies, this is possible. To be able to advance the planters, the firms get necessary funds by overdrafts from recognised Banks. These panchayats and co-operative societies should be directly financed by a system of State Aid to Agriculture—somewhat similar to the State Aid to industries, recently introduced in Madras,—the panchayats and societies being held responsible and invested with the necessary powers for the granting of advances to the cultivators on the security of standing crops and their recovery and subsequent payment to Government.

The produce may also be stocked by these societies and sold at opportune moments getting the maximum advantage to the ryot, obviating the necessity for his being obliged to sell it on the threshing floor and therefore getting minimum value for his produce.

Advances for long-term credit could be managed only by special societies, well financed and with proper safeguards of securities of immovable property.

(b) The rules which govern the system of *taccavi*, from the period of application for loan, through the different stages of local enquiry by different sets of officers, the sanction of the grant and the actual receipt of money, up to the repayment of the last instalment, are apparently so rigid, and necessarily so, that cultivators very often do not care to put themselves to so much trouble. They would rather go to a local moneylender and get a loan quickly, showing their property as a collateral security or mortgaging it, even though they may have to pay a greater rate of interest. Consistent with safety, it is worth while considering whether the rules could be made less rigorous. Also when the Agricultural Department is better manned, it is also worth while considering whether agricultural officers may not be entrusted with this work. Incidentally it will make the department better known and even more popular than it is now.

QUESTION 9.—SOILS.—(a) (i) The most urgent line for the improvement of soils in the Madras Presidency is the incorporation of organic matter or humus, to build up gradually the productive power of the exhausted soils most of which have reached their minimum cropping values.

This incorporation of organic matter is engaging the attention of the departmental officers, and, apart from green leaves which were formerly used for manurial purposes, green manure crops are now regularly grown in the fields and ploughed in to a large extent. A better preservation of cattle manure is essential. Synthetic farm yard manure has recently been taken up and it is expected that it will be widely adopted.

(ii) The reclamation of alkali lands is not a serious concern for this Presidency.

(iii) Erosion of surface soil by flood water is mostly a localised work and, on the principle of a stitch in time, putting up *bunds* and allowing for natural drainage has to be attended to, as soon as any small damage has been done.

(b) (1) Several acres of land of marked defective drainage in the Pervyar tract of the Madura district have been brought under cultivation and have shown distinct improvement, as a result of the application of green leaves, green manure crops and municipal rubbish and the carting of different kinds of soils.

(2) As a result of ten years' work at the Manganallur Agricultural Station in the Tanjore district, in which judicious manuring and seasonal cultivation were carefully practised, surrounding villages have improved their lands to a greater producing power.

(3) Over a block of 45 acres comprising the wet lands of the Central Farm, Coimbatore, the average yield of paddy has increased from about 2,500 lbs. to 4,000 lbs. per acre, in the course of 15 years, as a result of good cultivation and careful manuring.

(c) The best that can be done is to sell such lands as far as possible to the residents of the village in open auction. If the areas are fairly large and exist in blocks, the sale may be advertised widely, so that people outside the village who wish to invest in lands may take them up. At the same time, it is worthy of consideration whether these blocks of lands may not be assigned to agricultural students on low rental or on long lease.

The methods of reclamation of lands which have gone out of cultivation can be detailed only after an inspection of the lands, in the light of the reasons which have led to the abandonment of cultivation therein.

QUESTION 10.—FERTILISERS.—(a) There is necessity for both natural manures and artificial fertilisers in the country. Owing to the demand from foreign countries, indigenous manures like bonemeal, fish manure and poonacs are comparatively more costly at present than imported artificial fertilisers, calculated on unit values. A judicious mixture of both kinds is often the most useful. The higher cost of fish manure is also due to a lower "catch" on the Malabar coast in recent years.

(b) It is desirable to have a Fertiliser Act in which the analysis of manurial ingredients is guaranteed. In some cases as in fish manure, adulteration is not necessarily fraudulent, but is often due to the defective system of drying fish in the sandy seabeach.

(c) Popularisation of new manures can be effected by demonstration in selected demonstration plots on ryots' lands and by intensive propaganda.

(d) There has been a considerable increase in the use of manures in most of the deltaic soils of the Presidency, especially Tanjore. The planters have always been the biggest purchasers.

(e) Potash manures are generally not required for the soils of Madras. Phosphates in the form of super, bonemeal and flour phosphate have been fairly well investigated and, with the supply of nitrogenous manures or green manures, there is an increase in crop production, especially in the yield of grain. Most of the work on phosphates has been done with regard to paddy. As regards sulphate of ammonia, it has been found a suitable, and at present a cheap, nitrogenous manure for paddy and sugarcane.

(f) The practice of using cowdung as fuel may be said to be on the decrease. It is only when forest wood is made cheaply available that the use of cowdung as fuel will further decrease.

QUESTION 22.—CO-OPERATION.—(b) (vi) From the successful results obtained by the Lalgudi Co-operative Agricultural Society's farm in the Trichinopoly district, I consider that it is desirable to extend the system. This Society leased out, on usual terms, 10 acres of paddy land in a block, from several ryots, and began to cultivate the same according to the advice of the Agricultural officers. The area is under the direct supervision of the

local Agricultural Demonstrator who has to obtain the necessary funds from the Secretary of the society who in his turn, is asked to maintain accounts in proper form. The members meet occasionally and go round the farm. After payment of the lease amounts in kind and after deducting all cultivation charges, there was a net profit of Rs. 300 amounting to Rs. 30 per acre last year. This small demonstration farm has created great interest amongst neighbouring villages and people are always welcome. There are vernacular labels stuck up in each field which explain the nature of treatment or improvement, and an illiterate cooly was able to explain to me what was being done in that area. It has great educational value amongst the cultivators.

(b) (ix) An Agricultural-Industrial Co-operative Manure Society was started with flourish of trumpets, at Shiyali in the Tanjore district, with very indefinite ideas and no knowledge of business and ended as a complete failure. When there are a number of small Indian-managed bone crushing factories which are working profitably for years, for instance the one at Kadambur in Tinnevely district, the only reason that can be assigned for the failure of the Shiyali Society is lack of business methods. With a borrowed capital of Rs. 30,000 and a share capital of Rs. 19,000 machinery were obtained at enormous cost at the time of the War. The Registrar of Co-operative Societies conceived the idea, the Industrial Engineer designed and purchased the machinery, and the *mirasdars* were asked to run the manure works. The society has now gone into liquidation after causing complete loss to the shareholders and considerable loss to the Bank which lent the money. With careful management and a little forethought, this should have turned out a profitable concern. The failure of the society has given a set-back to the starting of similar undertakings in the district.

QUESTION 23.—GENERAL EDUCATION.—(a) The present system of education is mostly of a literary character. The brain is more rapidly developed than the hands and eyes which have not been trained to the same extent. Education, as it is imparted in schools and colleges, is more or less routine, whatever may be the theoretical methods advocated in training institutions. The object of education is to prepare the pupils and students for examinations, and the nature of public examinations is such that a student can afford to waste 11 months in the year and cram in one month and pass equally well with one who has been applying himself to his studies throughout the course. There is no stimulus for thinking and no incentive for developing powers of observation. There has been going on a great agitation in recent years amongst educational experts against this one-sided education, and one of the methods suggested is to tack on technological studies, including Agriculture, to schools and colleges in all stages of education.

What is wanted is to make educated classes appreciate the dignity of labour and get them to realise that the acquirement of a certain amount of literary education is not inconsistent with the doing of some manual work. On the other hand, an educated man must learn to do it better: With the diminished prospects of employment in the country for these literary—educated classes, they will soon have to get accustomed to manual labour, and I consider that it will be the first step and a new era for agricultural efficiency.

The remarks I have made above apply to all stages of education, collegiate, secondary and elementary, but more pointedly to the first two. The child, by nature, enjoys doing manual work with its tiny hands and, if only he gets a competent teacher, he will continue to relish manual work all his life. The Scout movement which is now rapidly spreading in the country is an illustration to show that young boys are not averse to manual work.

(b) (i) The only possible method whereby rural education may be improved on the desired lines is to have more efficient teachers—teachers who can use their hands and eyes and who can show their pupils how to use them effectively. Let me illustrate my remarks by quoting some figures from the last Report of the District Educational Council of Coimbatore. During the year 1925-26 there were 1,617 elementary schools for boys and 2,250 teachers. Of these, 39 were secondary trained and 33 secondary untrained teachers; there

were 280 higher elementary trained teachers and 158 higher elementary untrained teachers; while the lower elementary trained teachers were 755 and the lower elementary untrained teachers were 1,002. Put in other words, 1,757 out of 2,240 teachers had never read beyond the lower elementary stage, and a thousand of them were untrained as well. The teachers in these villages neither command respect nor are they sufficiently paid for mere subsistence, and most of them are married and have families to maintain. Is it possible to train the future pioneers in agriculture with teachers of the above type?

After all what is taught at present in most schools is a little reading, writing and arithmetic, and there is possibly no scope for regular nature study, even though that subject may be included for departmental reasons in the time table.

(b) (ii) There is a great demand for education in rural areas as may be judged from the large number of applications sent by these villagers to the District Educational Council for the opening of new schools. Compulsory elementary education has been introduced into six Municipalities of the district of Coimbatore. 9,645 boys out of a population of school-going age amounting to 11,003, have attended schools in 1925-26, working out to a percentage of 88, while the corresponding figures for boys in the rural areas of the district are 38,044; 1,81,367 and 21 per cent. respectively.

That more pupils of school-going age will attend schools, if there is adequate provision, is seen from the figures for girls' schools, although there is no compulsion for girls to attend schools. 4,525 girls out of 10,109 girls of school-going age, i.e., 45 per cent. have attended schools in Municipalities, while only 5 per cent. of the girls of school-going age have attended in rural areas.

In my opinion education up to the elementary standard must be made compulsory both in towns and villages. It will add to the efficiency of the ryot classes.

(b) (iii) The chief reason why there is a small proportion of boys in rural primary schools in the higher classes is that they can earn some wages for the family or do some work on their fathers' lands. It may also be due to inability to pay the school fees for the higher class; and if a boy cannot do much manual labour, he can at least attend to the grazing of cattle and sheep or scare crows in a field of ripened *cholam*.

QUESTION 24.—ATTRACTING CAPITAL.—(a) Men of capital are often business men who will invest capital in concerns which will bring them largest profits. Investment in banks is the general practice. There are, however, men of means who care more for the security of property than for the earning of a larger interest, and most people in the country who have earned money in different walks of life, wish to, and actually do, invest in landed property. It is not so much a matter of enterprise with them, but a question of safe investment for their children. One may sell his land to meet the cost of education of a son, but, as soon as the son begins to earn, the one ambition of the family is to invest the savings in landed property.

(b) The factors which tend to discourage owners of agricultural lands from carrying out improvements are:—

- (1) General inertia and a disinclination to take trouble; and agriculture is a business which involves trouble and constant attention.
- (2) A general sense of contentment, as long as sufficient income is received for the ordinary requirements of the family.
- (3) Several owners of lands are absentee landlords, who have either leased out their lands for fixed yearly payments in cash or kind, or who have entrusted their lands to ill-paid local agents, who often fight shy of, and even resent, any outside interference, like the preachings of an Agricultural Demonstrator.
- (4) Want of definite knowledge about the possibilities of help from the officers of the Agricultural Department.

- (5) Want of funds to purchase the improved implements or the manures recommended.
- (6) Want of facilities of cattle and labour.
- (7) Lastly a certain amount of want of confidence in the preachings of the Agricultural Demonstrator, as there are still people who consider that the departmental officers are more theoretical than practical, and who are also sceptical about the results of experiments said to have been achieved in Government Agricultural Stations.

Oral Evidence.

10716. *The Chairman:* Rao Sahib Ramaswami Sivan, you are in the Indian Agricultural Service?—Yes.

10717. You are the Government Lecturing Chemist in the Agricultural College at Coimbatore?—Yes.

10718. You have been good enough to put in a very carefully prepared note of what you wish to lay before the Commission, and my colleagues and I are greatly obliged to you for that. Do you wish to make any statement in amplification of your note at this stage, or shall we proceed at once to question and answer?—May I say anything that I have got to say, at the end?

10719. Most certainly. Would you please let the Commission have a short account of your own training and previous posts?—I passed out of the Agricultural College, Saidapet, in 1892, taking the Diploma in Agriculture, first in my class of 40 students. I passed the B.A. examination in Chemistry as a private candidate, using the knowledge which I had learnt at Saidapet for passing my Chemistry B.A. I was employed as Farm Bailiff at the Saidapet farm, in the first six years of my service. Later, I was employed as a Lecturer at the Agricultural College at Saidapet, and latterly, from 1908 up to date, at Coimbatore. During this period, for three years, I was Lecturer in Chemistry at the Engineering College, Madras, teaching applied chemistry to the Senior Engineer students of the B. E. classes. Starting with my knowledge of chemistry acquired from Mr. Keess, who was the Professor of Chemistry at Saidapet, I had laboratory training under Dr. Lehmann, who was the Agriculturist Chemist to the Government of Mysore, Dr. Van Geyzel, Chemical Examiner to the Government of Madras, and, for a little while, under Dr. Wilson, who was Professor of Chemistry at the Presidency College, Madras. I also had some training at the hands of Dr. Leather, and a little from Mr. Collins who was Assistant Agricultural Chemist to the Government of India in the old days. I had been lecturing in the earlier days on geology, meteorology and physiography. I was teaching agriculture for some time, but for over 25 years, I have been practically connected with the teaching of chemistry, inorganic, organic and agricultural, both theoretical and practical. I have been connected with a little journalistic work as Editor, for three or four years, of the *Journal of the Madras Agricultural Students' Union*, and I have been in fairly close touch with agricultural movements in the country. I have attended several Science Congresses, and am one of the Referees for the Agricultural Section thereof. I presided, in the absence of Sir Ganga Ram, who should have presided on that occasion, at one of the meetings of the Agricultural Section of the Indian Science Congress, when I read a small paper on the scope and limitations of agricultural research. My chief work has been teaching, and, whatever time and leisure I could devote to research work, I have done more as a hobby than because I was asked to do anything in that line. One of the subjects on which I have done a fair amount of research work was on the question of the phosphate problem in Southern India about which I have read a number of papers, published a number of bulletins and pamphlets, and recently published a memoir on the utilisation of mineral phosphate as a manure for the paddy lands of Tanjore. I acted, as early as 1912, as Agricultural Chemist; I relieved Dr. Harrison in 1917 and had officiated as Agricultural Chemist, Madras, of and on, for two and a half years, before I was appointed to the Indian Agricultural Service. I may say I am an Agricultural Chemist by profession and a Lecturing Chemist by designation. The expression "Lecturing Chemist" is rather a new thing. It looks as though it were coined particularly to describe some of us. In other colleges, we would be called Professors of Chemistry or something like that. I am afraid that the designation "Lecturing Chemist" looks as though I am not a real Agricultural Chemist, but I consider that I am really an Agricultural Chemist by profession. When I retire a few months hence, I propose to make agricultural chemistry a means of getting on in the world, probably putting up a board as "Consulting Agricultural Chemist." I have moved very intimately amongst the ryot classes. During these years,

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when I was doing the phosphate work, I came into very intimate contact with the ryots, and I know generally, as much as an official can know, their difficulties and their limitations.

10720. You have been in touch with those who have been carrying on research work, although you have not been, as you say, free to devote yourself to it to the extent that you would have liked?—Because, all the time I was put in charge of teaching. They said “You are very clever at teaching” and I was put to teaching.

10721. May I question you for a moment on your note as printed and put before the Commission? With regard to question 1—Research—, I rather gather that you are seized with the importance of organising research on the lines of team work?—Yes.

10722. What do you think of the organisation and work of the Indian Central Cotton Committee as a type of team work?—It is with reference to one single crop and the funds are provided by an outside agency to start with, by the British Cotton Growers’ Association. A cotton cess was levied for the purpose, and I have no objection to particular crops, not only of special importance for India, but of international interest as it were, being tackled “crop-war” in a particular place. I do not know whether it is a branch of the Central Board; apart from the question of administration, it would appear that, for the purposes of research in cotton, a good place was wanted. Bombay was selected, and in Bombay there is an organisation in which very good research work is being carried on; it is almost similar to the work on sugar-cane being carried on at Coimbatore.

10723. I am referring to the Technological Institute and the laboratory?—I have not seen it.

10724. Do you approve of the general notion of organising research according to crops?—Not always. For instance, take the case of paddy; I would like Madras to develop on paddy on its own lines, and if Bengal has got to do it, it should do it separately. The problem of rice growing in Madras is probably a little different from the problem of rice growing in Bengal.

10725. *Professor Gangulee*: A little different?—I think there is a little difference in practice, but there is much more of climatic differences.

10726. *The Chairman*: Would it not be true to say that, while a problem of that nature may have a great deal in it that is common between this Presidency and, let us say, Bengal, there would be certain elements of the problem which would be particular to this or that Province? Would that be a fair way of saying it?—Even if it were so, I think it is desirable to have a separate paddy research station for Madras and another separate research station for Bengal. There is no harm in duplicating to that extent.

10727. So that, as far as paddy goes, you would not apply some such organisation as the Indian Central Cotton Committee to that crop?—Personally, I would not.

10728. Are you yourself engaged in any research work at the moment?—I am just now trying to devise manure mixtures on the present unit values of different manures available in Southern India for the deltaic lands of the Presidency. It is a work which I have taken upon myself, not because I was asked to do it. My chief object is to arrive at what are called assimilation factors, according to Dr. Kellner’s work in Japan. That is to say, if you apply a certain quantity of manure, containing so much of nitrogen, phosphoric acid and potash, you recover in the crop return only a certain quantity, even if it is a soluble manure; that is the assimilation factor in the manure, a factor which we have to take into consideration in determining the manurial requirements of a crop.

10729. Would you regard this particular problem, on which you are engaged on your own choice, as a fundamental problem, or as a problem of pure science? How would you describe it?—It is a fundamental problem.

10730. Could you tell me what work has been carried on in the Presidency of Bengal on that particular subject?—I do not think the question of assimilation factors has been tackled, so far as official records go, in Bengal.

10731. So far as official records go, are you satisfied that you would know if research of that sort had been carried on?—I think it is desirable that they should carry on separately.

10732. You do not think that any inter-communication would be useful?—I think it would be useful; I think I should know what they are doing and they should know what I am doing.

10733. But, like most people who have studied the history of research, you are not too frightened by the existence of a certain amount of duplication?—I am not afraid of it. As a matter of fact, there is necessity for it.

10734. You probably realise that duplication very often leads to valuable correction of results which, in many cases, has led to discoveries of the utmost importance?—Yes, and there are side lines which will be indicated to us when we are duplicating; it is not only a question of personal error; there is the question of different soils, climates and other conditions with which we deal.

10735. On page 152 of your note you say, "Research workers who specialise in particular branches of learning must devote their lives to it. For the sake of an allowance of a sum of Rs. 150, scientific experts have had to relegate their research work, often times in the past, to their assistants and subordinates, although they were drawing their main salaries as experts." Will you describe very shortly the circumstances in which this allowance of Rs. 150 has so prevented the careers of experts?—There is an allowance of Rs. 150 attached to the post of Principal of this College. In Madras, of all the Agricultural colleges in India, the man who is actually teaching is not necessarily the Principal. The senior officer on the spot is appointed Principal; he is either an Economic Botanist or an Agricultural Chemist or a Mycologist or a Paddy Specialist, or a Cotton Specialist as at the present time, people who have their appointments in the regular cadre of the Indian Agricultural Service and draw their salaries as such. Now when they take on the duties of Principal, it is my opinion that it is not humanly possible that they could devote the same amount of attention to their research work when they have multifarious duties to do as Principal. The duties of the Principal of this College are not exactly on a line with the duties of the Principal of an Arts College like the Presidency College, because there it is only the administration of the College, while here he has the administration of the estate, roads, sanitation, lighting, etc., so that, let alone the correspondence involved, the amount of time that he has got to devote to all these little details is so great, as a matter of fact the annoyance in attending to these details is so much, that I do not think it is possible for any research worker to devote his full time to research.

10736. To pass to another subject in your note, you are very clear as to the inadvisability in your view, of any central organisation being set up which might have an authority over provincial Departments of Agriculture, or over the direction of agricultural research in the Provinces. You say, and if I may say so I agree with you, that any proposal which traverses, either in letter or in spirit, the idea lying behind the Reforms of 1919 will not be acceptable to the Provinces and would be doomed to failure? Nevertheless, may I take it that so far I carry you with me, that is the view expressed in your note. If that is accepted, there is still the possibility, is there not, of setting up some central advisory body, not administrative in its function, not executive in its authority, but able to encourage co-ordination between Province and Province and able, we might hope, to support the financial resources at the disposal of any particular Province for any particular piece of work. Do I make that clear?—Yes.

10737. How would you envisage the creation of some such central body as that which I have outlined? I want to be perfectly plain that there is no question of compulsion; there is no question of overriding authority; the

initiative might rest with the Province; a particular problem would come up for investigation in a Province; if the authorities in the Province desired the advice and perhaps the financial help of the central advisory body, they would submit their plans and ask for advice and financial assistance as well. How would you view a suggestion of that sort?—You said that such a body would be purely advisory?

10738. Purely advisory?—And would be an honorary body also?

10739. I am not prepared to commit myself to that now?—Because my answer is going to depend upon that. If it is going to be a costly Board like the Railway Board, if it is to entail the salaries of five officers at Rs. 3,000 each, I think that, in course of time it will assume mandatory powers. A proposal to appoint a particular person or a particular set of research officers to be financed from the provincial revenue might be suggested as benefiting that particular Province. What I mean is this: if such a proposal is suggested, it is quite possible that the local Legislature may not accept it. The Minister is responsible to the local Legislature. If it is not accepted once, if it is not accepted a second time, and if it is not accepted a third time, it is quite possible that a proposal of that kind which involves some kind of financial liability upon the Province might be certified by His Excellency the Governor. That is a contingency which might arise and about which I know the local Legislatures are fairly delicate. They rather wish to avoid all chances of giving an opportunity to the Governor to certify. When grants are not voted by the Provincial Legislature, it is left to the Governor to certify.

10740. Yes, I am familiar with the constitution, but I do not quite follow the application of your argument to the particular proposal I have in mind; probably we have misunderstood each other?—The Central Board may send up a proposal; it may be advisory. The proposal may involve some financial liability on the Province. In such cases, the Legislature may accept, and then it is well and good; but suppose the Legislature does not accept, then there is the possibility that it may be said to the Legislative Council: "you are people who do not know anything; the proposal has come from an expert body; therefore you should accept it; if you do not accept it, the Governor will certify, or rather the people in charge will ask that it be certified." That is why I asked if it was going to be an honorary body. If it is not going to be a paid agency, I think it is worth trying.

10741. Are you quite sure you are right on a point of fact? Are you sure you are right in suggesting that certification by the Governor would be within the law on the particular point you have in mind?—I think so. I think, when the Legislature does not vote, the Governor has the power of certification. I am subject to correction; I am not a member of the Legislative Council and I do not know much about it.

10742. *Mr. Kamat*: Which subjects do you mean?—Transferred subjects.

10743. *The Chairman*: But provided there was no question of salaries attaching to services on the Advisory Board, you think there would be no difficulty?—No.

10744. Then it is possible?—Provided it consists again of officials and non-officials. I want that the Central Board, if there is one, should be more a non-official body than an official body. We have suffered in the past by not taking non-officials sufficiently into our confidence; if you are going again to create an organisation of officials, I think it is not going to help us very much.

10745. If the Central Board consisted partly of representatives chosen by all the Provinces, partly of representatives of the Central Government and partly of gentlemen of distinction who have shown interest in, and knowledge of, agricultural matters, if it consisted also of those who in the course of their business, buy and sell or manufacture agricultural products, would that be a sort of body which you have in mind?—Even then I say it should be confined to questions of international concern as far as possible rather than of Provinces. If the Provinces want advice they will ask for it; I think advice need not be thrust upon people who may be unwilling to take it.

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10746. I agree; if the Provinces want advice, they should ask. But whom do you suggest they should go to for advice?—Certainly not the kind of Central Board that you are now suggesting.

10747. I want a constructive suggestion; you must have something in your mind?—It is my opinion that the kind of Central Board you are now thinking of, consisting of a number of people, some officials and some non-officials and so on, is going to be extremely unwieldy. I do not think that, even in an advisory character, they could give much help. I mean it is going to be so unwieldy and the problems of the different Provinces are going to be so great. I do not quite see how this Central Board is going to help the Provinces.

10748. You envisage, you say, the possibility of Provinces desiring advice; will you tell me where you suggest the Provinces should go for advice?—I have just suggested a scheme for that kind of collaboration of experts; I would rather go to them. I mention it on page 162.

10749. Yes, I recollect it; I have read your note with great care and interest. Do you envisage a body of that sort having any funds at its disposal?—Yes.

10750. Where do you suggest those funds should come from?—From the different Provinces.

10751. As a contribution?—Yes; or from the Government of India if the Government of India think it is of sufficient interest; I would rather have it from the different Provinces.

10752. Do you think there might be any difficulty in defending in any Province a proposal to spend in other Provinces the money subscribed by the first Province?—I have not thought about it.

10753. It is a very definite possibility, is it not, under your scheme?—I should say the money should come from the Central Government.

10754. You are coming back to my point of view now, are you not? I thought probably you would agree with me sooner or later. You want money from the Central Government. You quite agree that the Central Government are not to be put in the position of dictating, but do you not think if the Central Government funds are to be used, the Central Government should at least have an opportunity of advising as to the direction in which the central funds should be spent, and of withholding central funds if the object for which central support is invited does not comply with the conditions and does not satisfy those who represent the Central Government. If my suggestion is carried out the Central Government officials would have the assistance of provincial representatives and also of persons who have general experience in agriculture and in commerce?—Will you allow me to answer this question a little later?

10755. Certainly; I am not pressing you any way; I hope I have made it plain?—Yes, I have understood your point.

I should just like to make it quite clear. In this scheme which I am suggesting I conceive the Province as being at liberty, either to submit its scheme and to ask for a blessing and for advice, or not to submit its scheme but to carry out its scheme by itself on its own funds; so that, to that extent the Province is absolutely protected against any infringement of its political, parliamentary, or constitutional position.

10756. Now on page 152, section 8, routine and research, you are talking about the need of separating all those who show aptitude for research from those whose capacity is of a more ordinary nature. Do you think that process is being carried out sufficiently rigidly at the moment?—In my opinion, no.

10757. In paragraph 9 on page 153, you are talking about the provision of post-graduate training. You say, "All that is required is a Government Order, formally sanctioning the admission of advanced students for post-graduate study." Are you suggesting there the granting of salaries to post-graduates?—Not necessarily, but in the University they are giving University stipends of Rs. 75 per month, tenable usually for two years. Those stipends

are given for B.A. Honours men, and recently Bachelors of the Science of Agriculture have been considered eligible for that purpose. There has been only one applicant so far. A student may get a University stipend or he may not get a stipend, but there should be provision in the department. Recently, when a student of that kind applied for post-graduate study in agricultural economics, we turned it down saying, "We have no facilities for teaching agricultural economics here; you had better go to the University of Madras." I think we ought to be able to take students of that kind. Half a dozen Honours graduates in chemistry came to me and wanted to have a little post-graduate study in agricultural chemistry here. There is no provision for it here, those men have to apply to Pusa. They have to be recommended by their respective Provinces, and as students from the whole of India have to be selected at Pusa, these people have small chance of admission there either. All I can say is there is ample provision in Madras, I would not say of the highest kind of education, but there are grades in everything, and they can certainly have the immediate post-graduate course at Coimbatore.

10758. On page 153, paragraph (11), you are talking of the increased recruitment of agricultural graduates into the science sections. You point out what you hold to be the growing tendency in recent years to draft fresh science graduates who are not all of them, honours men, into research sections to the exclusion of agricultural graduates?—Yes.

10759. If you had the appointment in your hands and there were two candidates, one a science graduate and another an agricultural graduate, if the science man were slightly better than the other, whom would you choose?—I would choose the agricultural man.

10760. In spite of the fact that the science graduate is slightly better in general scientific qualifications?—Slightly better in general scientific training, but the other man is decidedly better because of his all-round knowledge; it is the application of science to agriculture that is wanted.

10761. Then you go on to say it is not pure science that matters. I suggest to you the explanation of the fact that so many of those whose ambition is to excel in research work fail at a certain point in their career is that that is the point where their shortcomings in the fundamental sciences find them out, and that your statement that it is not pure science that matters is an unsound one?—To that extent I grant it is; the wording might be slightly changed. May I just explain that point in my own way? There have been cases of science graduates, University B.A.'s in Science who have also taken the agricultural degree, who have been passed over in favour of an ordinary pass B.A. Both have passed the same examination; one has got an agricultural degree in addition and he has been passed over.

10762. That is an instance, if I may say so, of what in your view is a hardship, but it is not an illustration of the general principle which I attempted to lay down. With reference to question 1 (c) on page 154 do you feel that more ought to be done for the farmer of dry cultivation?—Yes.

10763. You think he is the man who is in most need of assistance?—He is the man who needs considerable assistance.

10764. You do not think he has had a fair show?—No.

10765. Are you quite sure?—Quite sure.

10766. What would you say to the initiation of a degree of rural economics in this Presidency?—We have now got a degree; it is not called a degree in rural economics; it is a degree in arts and sciences, but in that course rural economics is only an optional subject of study. I do not know if it is called rural economics but they, in fact, study economics.

10767. You follow broadly speaking what I mean? When I ask about a degree of rural economics I ask your opinion: do you think it would be to the advantage of this Presidency if such a degree were founded?—I think so.

10768. Do you think it would be well if officers in the Public Services, other than the Agricultural Service, know a little more about rural economics than they do at the moment?—I think so.

10769. On page 160, paragraph (6), you are talking about the need of advertising the Department of Agriculture. I think you said the Department of Agriculture should be advertised. Have you any proposals?—I do not mean to say that people do not know of the existence of the department. What I mean is that the possibilities of help by the department to the people are not very well-known, and that can only be done by officers moving more among the people. I daresay the Agricultural Demonstrators, Deputy Directors and Assistant Directors are moving much more closely among the people now than they did sometime past; but I want them to enter into the spirit of the life of each village; I want them to move much more. As I have explained at one place, it is no use their doing what is called their routine work. My recent experience has been that these agricultural officers are moving much more closely now; that is the first step of advertisement. The second is we must have some kind of shows in the towns, however small they may be. If shows have not been a great success in the past, that is no reason why they should not be a success in the future. More co-operative societies have sprung up and they are doing much more work than formerly and I dare say agricultural shows will be a very good method of advertising. I know there are a number of difficulties, but difficulties are meant to be overcome and must not make us turn back. The work of the Agricultural Department is entirely missionary in character; we cannot use any compulsion; and being a missionary, the man who does the work must be enthusiastic. This is what I mean by advertisement; I do not merely mean placarding and so on.

10770. On page 163 of your note, you deal with the question of Finance and you say, "One of the methods of financing provision for short-term credit to cultivators which may be suggested is the one similar to what is adopted by some manure firms to help the planter." In the case you are citing, the firm selling the fertiliser allows the planter to have the fertiliser on credit secured on his crop, so that it is a definite hypothecation of credit to a particular debt. What particular object are you proposing to finance by this method?—Agricultural purposes.

10771. In general?—In general, not for marriages; not for the discharge of prior debts; I would say, for all agricultural purposes organise this kind of State aid, and this can be done by village panchayats.

10772. How would you secure the repayment of these loans?—The crop is mortgaged to the panchayat.

10773. Take the ordinary peasant to-day; he has got his land revenue to pay; he has his own personal and household expenses; he has also his existing debt to pay, which is probably much more than he can manage. How would you propose to recover the capital and interest on the further loan advanced by the State?—The crop is harvested and measured in the presence of one or more of the members of the panchayat; they just take hold of it, and if the man is really in debt they can probably give him a further advance based upon his next year's crop, if they think the man has sufficient security. I am suggesting it should be only to the extent of one year's crop. If it is a crop of paddy in good land which will fetch Rs. 100, I say there is nothing wrong in giving an advance of Rs. 50 to that particular cultivator, and the crop as it is harvested may be taken over by these men. Now what happens is, the ryot gives his paddy to the moneylender. I am not suggesting a millennium; what I am suggesting is a palliative, something which will free him from the hands of the more usurious moneylender. He will in any event be obliged to sell his crop to somebody.

10774. And you think by that method you can provide funds for the ryot's agricultural operations, and at the same time finance his existing debt and his household expenses?—Yes, up to the extent of the value of his crop.

I am quite certain you have a distinguished career behind you as a Research Chemist, but if you will not think me rude in saying so, I do not believe you will ever be a Chancellor of the Exchequer.

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10775. *Dealing with Soils* on page 163: Is it not the case that there is a shortage of phosphates in the soils of the Presidency?—Yes, there is a shortage of phosphates generally.

10776. You say, "The most urgent line for the improvement of soils in the Madras Presidency is the incorporation of organic matter or humus to build up gradually the productive power of the exhausted soils." Is that even more urgent than the supply of phosphates which you have described as the existing limiting factor?—I consider the incorporation of organic matter is the first thing because our experiments have shown that, without organic matter or nitrogen in the soil, the phosphates do not respond.

10777. Now I come to Co-operation on page 164 of your note. You are describing a co-operative society formed in the Trichinopoly district at Talgudi; is that right?—Yes.

10778. You say, "The society leased out, on usual terms." Do you mean by that that they obtained the usual terms on lease?—Yes.

10779. You say, "The society leased out, on usual terms, 10 acres of paddy land in a block." That is from the ordinary proprietors?—Yes.

10780. Who is managing the society, do you know?—The Secretary is the manager, he has got the help of the local Agricultural Demonstrator; the Secretary keeps the funds and the servants are under his charge.

10781. It is really a demonstration farm?—Yes; a small one.

10782. *Mr. Calvert*: Who is the Secretary?—One of the cultivators; as a matter of fact, he was one of those from whom a portion of the land was leased.

10783. *The Chairman*: On page 166, you are dealing with General Education and you suggest that the girls respond to any increased opportunities of education. Do you suggest that this tendency would be as noticeable in rural areas as in urban areas?—I think so. I am speaking from a little experience, because I know that even the servant girls here come and join special classes when they are held for them.

10784. Lower down you point out that a boy can at least attend to grazing of cattle and sheep, or scare crows in a field of ripened *cholam*. Do you think the boy's parents are entitled to that service from their own child or not?—It depends upon the father's position; if he is fairly well-to-do, I do not see any reason why he should not send his child to the school; when he is poverty-stricken, I believe he has no other choice than to get the maximum out of his children.

10785. But if you insisted upon compulsory education in towns and villages, then of course, and I do not say it is not right to do so, you will deprive the poorer man as well of the services of his boy?—But in course of time, the boy who has higher education will be of greater efficiency.

10786. But still you are definitely in favour of compulsory education?—Yes.

10787. You know that at the moment, unless I am wrongly informed, it is open to any community in this Presidency, through its elected representatives, to accept the principle of compulsory education; is not that right?—You mean there may be anybody who may want to be exempted?

10788. The District Boards in this Presidency have a right to apply compulsory education?—I do not know about the District Boards, but the Municipalities have gone in for it, and several of the Taluk Boards have voted in favour of compulsory education.

10789. I am asking you a perfectly clear question: Is it not within the competence of any District Board to pass a rule which will have the effect of making elementary education compulsory and administering it?—I do not know whether they have got the powers.

10790. *Sir Ganga Ram*: Have you specialised in chemistry?—Yes.

10791. Organic or inorganic?—I know a bit of organic and a bit of inorganic chemistry.

10792. Applied chemistry?—Chemistry as applied to agriculture, I know, but not chemistry as applied to other industries.

10793. It is the first time that we have heard that the Legislative Council has been very fair in providing funds in the budget for agriculture. Will you explain that? Do you mean that generally there is no lack of inclination on the part of the Council to provide funds?—No. The Council is liberal in providing funds.

10794. Well, about Research, if you were drawing up a programme for three years on the understanding that there is any amount of funds available, what researches would you first spend money on?—I would say, the first limiting factor for crop production is water; you get the maximum out of the land by the help of water.

10795. Do you mean quantity of water?—I say the first limiting factor for crop production is water.

10796. You mean the quantity of water that is required by each crop?—For mere growth the first limiting factor is water; and the utilisation of all our researches is limited by the water factor. For instance, the question of dry farming is one which concerns the conservation of soil moisture; irrigation and the conservation of soil moisture, I should say, should receive first attention.

10797. On page 164 you have used the words “good cultivation” and you have distinguished that from manuring. What do you mean by good cultivation?—Ploughing with suitable ploughs instead of small wooden ploughs.

10798. How many times?—Wet land is ploughed eight times.

10799. That is paddy land?—Yes, paddy land.

10800. In dry land?—As many times as you can.

10801. Can you tell me whether in good years the ryot can grow cotton and save something after meeting all his requirements for food and other things?—There were one or two years when, owing to the fabulous prices obtained for cotton, they were able to make money; but I do not believe that they put it by as a saving.

10802. Can they not thereby make up for the deficiency of food in famine-years?—No, because these people, when they got money from cotton, spent freely and did not save it. I would rather that they went in more for food crops.

10803. If they grow cotton, they will have some reserve to draw upon in famine years?—I would rather coax the land to yield more food produce than it is giving now.

10804. *Sir Thomas Middleton*: On page 153 of your memorandum you note that there has been a tendency to draft science graduates into the research sections to the exclusion of agricultural graduates, and you quite rightly, in my opinion, deplore that tendency; you would like to see agricultural graduates qualify for the research posts. Now I want to get from you, if I can, the reason for that tendency?—The tendency is chiefly due to this; the science men are trained by men from outside; the agricultural men are trained by us; we use the men we have trained for agricultural work as Demonstrators, and we get people from outside for research work. I do not think that the recruitment of people trained outside should be completely stopped; what I say is that the agricultural men should have an opportunity whenever there is a chance. At present it is chiefly owing to paucity of workers for the agricultural section that outside men are taken into the scientific sections. Now, the science men can be made to learn agriculture in course of time. My contention is that there are good B.Sc. Ag. men who have a very good knowledge of science. As Chairman of the Board of Examiners, my instruction to the examiners is this: the papers set should have a standard higher than the pass standard, though not so high as the honours standard; that is, so far as chemistry and botany are concerned. So that, to say that people passing that examination have not got as good a knowledge as the ordinary B.A., is wrong. I speak from experience, both of B.A.'s and B.Sc. Ag.'s.

10805. That does not answer my question. The point is this: the fact exists that these men are being preferred. Why are they being preferred?—I believe the Head of the department chooses them. As a matter of fact, there are agricultural graduates, who have learnt these sciences. I only want that the particular tendency should be removed. I do not say that posts should be earmarked only for these and never for the others.

10806. I quite follow that, but why does that tendency exist?—I do not know.

10807. What is the difference in the course of training for these two groups of men, the B.A.'s and the B.Sc. Ag.'s Both enter the course at the Intermediate stage, I understand?—Yes.

10808. What amount of chemistry, which is your subject, do the agricultural men get in the final course?—They have the whole of organic chemistry which is done by the other class, the pure science men; they have agricultural chemistry in addition; the people from the Presidency College, for instance, do not do as much simple quantitative analysis, and much less of anything of agricultural chemistry. We have got to teach them, for one or two years, the elements of agricultural chemistry.

10809. Your answer shows that so far as chemistry is concerned, they are better qualified?—Yes, at any rate, not less qualified; probably the same remark applies to botany.

10810. *Dr. Hyder*: Are you referring to the graduates of the Madras University?—Yes, graduates of the Madras University.

10811. 'Pass' men or 'Honours' men?—I am not talking of 'Honours' men.

10812. You are simply talking of 'pass' men?—Yes.

10813. *Sir Thomas Middleton*: Your statement was that these 'pass' men of the Madras University were occasionally preferred to agricultural graduates?—Mostly 'pass' men; there are very few 'Honours' men.

10814. We have reached no explanation yet; I can only assume that there must be something in the personal qualifications of the men?—That may be so.

10815. You explained to us that both the men who take the B.A. in Honours and, I understand, the B.Sc. Ag.'s are eligible for stipends for post-graduate work. Is that so?—Yes.

10816. How many stipends are offered by the University?—About ten, for all subjects.

10817. I think your point was that the stipends are confined to the Madras University?—Yes.

10818. And they cannot be used outside?—No.

10819. What you desire is that there should be a greater number of open stipends?—I am not very particular about the stipends. My concern is only about the training given. Whether they are to have stipends, or whether they are not to have stipends, and where the stipends are to come from, is not my concern.

10820. The stipend is merely a means to training and you want to get them trained at the institution most suitable?—Yes.

10821. *Dr. Hyder*: How many periods do you have to teach?—Six hours: lectures and 14 hours' practical in a week.

10822. By hours, do you mean the ordinary school period or the full hour?—I mean a full hour of 60 minutes.

10823. Is there complete separation of research and teaching at this institution of yours?—It is now complete.

10824. Do you think that is desirable?—Certainly, that is my opinion.

10825. This complete separation is desirable?—Yes, provided that facilities for the research workers coming in occasional contact with teaching are provided

10826. You have been, so to speak, a teacher?—Yes.

10827. Would it be better for you to carry on research and would it be better for the research man to deliver lectures to your students, or to have an interchange between teaching and research in the case of the same man? You would, in that case, be lecturing for a certain number of periods, and you would also be engaged in research work, but I understand from you that there prevails at this college, a complete divorce between teaching and research, and that your research men do no teaching whatever. Is that so?—Yes, unless we call upon them to give some special lectures.

10828. Is that done?—Occasionally; when we ask them, as a matter of courtesy they oblige us.

10829. Would it be good for the training of the students in your college, if those students were taught regularly by people who were carrying on research?—Certainly, that is what I have mentioned. May I draw your attention to my note on page 157?

10830. You deplore the tendency which prevails here of the preference given to graduates in pure science; they are drafted into the research sections, and your agricultural students pure and simple are not taken in such large numbers?—There are some, and they have done very well indeed.

10831. You have got a very old and long-standing connection with this institution, extending over, I suppose, two decades?—Practically all my life.

10832. Here are the qualifications for admission: "Candidates shall have passed completely the Intermediate examination in Arts and Science of the University of Madras, and shall have qualified in group 1 or 2 thereof, or an examination of some other University recognised as equivalent thereto." These are the qualifications for admission. If a graduate of the Madras University in pure science is appointed here, he gets agricultural training, surely?—He does not get agricultural training; the man comes and straightaway gets appointed as an officer; he does not get any agricultural training; a pure science man comes here and becomes probably a teacher to the Agricultural College students; that is my point; he does not get any agricultural training.

10833. Surely, the University standards in science, chemistry or physics, or biology or botany would be higher?—The University B.A. standard is good, the B.Sc.Ag. is not inferior. I say I am teaching both; I know the kind of instruction which is given in Arts colleges, and I know the kind of staff whom I am getting, and I know the people whom I am training.

10834. I am not talking of your regular teachers; I am talking of the research that is carried on here under these teachers, attached to this college. I understand that these teachers prefer a pure science man to a graduate of your college. I submit to you, do you not think that so far as that pure science man is concerned, his training is better than the training which is specialised in the case of agricultural graduates?—It is a matter of opinion. I consider that if the knowledge of science possessed by the B.A. is greater, then what you say may be correct; but I do not accept that; I say, as a teacher of 25 years' experience, that the knowledge of science possessed by a B.Sc.Ag. student is not inferior to that of a B.A. 'pass' man in chemistry or botany, and if he has got to learn an additional amount of science, he can learn it much more quickly than the B.A. 'pass' man can learn agriculture, because agriculture is a practical subject.

10835. For carrying on research in entomology or an allied subject, knowledge of agriculture would not matter. If the research is confined to the principles of pure science, a knowledge of agriculture does not matter; it does not matter to the man whether he has received any training in farm management; an entomologist has to find out remedies for insect pests and do plant breeding work?—He could not know anything about it; it would take him much longer to learn the habits of growth of a plant.

10836. He would know that if he had taken botany?—You do not expect a man to learn three or four sciences.

10837. Can you tell me whether the teachers and those who are engaged in research get enough opportunities of meeting other men working in other Provinces, apart from these annual gatherings at the Science Congress?—None at all.

10838. You think it would be desirable that you should have Associations on different subjects, for instance, the chemists of this Presidency coming into contact with the chemists from other Provinces, so that you may discuss the subject?—I have made a proposal to that effect on page 161.

10839. *Dewan Bahadur Raghavayya*: Please see paragraph (4) on page 155 of your replies. There you propose periodical transfers of the staff from Teaching to Research section and *vice versa*. Is that reconcilable with your statement that the teaching section and the research section, which are quite separate in the college, should continue to be so? Do you not think that the periodical mutual transfers of these officers would prejudice the continuity and success of research work?—I do not want all the staff to be transferred. Probably the Head of the section would not be transferred. What I want is that the subordinate staff and the Assistant Professors and the Professors must have a transfer from time to time, so that there will be new blood coming in; otherwise, there is a tendency for the teaching to become stereotyped, and even in the case of the Head of the section, I should not mind if there was an occasional transfer. For instance, a Deputy Director may go out as a Professor of Agriculture, and the Professor of Agriculture may work for a time as a Deputy Director; they may change. Such an arrangement has been found to be very useful in other professional colleges, for instance, in our neighbouring Forest College. I do not say you should necessarily change, but the change of a few men occasionally seems to be of some use. If a teacher is getting into a stereotyped vein, it is better to have a man who has been dabbling in research for some time as teacher.

10840. Is not continuity an essential of successful research?—There is. the Head to see that the continuity is kept up.

10841. You say that this proposal should relate to the subordinates?—Mostly, but occasionally also to the Chief. If such a thing does not take place, if there is a contingency on account of the illness of anybody or some other cause, there is nobody to take his place. I do not want such a contingency to take place in such a big department as the Agricultural Department.

10842. In the research department itself, are there not men who can readily take the place of the man who is temporarily absent?—They can, but they will not; they refuse to come. My experience is that the men working in the research section refuse to go to the teaching section; they say "We do not want to go to the teaching section." I am referring to the research section men.

10843. But you do not want them?—I want them occasionally, a certain leavening. There will be an improvement in the kind of teaching by having an occasional transfer. That is my opinion.

10844. Please refer to page 158, sub-paragraph 4, of your replies. You suggest that land should be assigned preferentially to agricultural students who should be helped with money for initial outlay. Are you aware of any culturable waste lands or disforested lands which are good enough to be brought under that scheme?—From reference in the Questionnaire I believe there are waste lands available in the country.

10845. Twelve and a half millions of acres?—Probably, yes.

10846. But are there good culturable waste lands with soil suitable for this experiment?—I wish that the Revenue Board or the Agricultural Department should depute an officer to make out a statement of culturable lands.

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available in the different parts of the country, or at least let the college students know whether there are culturable lands. I believe that information is not available easily here, unless one gets it from the Collectors' offices.

10847. So you desire that the matter should be investigated?—I think so.

10848. Would you extend that experiment to educated youths who are willing to take up such a career?—Those who have not had any agricultural training?

10849. No?—I have no objection to Government giving lands on request to anybody.

10850. Subject to proper precautions?—I am only asking that you should also consider agricultural students along with other people in the matter of giving out lands.

10851. Is it in your opinion desirable that it should be done? Do you think that the educated man who does not seek service but who wants to enter upon land and cultivate it will be in a position to do agriculture better than the man without education and that he should be helped to get land?—I think so; but not to the exclusion of agricultural students, I hope.

10852. No, I do not mean that?—I understand that such a system has been followed elsewhere. Sir Ganga Ram told me yesterday that it was followed, and was a great success, in the Punjab.

10853. You refer to Adult Education and the work that is being done under that head. Are you of opinion that adult education is becoming popular?—I cannot say it is becoming popular; we cannot wait until people demand it; there are so many cases in this world where you have got to put things before the people before they ask for them. If you are going to wait for the popular demand, I am afraid that no advance at all will be made in very many things. If you put a library in a village, it will be used, and, from what I know of the work of the District Educational Council of Coimbatore, I see that there is a demand whenever a few library books are placed in an almirah in a village.

10854. Have you visited any centre of adult education?—Yes.

10855. Do you find the work done there encouraging?—Not quite; the schools are attended by a number of small boys of 12 or 13 much oftener than by the older men. The older men are so tired after their day's work that they prefer to go to the tavern rather than to the evening class.

10856. *Mr. Calvert*: What about the months when they have no work to do?—Even then I believe they are not likely to go to a regularly conducted class. I do not see there is such a demand for it. But if you have some kind of provision, I daresay they will utilise it.

10857. *Dewan Bahadur Raghavayya*: I see from the Report of the Director of Public Instruction that last year, that in one single year, over 700 adult schools have been started in this Province?—Yes.

10858. Do you think that those 700 schools would have been started had there been no real demand for them?—I daresay there is a demand; there were in Coimbatore district itself 137 adult night schools, 100 private schools and 37 under local bodies; but the arrangements for lighting were inadequate in some cases and, in the majority of cases, the classes themselves were unsuitable. The hard worked labourers used in the beginning to swell the ranks of the night schools, but you really have to maintain their enthusiasm for a sufficiently long time for them to learn anything useful. All I can say is there is a demand, but not to such an extent as one would wish; if you have a number of these schools, certainly more and more demand will come. Simply because they are not as much of a success as one would wish, I do not want that adult schools should be stopped.

10859. So you have hopes for them?—Certainly. I have hopes. I only say they are not working at their best. Boys of 11 and 12 are mostly attending the night schools rather than adults, although they are meant for adults.

10860. Please refer to the last paragraph of your answer on page 159 of your note. You suggest: "One of the most effective methods for popularising agricultural improved methods, is, in my opinion, the constitution of Advisory Boards in typical localities." You are of course aware that there were Agricultural Associations in this Province in almost every district. How do you account for their failure in the past?—To be very plain, it was an official organisation.

10861. Official ridden?—Official ridden. The Commissioner for Agriculture said one day 'let there be an Agricultural Association'. He said to a retired secretary, 'Will you please be my Secretary for this Association?' In the same way he sent letters to the different Collectors saying: "Will you please organise Agricultural Associations?" They were organised; then a particular gentleman retired, or a particular secretary died, and the whole thing collapsed. You should begin from the bottom. You should begin from the village instead of starting agricultural societies from the Presidency. What has the Madras City to do with it? You must start Agricultural Associations from the village, and I want that the village panchayat should be the unit and not an Agricultural Association engineered by a Commissioner of Agriculture.

10862. I understand you to say that you want the village panchayat, or the co-operative society as the case may be, to constitute itself the advisory board for that particular village?—I did not say in that particular manner so far as the advisory body is concerned. What I say is this: suppose I have to carry on a certain amount of propaganda in a particular group of villages, I would like the Agricultural Demonstrator or the Assistant Director of Agriculture to form a kind of organisation within those few villages; I would entrust the secretaryship to one of themselves, though the Agricultural Demonstrator would still do the bulk of the work; you would thus make the people interested in the kind of demonstration you are doing. Now in some cases what happened was this: I go to a place and say "Look here, I am bringing some manure; I am going to put it on your land to see the relative effects of the manurial treatment and the non-manurial treatment. I shall bring the manure and put it on without any extra labour or cost to you". Now, if it were done like that, people would help very readily. They would think it an honour and not merely an obligation to allow their lands to be used. If you have a local organisation consisting of a few agriculturists and a few officers and take the people into your confidence and tell them exactly what kind of experiment you are doing instead of merely going about from one place to another, I daresay people will take more interest. I want an organisation like that. Now on a larger scale such an advisory body was thought of as early as 1883, I believe, by Sir Frederick Price in Madras; it is nothing new; it is working exceedingly well in Mysore.

10863. Are you not going back to the old state of affairs? You are suggesting an Agricultural Demonstrator to constitute the advisory board?—But it is not the Commissioner of Agriculture and his Secretary. It is not the Collectors that are doing it; it is not the Tahsildars that are organising these Associations. It is the agricultural departmental officers that do it.

10864. That is only a difference in Degree. You still want the official patronage and the official initiative?—Official patronage I want but not official control. When so many non-official organisations can exist in this way, the District Educational Council and others, I do not see why this one should not work. Formerly we had so many official associations. Now that Taluk Boards, District Boards, Municipalities and District Educational Councils are working as non-official agencies, I think agricultural work must also be more largely worked by non-official agency. The greater the amount

of co-operation we get from the non-official agency, the better, and the greater is our salvation.

10865. I do not think there is a difference of opinion between you and me in regard to that. The only question is who is to organise these associations?—The Agricultural Demonstrator may start it, but he must be helped to keep it going; it is the people who must run it; it should not depend on enthusiasm of one or two men. As I say, as our Director said just now, such organisations depend on the energy and enthusiasm of a few people; when these people are transferred, the organisation is liable to break down, and on that basis all kinds of non-official administration in the country will be a failure. In the whole country only a very few people take an actual interest and you must utilise them in the best manner possible. Now the co-operative societies have come to stay, and with village panchayats, in the whole Presidency organised for all purposes by an officer of the grade of a Collector as the Inspector-General of Panchayats, we are certainly going to have the village as the unit. There is progress everywhere. I am very optimistic in that matter.

10866. One last question about Finance. Do you not think there are already methods by which the ryot could be financed with a view to his getting manures and implements and meeting other expenses of cultivation? You have the co-operative agency which has plenty of money; it has so much money that it cannot spend it within the Province itself and lends it to the other Provinces; there is the Agriculturist Loans Act under which advances are made to the ryots for the purchase of manure, for the purchase of implements, for the purchase of seed grain and so on. What further organisations do you want?—The following remarks made by Sir Frederick Nicholson 35 years ago hold good to-day. The reasons are the same. The reasons given by Sir Frederick Nicholson are “ignorance of Government’s willingness to lend, suspicion of its intentions, worry and delay in enquiries, frequent refusals, large demands for bribes or perquisites by taluk and village officials, opposition of taluk officers on account of the trouble of enquiries and of their knowledge that often money is not used as it should be, opposition of village officers who are often the village moneylenders, strictness of recovery of instalments and so forth.” Although there are 2 or 3 lakhs of rupees available for these loans, people do not take one-tenth of the amount available.

10867. *The Chairman:* Before you answer any other question, would you like to read the passage marked in the book I am passing up to you and say if you wish to correct the remarks you have made earlier? You see the provisions under which the Governor may certify. This is in reference to your contention that one of the possible dangers of the central body would be that it might lead to the Governor of a Province certifying legislation not otherwise certifiable. I have handed to you a copy of the Government of India Act which I think says that, agriculture being a Transferred subject, no certification of any measure relating to agriculture is constitutional?—I accept that.

10868. *The Raja of Parlakimedi:* You say that farms had to be given up as they did not serve the purpose for which they were intended, in Bellary, etc.?—Yes.

10869. Have they come into existence in other places?—Farms have been opened. Is that what you mean?

10870. Yes; have they been opened out of savings from other farms that have been closed?—It is not a question of substitution of new farms for farms that have been closed. The question is, why should farms be opened at all if there is no policy? I daresay more farms have been closed than opened afterwards.

10871. In different parts, farms are necessary to experiment upon the different valuable crops. The department have been saved the expenditure in those places where the farms have been closed. I wish to know whether

these savings have been made use of?—I suppose so. But what I want to say is this. A number of farms were opened and closed again without sufficient results having been achieved therefrom. Now new farms have been opened, it may be with the money saved by the closing of the other farms.

10872. What are your objections to research work being carried on by a central body on a common crop, for instance, paddy?—We want duplication in crops like paddy which is so very important. It is something like this; India is not a small place; it is almost a continent. Being a continent, it is something like saying “They are doing certain research work in France; why should they do it in Germany, Belgium and other places.” This is a vast country and I do not see why you should restrict research to a particular Province. Certain States in the United States of America carry on research work, and in some cases there is duplication.

10873. For instance, the conditions and manures necessary to stimulate the growth of paddy on all sides are practically the same?—Not necessarily. I may tell you that, in the course of the experimental work that I carried on in respect to paddy, the results that I obtained at Tanjore were different from those which I got at Coimbatore, which were again different from the results obtained in the Periyar tract. After all, these are within a distance of 200 miles of each other.

10874. You say that the conditions in the Northern Circars must be different from the south?—Yes, the conditions will be much more different between Madras and Bengal. Therefore, there is no harm if such fundamental problems are being attacked in two places and, in order that it may be done with proper care, I suggest that it should be done as a kind of team work, some problems being attacked in two or three places and all the several investigators making a report on a later date. Then the results could be compared and the generalisations made.

10875. Then with regard to your remarks at page 164, paragraph (c) in question 9, referring to soils, you suggest that the improved lands may be auctioned to the public?—I do not say, improved lands. I am talking about areas which have gone out of cultivation. Supposing there are areas of culturable waste lands which are now out of cultivation, these should be thrown open, that is the point.

10876. On page 164, you say that the best that can be done is to sell such lands as far as possible to the residents of the village in open auction. If the areas are fairly large and exist in blocks, the sale may be advertised widely, so that people outside the village who wish to invest in lands may take them up. At the same time, it is worthy of consideration whether these blocks of lands may not be assigned to agricultural students on low rental or on long lease. I do not think there is much advantage to be gained if the land is only capable of producing bad crops?—In my opinion agriculture is a very difficult business and a man must take trouble. A man who takes trouble must get something out of these lands. It may be that these lands may be out of cultivation, probably because of want of attention. It often happens that, if one has some very good land, he cultivates only a part of it and pays less attention to the rest. The other lands may be comparatively good but they are not cultivated. A careful cultivator, by means of intensive cultivation, may be able to produce crops thereon. In some of the Periyar tracts, they have done this. Lands which were practically considered useless in the year 1911 by Dr. Harrison when he examined the soils, are not recognisable now. The ryots have actually filled the soil with six inches of new soil or of municipal refuse from the Municipality of Madura, and as a result they have changed it altogether. Agriculture is a business which requires serious attention.

10887. *Professor Gangulee*: With reference to the answer you gave to the Dewan Bahadur, you waxed eloquent about non-official agency. Can you explain why no such organisations have yet sprung up? You want things

to come from the bottom. Can you explain why there is no sign of non-official organisations springing from the people?—Should I answer that question; it is almost a political question.

10878. You must explain it because it is important?—Somehow or other, I should consider that the administration of the village as a unit has practically gone out in the present time; I will not say why; it has gone out. The villager is not sufficiently educated; the rich man who made his solemn promises before the Chancellor of the University that he would do this and that, was so selfish that he did not attend to the less educated people, with the result that there was a set of people who became rich, well-to-do higher classes, and another set of people who were left in need and poverty. It was a kind of social suppression as it were. The man with his coat on and with a little smattering of education thinks himself superior. The result of this has been that there is a serious cleavage between the educated higher classes and the uneducated classes. The highly educated man has not imparted the benefits of his education to the village people as he promised to do. The result is that, in the villages, you have got no organisation of any kind; there is only one thing, and that is that everybody is going to the court and spending money in litigation; except that one habit, nothing else has been learnt by the villagers, and I do not know whether you can call that good.

10879. You are about to retire from the Indian Agricultural Service?—Yes.

10880. How many years' service have you put in?—A total service of 33 years and a pensionable service of 30 years.

10881. Most of the time you have spent in educational work?—Yes, most of the time.

10882. Have you done any research?—Yes.

10883. In agricultural chemistry?—Yes.

10884. Will you tell us of any research in agricultural chemistry that you have done, that has been of considerable value to agriculture in Madras. Of course you must have done research in many subjects, but I want you to mention one single agricultural chemical problem you have undertaken which may be of considerable benefit to Madras agriculture?—There is a deposit of 80 million tons of mineral phosphates within 30 miles of the Cauvery delta practically untouched, impure stuff, containing a large amount of iron, aluminium, and calcium carbonate.

10885. You are referring to the nodules?—Yes; these nodules can be converted into flour phosphates and can be used along with green manures, also in suitable mixtures with sulphate of ammonia. So far as paddy is concerned, I have just shown that an increased crop can be obtained as a result of using the mixture I have devised. I have studied the comparative merits of bonemeal and flour phosphates as suppliers of phosphoric acid. I have studied different organic manures as suppliers of nitrogen, and I have devised a mixture which has given good results for the last two years, and which I hope to complete before I retire.

10886. Did you make any soil survey?—As a matter of fact, I was completely responsible for one, and I took a certain amount of responsibility for two others.

10887. And in the surveys, one of the conclusions you arrived at was that there was phosphatic depletion in Madras soils? There is considerable depletion?—There is considerable depletion of phosphates.

10888. In answer to the Chairman, you said that you attached greater importance to the incorporation of organic matter or humus than to the supply of phosphates. Where there is a supply of phosphates in the soil, I agree, the supply of organic matter will stimulate the soil; but when there are no phosphates in the soil, what will the supply of organic matter or

humus do?—I never said that you should supply only humus and not phosphates.

10889. Before you supply organic matter to the soil you should also increase the phosphates?—I will show you some charts from which you will see that the supply of phosphates alone to paddy soils has not given any result; whether it is super-phosphate, bonemeal or flour phosphate, you will not get any result unless you put in organic matter, or nitrogen in some form.

10890. In the type of soil which shows phosphatic deficiency, before you add any organic matter or humus to the soil, you must be quite sure that phosphate also is added?—I never said that phosphate should not be added. As a matter of fact I want the phosphate to be added.

10891. I wanted to make that quite clear. Is it a fact that there are certain parts in the Presidency where the law of diminishing returns is in operation?—I think there is a tendency recently towards a general improvement; it is not so bad as it was.

10892. I wish to have information on the method of teaching. You say you teach six hours in the week; you teach agricultural chemistry, I suppose?—Organic chemistry and agricultural chemistry.

10893. Supposing you want to teach the mechanism of nitrogen fixation, you would explain the matter technically; would you not?—Yes.

10894. And then would you go to the laboratory and show some experiments there or would you go, to the fields and show the points relevant to the subject?—As a matter of fact that particular subject is not fully taught; nitrogen fixation is a specialised branch of bacteriology, and the students have not the time, consistent with their other requirements, for a practical study of that subject.

10895. Do I understand that, for an Agricultural degree like the B.Sc. Ag., you do not teach the mechanism of nitrogen fixation?—They are taught, but they have no time to do it practically themselves.

10896. You only teach?—I think we may teach and leave the technical details alone.

10897. Do you carry on any laboratory experiment, or teach them only through the text books? Do you conduct actual experiments either in laboratories or in fields?—Do you want to find out what I know of agricultural bacteriology?

10898. I want to know how these important subjects are taught?—If you are asking me a question about agricultural bacteriology, I may say I have not specialised in it.

10899. On the subject of the mechanism of nitrogen fixation, I want to know what methods you follow in this College for teaching?—I do not think that subject is being taught completely; only lectures have been given. This is one of the subjects in which I ask for the co-operation of research officers. In this case, Mrs. Norris was the Government Bacteriologist, and at my request, she gave a few lectures on the subject illustrated by demonstrations. Similarly with the subject of malting in general, although I could explain the general principles, there was another officer who was specially engaged in that work and I asked him to give three or four lectures, which he did. That is the kind of work that I want research officers to do. It is not possible for one to specialise in each and every subject.

10900. Have you studied the question of dry farming?—I have, from a general point of view.

10901. With regard to manure mixtures, you give an example to show their limitation. You are referring to your mixture?—Yes.

10902. You say, on page 159, "For example, the application of a manure mixture suggested by me has brought in an average increase of 10 per cent.

in the yield of paddy grain which, for a scientific worker, may be considered a satisfactory result. 10 per cent. increase, however, on a yield of 3,000 lbs. amounts to 300 lbs. while a similar increase on a yield of 1,500 lbs. is only 150 lbs. of grain. The former pays the cost of the manure, the latter does not." From that I gather that that mixture is a wrong mixture for that particular case, that it is not workable?—It is not a question of not being workable.

10903. It will not pay?—It will not pay in that case. You seem to know some science, and I hope you will agree with me that, for a scientific worker, the economic question does not arise. First of all, he is concerned with the question of the amount of nitrogen, phosphoric acid, etc., in a manure required to produce a certain yield of crop. The economic question comes in later. I have simply given an example to show that a 10 per cent increase will not pay for a certain farmer. Simply because there is an increase of 10 per cent in the yield, I cannot straightway tell a farmer that he can use my mixture.

10904. Have you carried out field experiments?—I have carried out field experiments with reference to phosphates.

10905. What is the procedure?—I write to the Deputy Director of Agriculture, who selects the owner of the plot who is willing to place the land at my disposal. The land is then divided into a number of plots. With reference to the experiments on phosphates, I divided the land into ten plots of ten cents each, omitting outskirts, and pegged them out carefully. Five plots were manured, and the other five were left in the way the ryot would leave them; the plots were separated by small bunds; both sections were planted in the same manner, by the same coolies, and treated in all respects equally, except for the method of manurial treatment. The Agricultural Demonstrator visits the place once a fortnight and sends me progress reports of the growth. At the end, the Agricultural Demonstrator, or one of my Assistants, goes there, harvests the outskirts first, and then harvests each particular plot separately; the crops are then allowed to dry and they are weighed. The average of the five manured plots and the average of the five unmanured plots are taken, and I thus find how much increase there has been in grain and how much in straw. We take care to cut the straw closely and uniformly; otherwise there will be no uniformity. In the Tanjore districts some labourers leave 1½ feet of straw uncut and others less or more. The results having been obtained, samples are taken of the grain and straw and these are sent to me for analysis; I analyse them and, based upon the analysis and based upon the amount of yield of grain and straw, I calculate the amount of nitrogen and phosphoric acid the plant has taken from the manure. Is that a correct procedure?

10906. *Mr. Calvert*: Discussing the *taccavi* loan system, you have suggested that agricultural officers might be entrusted with the distribution of the loans; would you also entrust them with the collection of the loans?—Excuse me; on that particular matter, I just mentioned the opinion of Mr. Benson who was Deputy Director of Agriculture long ago; I do not know exactly who should recover it.

10907. Then, you suggest that there should be a Chair of Agricultural Economics for post-graduate teaching?—Not only for post-graduate teaching, but for the general teaching of agricultural economics in this College.

10908. Is there any one in the Presidency who is qualified to occupy such a chair?—If you consider a person who has taken an Honours degree in Oxford University competent for it, I believe there is one.

10909. There is an Indian Officer who has taken his degree in Economics in the Oxford University?—Yes, and he happens to be Professor of Agriculture at the present time; but he is also Superintendent of the central farm, and he has many other duties; I believe he devotes only a small portion of his time to agricultural economics. If you make him a full-time Professor of Agricultural Economics, I believe the question will be solved.

10910. *Mr. Kamat:* May I know who invented this designation of 'Lecturing Chemist,' and when, about which you complained to the Commission?—It is a long story, but I will make it very short. About 15 years ago a Government Botanist was appointed Sugarcane Expert to the Government of India. That appointment was divided into two parts; one was occupied by a European Officer and another by an Indian Officer; the former was called the Government Economic Botanist and the latter was called the Government Systematic and Lecturing Botanist. This designation was created when Dr. Barber was appointed Sugarcane Expert to the Government of India. When the separation of teaching and research in chemistry took place, I believe, following that precedent, they gave me the designation of Government Lecturing Chemist.

Sir Ganga Ram: On page 167, you conclude by saying, "Lastly a certain amount of want of confidence in the preachings of the Agricultural Demonstrator, as there are still people who consider that the departmental officers are more theoretical than practical, and who are also sceptical about the results of experiments said to have been achieved in Government Agricultural Stations." I only wish to remark that the ryot knows a lot more about economics than we give him credit for. He would not leave a crop which is paying Rs. 100 per acre in favour of a crop giving Rs. 15 an acre, and moreover, you ought to know, as an Agricultural Chemist, that cholam sucks the blood out of the land.

10911. *The Chairman:* Sir Ganga Ram had better ask a question. I believe what Sir Ganga Ram was going to mention was, that without that particular knowledge of the commercial side of farming, as you mentioned just now, they are not quite confident, and therefore there is a tendency for the people to think that they cannot tell them much about the commercial side?—Yes.

10912. I think I must give you an opportunity of expressing your views as to the wisdom of a purely advisory central body. I think I have disabused your mind of any fear that anything of that sort might have an influence on any Governor's judgment as to any particular measure. If your model is the United States, your case in that respect is against the central body, because I suppose there are no federal systems in which the Central Agricultural Body is more powerful or active, or in which the Central Agricultural Organisation pays more attention to it than in the United States. Have you studied it more closely?—No.

Then I think you had better leave that alone.

10913. I wonder whether you wish to say anything as to the possibility of a purely advisory body, which may or may not have a certain amount of funds at its disposal, proving a success. Do you wish to say anything?—Yes, provided it is honorary in its nature, and provided the different Provinces are fairly well represented.

(The witness withdrew.)

**RAJA SIR VASUDEVA RAJA OF KOLLENGODE, KT., C.I.E.,
MALABAR.**

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(a) All research works affecting the welfare of the agriculturist and especially those in regard to insect pests and fungus diseases which attack the crops, and the investigation of their causes and their preventives are of considerable importance. This is being done in the Agricultural College at Coimbatore but the results are not known to the agriculturists, a majority of whom are illiterate. Mere issuing of leaflets will be of no use but frequent lectures among the agriculturists by a member of the department will be of considerable benefit. Every taluk must have at least one officer who will be engaged in this and in supplying other informations to the ryots in regard to agriculture. Research works can be done only in places like the Agricultural College at Coimbatore but it should not be expected that the agriculturists will avail themselves of the results by seeking them but on the other hand the information should be brought to them.

The indigenous theory and traditional methods of agriculture have a firm hold now upon the agriculturists. Any attempt to do away with it or radically change it is likely to meet with failure. The only aid which scientific research can render to this ancient theory and practice of agriculture is to make the agriculturists understand intelligently the reasons for the various operations which they carry on. Research must therefore be directed towards investigating the reasons for the various operations which they carry on and the result of the researches must be put in popular language. It should then be carried to the actual cultivator in the form of lectures. If such information can be carried to the actual cultivator through the agency above suggested it is possible that the actual cultivator may begin to appreciate the value of the information. This will further lead him to do what he has to do punctually, accurately and neatly. At this stage it may be possible to suggest modifications, improvements and probably radical changes in his method of doing things. If the research department of agriculture is doing this kind of work now nothing more is needed than to extend the scope of it. If such work is not being done now the sooner it is begun the better it would be.

(c) Researches to find out subterranean resources of water-supply with a view to enable ryots to sink wells should also be undertaken. A soil survey of each district will also be of immense use.

QUESTION 2.—AGRICULTURAL EDUCATION.—(i) The supply of teachers and of institutions is not sufficient.

(ii) There is urgent need for extension of teaching facilities in all districts.

(iii) Teachers in rural areas may preferably but not necessarily be drawn from the agricultural classes.

(iv) There are only two schools in this Presidency, one in Malabar and another in Vizagapatam, where agricultural education is imparted. The one in Malabar is situated in a remote corner and out of the way place and hence the attendance is not satisfactory. If more schools are started in various centres within easy reach of the agricultural population the institutions will gradually have increasing strength.

(v) The incentive for lads to study agriculture is mainly want of other occupations and the desire to follow their fathers' profession.

(vi) Most of the pupils are drawn from the agricultural classes.

(vii) The existing course of study in rural schools has only just begun and it is too early to suggest modifications.

(viii) To every school there must be attached a school farm for practical study and demonstration.

(ix) The career of the majority of students who have studied agriculture is agriculture.

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(x) The middle class youths in the first instance have neither lands nor capital nor have they as matters now stand the means of acquiring the same. Any device by which capital and land could be made available to them will be an inducement to them to take to agriculture. Further when they realise the great possibilities of agriculture they would naturally take to it.

(xii) The adult education in rural tracts can be improved by starting night schools and by giving lectures.

(xiii) The administration of rural schools may be placed in the hands of village panchayats where they are in existence. The expenditure on agricultural education would be a legitimate charge upon the land revenue. A portion of the land revenue sufficient to meet such expenditure may be set apart for the purpose.

QUESTION 4.—ADMINISTRATION.—(c) (i) The Agricultural and Veterinary services are at present very insufficient.

(ii) Railway communication is insufficient and unsatisfactory.

(iii) Village roads are insufficient and ill-maintained.

QUESTION 5.—FINANCE.—(a) The starting of grain banks, agricultural banks and co-operative societies specially intended to give advances for agricultural purposes is necessary. Agricultural loans and land improvement loans given by Government should be made more easily available to them than at present. There should be a special staff for granting loans under the Agricultural and Land Improvement Act.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(a) The main causes of borrowing—(i) A large number of actual cultivators are not hereditary cultivators but belong to mere cooly class that has no capital. These and a large portion of even hereditary cultivators are very poor with neither cattle nor seeds. They carry on the agricultural operations only with borrowed capital at a very high rate of interest. It is only bad cultivation that is possible with this class of people. The result is they are neither able to pay the rent to the lessor nor to discharge the debt borrowed. This operation is carried on by them from year to year making them perpetual borrowers. If such class of people are prevented from assuming the role of cultivators, the rest of the real cultivators would be in a far better position as larger area would be available for cultivation which alone will leave a sufficient margin of profit to them. The result of the pressure upon land now by all sorts and conditions of people as cultivators is that agricultural holdings are parcelled out into such small areas that it is capable of leaving no margin of profit to any class of cultivators thereby rendering almost every one of them unable to carry on the cultivation without borrowing money and grain.

Other causes are loss of cattle by epidemic diseases, failure of crops for want of rain and poor harvest on account of the attack of insect pests and diseases of crops and lastly imprudence of the tenants.

(ii) Good faith and honesty is the main source. Expectation of good harvest and the village moneylender's avarice.

(iii) Reasons preventing repayment are mentioned in (a) 1.

(b) The only measure which will lighten agriculturists' burden of debt will be to provide some means by which he can get loans at small rates of interest. This he cannot get except from the Government. Legislative interference to deal with rural insolvency, etc., will do more harm than good because he can get neither money nor grain under altered regulations.

(c) The answer to this is contained in the above. Any interference under this head will deprive them of all means to carry on cultivation. Non-terminable mortgages should certainly be prohibited.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—By excessive sub-divisions it ought to be prevented. Division of corpus must be put an end to but division of interest in holdings may be tolerated. The only way by which this can be effected is by the shareholders appointing a common manager. There must be legislative authority vesting in some revenue officer or other the power to appoint a common manager in case of disagreement among the shareholders.

It must be made a condition for the division of interest that it must be accompanied by a provision for a common manager. The obstacles in the way of consolidation may be overcome in the same way as suggested above for fragmentation.

QUESTION 8.—IRRIGATION.—(a) I advocate irrigation schemes for Malabar where there is no irrigation project at all in operation by Government. There are three schemes under consideration by Government. These ought to be pushed through as expeditiously as possible. All encouragement by Government to induce either private individuals or societies to undertake minor irrigation projects should be given by the Government in the shape of advances as loans at low rate of interest and the acquisition of lands necessary for the construction of main and branch channels.

QUESTION 10.—FERTILISERS.—(a) Greater use can be profitably made of both natural manures and artificial fertilisers. Fertilisers are not popular now because they are not available to the agriculturists near their holdings. Their cost is prohibitive. Endeavour must be made by some means or other to reduce the price of these articles and place them within the reach of the agriculturists.

(c) By propaganda work.

(d) By making wood fuel available and cheaper.

QUESTION 11.—CROPS.—(a) (i) The improvement of existing crops can be made by selection of seeds and the production of better and healthier seedlings and the application of sufficient manure.

(ii) There is scope for the introduction of new crops and fodder crops.

(iii) There is great necessity for distribution of better seeds.

(iv) There is good deal of damage to crops by wild animals and this can be prevented by giving free licences for firearms on a more liberal scale.

QUESTION 12.—CULTIVATION.—I suggest a more extended use of the Meston ploughs.

QUESTION 13.—PROTECTION OF CROPS.—Spraying with a mixture of copper-sulphate, lime and resin to prevent the Mahali disease has been found to be very efficacious. But in regard to many other external infections remedies have yet to be discovered and applied.

QUESTION 14.—IMPLEMENTS.—If improved agricultural implements and machinery are made available in rural parts at reasonable prices they would be adopted by the cultivators.

QUESTION 15.—VETERINARY.—(b) (i) The need for expansion of dispensaries is not adequately met. There is wide scope for expansion.

(c) (i) The existing dispensaries are not availed of by the cultivators simply because they are at prohibitive distances besides being far and few.

(ii) I have not heard of any touring dispensaries in Malabar, such dispensaries will be of immense use.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(a) An average cultivator has work for about seven months. During the slack season he does practically nothing.

(b) Creation of opportunities for taking to subsidiary industries would induce agriculturists to take to them.

(c) Want of ready market at hand and want of organisation to marketing the products of such industry in bulk.

(d) Yes.

(f) Yes.

QUESTION 23.—GENERAL EDUCATION.—Under the existing system of education very little is taught that has a bearing upon the agricultural efficiency of the people. In high and middle schools I would suggest that agricultural subjects are also taught and as far as possible a farm is attached for practical work.

QUESTION 24.—ATTRACTING CAPITAL.—(b) The existence of numerous sub-tenures is always a great handicap to owners of agricultural lands to carrying out improvements.

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Oral Evidence.

10914. *The Chairman:* Raja Sir Vasudeva Raja, you have been good enough to put in a reply to the Questionnaire of this Commission, which we have all read with great interest; you have also been good enough to come here to-day to answer any questions which we may wish to ask you. Do you desire to make any statement of a general character, before we proceed to question and answer?—No.

10915. On the question of research, is it your view that the Agricultural Department have rendered important services to cultivators in this Presidency?—They have rendered some service, I think.

10916. Are you satisfied with the general directions to which their efforts are now being applied if you are familiar with those directions?—I think there is plenty of scope still; they can do more.

10917. Of course, the activities of the Department and of this College and Research centre are limited by financial considerations?—Yes.

10918. I do not know whether you have in mind any considerable expansion of those activities, because, if you have, I ought to ask you whether you suggest a further share of the present general revenue being allocated for purposes of research, or whether you have in mind new taxation?—I think that a greater proportion of the land revenue ought to be spent on agricultural education, research, etc.

10919. Of course, that is a far more popular proposal than the other at any rate?—Yes.

10920. Have you ever considered the advisability of Government levying income-tax on incomes derived from agriculture? Do you think that would be a popular measure in the Presidency?—I do not think it would be a popular measure.

10921. I should like to ask you whether, in your experience of the country-side, you have come across any of the co-operative ventures which have been started in this Presidency. Have you come into personal contact with any form of co-operation? Co-operative societies lending money?—Yes. Not for agricultural purposes.

10922. Have you come across these societies in their working?—No.

10923. On page 189, answering our question 7 you say that fragmentation of holdings by excessive sub-divisions ought to be prevented. I should rather have put it the other way myself, that sub-division by excessive fragmentation ought to be prevented. You cannot very well stop sub-division. Unless you stop the operation of the established law of inheritance, can you? Sub-division follows inevitably on the present rule and law of inheritance, does it not?—Yes.

10924. What you should do if you can, is to try, where you cannot prevent sub-division, to see that unnecessary fragmentation does not take place?—Yes, it ought to be prevented; the income can be divided but not the corpus.

10925. You say, "The only way in which this can be effected is by the shareholders," that is, the heirs of the deceased "appointing a common manager. There must be legislative authority vesting in some revenue officer or other the power to appoint a common manager in case of disagreement among the shareholders." You know the peasants of this country-side very well. Do you suppose that any attempt to appoint a joint manager amongst the co-heirs of a deceased landholder would be likely to lead to good management on the one hand and family peace and quiet on the other?—I do not think it will do any harm.

10926. You think it is possible?—Yes.

10927. Do you think the several sons would be content to take their share in cash or kind, and to allow the manager to function?—I think so.

10928. If you were in the insurance business in this Presidency, would you be prepared to insure the life of such a manager, at the ordinary rates of premium?

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-or would you want something more? You do not think his life would be at some hazard with so many masters? You do not think that a manager serving four or five sons might find himself in considerable difficulty?—I do not think so.

10929. On page 190, you are talking about veterinary matters, and the need for the expansion of veterinary dispensaries. Do you think there is a demand among cultivators for skilled veterinary attention to their animals?—There is great demand, I think.

10930. What particular direction are you thinking of?—Cattle disease.

10931. Do you think there is a demand for further inoculation?—Yes, there is a demand for preventive treatment as well as for cures.

10932. Yes, but after all the non-epidemic diseases of cattle, until they reach the later stages of their life, are not so very important; it is the rinderpest and the other epidemic diseases that matter. What I want to get from you is this: in your experience of the country-side which you know so well, are the peasants anxious to have their cattle inoculated against, for instance, rinderpest?—Yes, they are.

10933. There is no superstitious objection?—Not that I am aware of.

10934. Do you think they have faith in the efficacy of that particular measure of prophylaxis?—In the beginning, they had not but now they have belief in it.

10935. You think there is a growing demand?—Yes.

10936. *The Raja of Parlakimedi*: From your experience of paddy cultivation, may I know what is the minimum area necessary to carry out proper improvements for paddy?—About 10 acres. If you want to introduce improved methods of cultivation and all that, you can do it on an area of about 10 acres, but you cannot do so on very small holdings.

10937. Supposing a man cannot afford to have an area of 10 acres, in such a case what is the minimum you suggest?—About 5 acres.

10938. Is fragmentation spreading very rapidly in Malabar?—Not generally in Malabar. It is not so with a certain section of population of Malabar, because in their case there is no division of family property, but in those families where division is allowed by law, fragmentation goes on.

10939. It is divided into as many pieces as there are families?—To a great extent that is so.

10940. *The Chairman*: Are you definitely of opinion that fragmentation is, at this moment, on the increase in this Presidency?—Yes.

10941. *The Raja of Parlakimedi*: With regard to manures, what is the usual plan adopted in Malabar for green manure?—We have private forests there. Many people go into the forest to get green manure and utilise the leaves. That is what is generally done. Some others also grow gram and other things to produce green manure. They grow wild indigo also.

10942. Are you growing any of the crops suggested by the Agricultural Department?—No; they are not grown.

10943. Why? Is it due to the difficulty in getting seeds or what?—I do not think many people know anything about them. I do not think they have been brought to their notice.

10944. Are there no Demonstrators in your part of the country?—I have not seen any yet. I was told the other day that there was one somewhere in Palghat, but he does not come to the rural parts or demonstrate anything or convey any information to the ryots.

10945. Are the zamindars putting any obstacle in the way of these people coming to their parts?—No, I do not think so.

10946. They welcome such people?—Certainly.

10947. *Sir James MacKenna*: Are you a large landholder, Raja Sahib, yourself?—I have got some lands, about 18,000 acres. I have got also more than 100 square miles of forests.

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10948. You cultivate the land on your own behalf through a manager?—I have land on that system.

10949. Which you work as a home farm?—Yes.

10950. Is it in your neighbourhood in Malabar?—Not far from my neighbourhood.

10951. Are you in touch with the work of the Agricultural Department through its publications and other activities?—Yes.

10952. You apply the manures recommended to the land that you have got under your control?—Yes, to some portion.

10953. And probably from that example your other tenants may follow your lead? You see no indication of that?—It is not possible for all the tenants to adopt the improved methods of agriculture for want of funds. It is a difficult matter.

10954. That would not apply to seed which after all does not involve more expense?—That is true, but they must know the importance of it.

10955. Do you follow the system of transplanting paddy advocated by the department?—Yes, in some, I do.

10956. 1, 2, 3 seeds against 12, 13, 14?—Yes.

10957. Are you doing it?—Yes.

10958. Are you keeping cattle?—Yes.

10959. What breed do you have?—I have the Coimbatore as well as the Nellore cows; I have got about 800 cows.

10960. Pure breeds?—Yes.

10961. *Professor Gangulee*: Have you any agricultural officer in your service?—No; I have got only local men. They are not trained in the Agricultural College.

10962. Do you send them over here?—No; neither is any one available from here. I wanted to get some from the department, but none were available.

10963. Your agricultural agents have had some training?—No; they are only private farmers.

10964. Do you think it would be beneficial to your tenants to have a trained officer?—I think so.

10965. You intend to appoint one?—I do.

10966. On page 190 of your note you say, "There is great necessity for distribution of better seeds." Where do your tenants get their seed from?—They do not care to go outside and collect the seed. They are trying to improve the seed which they themselves grow on their lands.

10967. They do not go in for better seeds?—No.

10968. Your tenants get no advantage of better seeds and better manure?—No.

10969. With regard to subsidiary industries you say here "Creation of opportunities for taking to subsidiary industries would induce agriculturists to take to them." Have you any particular industries in mind when you make that suggestion?—That will depend upon the locality; it must vary from place to place. In Malabar there is scope for coir industry, basket making, mat making and small industries like decorticating ground-nut, cotton ginning, and so on.

10970. These industries are pursued by the agriculturists in addition to their agricultural pursuits?—No; they are not pursued now. There is scope for them.

10971. There is no subsidiary industry at present?—None.

10972. You say in answer to our question 24, "The existence of numerous sub-tenures is always a great handicap to owners of agricultural lands to carrying out improvements." Have you any suggestions to remove the handicap arising out of these sub-tenures?—The ideal would be to have only landlord and tenant. If there are too many intermediaries the actual cultivator gets absolutely nothing. The land gets into the hands of the cooly and he cannot

do anything. To have so many intermediaries is very injurious and moreover the owner will not invest his money in lands because there are so many intermediaries and he has no direct connection with the actual cultivator. So, in the interests of agriculture there ought to be only the landlord and the tenant and not so many other people between.

10973. How to eliminate those intermediaries? Have you any suggestions to make?—So far as Malabar is concerned to some extent some of us are doing it. Tenants have not got permanent rights. We pay compensation and get the lands back in our possession and then we deal with the actual tenants directly.

10974. *Mr. Calvert*: In discussing finance on page 189 of your note you use the term 'agricultural banks.' Were you thinking of co-operative banks or something different from the co-operative banks?—The banks which will advance money to agriculturists.

10975. Co-operative banks or other kinds?—Other kinds.

10976. What other kinds?—Money lending banks or land mortgage banks. The ordinary banks do not lend money to agriculturists; they generally lend to merchants and not to agriculturists.

10977. You say land mortgage bank. Would that be a co-operative land mortgage bank or some other type?—It may be a co-operative bank or it may be any other, organised and financed by Government or in any other way.

10978. You have no specific proposal?—No.

10979. Then you say that agricultural loans should be made more easily available. Have you any suggestions to make as to how it is to be done?—In the first place, the ryots do not know of the existence of the Agriculturists' Loans Act or the Land Improvement Act and so on; even those who do know something about them have to go with applications to the Revenue Inspector who is in charge of many villages; he is a touring officer and it is very difficult to find him in the first place and secondly, it is very difficult to get his sympathy and in some cases it has to be purchased. All that means a lot of difficulty to the ryots. If there is a separate department for granting agricultural loans (the money will be quite safe because the lands and improvements will be security), if there is a special agency working for granting the loans, I think it will be easier for the ryots to get money.

10980. Your suggestion is a special agency?—Yes, a special agency. Now the Revenue Inspector is the nearest man to go to and it is not easy even to find him.

10981. On page 189 of your note discussing this question of loans at small rates of interest you say that this cannot be done except from the Government?—Yes.

10982. Do you not think that the co-operative society can in course of time lend money at lower rates than Government?—I do not think so.

10983. Are there not societies which will lend money free of interest as in the case of certain Mahomedan communities in the Punjab?—I do not know of any society which gives money free of interest.

10984. The Muslim population will not take interest?—I do not think that is possible; they may rather invest their money in other ways; they may not lend. I do not think anybody will lock up money like that.

10985. When you say there is scope for the introduction of new crops, had you any special new crops in your mind?—The crops that we see in the experimental stations of the Agricultural Department. If any particular crop will pay better than can be used. At present we are following the old stereotyped way of farming without introducing anything new. But if the results in the Agricultural Department farms show that any better or more profitable crops can be grown such things may be introduced and there is a good deal of scope for that.

10986. Have you yourself, Raja Sahib, been trying to experiment with such crops on your estate?—No, I have not.

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10987. *Mr. Kamat*: It has been suggested, Raja Sahib, that *Rajas*. zamindars and big landholders do not undertake, for instance, cattle-breeding or make any improvement though they might be in a position to do it. Have you anything to say on that?—It is not a fact; I have got not less than 800 cows and I keep them in different farms, that is for the sake of manure more than for milk or other purposes, so that I need not bring cowdung from a distance.

10988. *Sir Ganga Ram*: All of the same breed?—Yes.

10989. Which breed?—The ordinary Coimbatore, what we buy from Pollachi which has a very big market. We have got also a few Ongole cows.

10990. *Mr. Kamat*: Do you take care to keep the breed pure and if so by what method?—We have got only one breed; there is no cross-breed at all.

10991. *Sir Henry Lawrence*: What is the name of this breed?—I think it is the Kangayam breed. What is procurable in the Pollachi market we have; they all come from the Coimbatore district; these are the ordinary country bred animals.

10992. *Mr. Kamat*: And do you take special care of your breeding bulls?—I have got an Ongole bull which is kept separate and looked after; but in general I give attention only for the Ongole cows which provide milk for our household purposes. The other cows are all kept in different parts.

10993. To your knowledge do other big landholders experience any difficulties in cattle-breeding?—The chief difficulty in breeding cattle is the problem of food because the cost is very great.

10994. Even for big landholders?—For everybody.

10995. That means the price of fodder is increasing?—Yes, and oil-cakes are all exported. It becomes a problem to keep cows except in the case of people who have forests. I happen to have a large area of forest, so I can keep any number of cows. Such landlords as have got large estates keep cows. The other people do not, on account of the economic difficulty in keeping cows at great expense.

10996. Do such landlords avail themselves of the scientific knowledge of the Livestock Expert?—No, they do not.

10997. *Rao Bahadur Muniswami Nayudu*: Are you in touch with village life in the eastern parts of the Presidency?—I have been to several places, I do not know what you mean.

10998. You have not visited the villages and seen the villagers?—I cannot say I have been to small villages.

10999. You have been to towns. Life in Malabar villages is entirely different from the life in villages in the eastern parts of the Presidency. Do you know that as a fact?—May I know in what respects you differentiate between the two?

11000. The rainfall in your part of the country is much higher than in the eastern parts?—Yes.

11001. Your soil is more fertile than the soil in the eastern parts?—I do not know that. I do not think it is in any way very much better than the lands in Tanjore, Trichinopoly and even Coimbatore.

11002. And the people who cultivate your lands have no interest in the lands? They are merely labourers or persons who share the produce?—The agriculturists who are cultivating the lands are poor people.

11003. There is a difference between the zamindari estates in the East and the zamindari estates in the West? The zamindar or *janmi* simply collects the rent from the cultivator who is entitled to the benefit of all improvements on the land. In your part of the country the ryot has no interest in the land?—It is not so.

11004. You do not think there is any difference between the ryotwari lands and the *janmi* lands?—No. There are big landholders in the East Coast as in Malabar. In the town of Shiyali in Tanpore there is a Mudaliar and Nungavaram Rajappa Aiyar in Trichinopoly and others, who own enormous areas.

There is no difference between the *mirasidars* in the East Coast and the land holders of Malabar.

11005. Legislation has been introduced in the Legislative Council to give occupancy rights to tenants in your part of the country?—Yes.

11006. That has been opposed?—Yes.

There is a demand from the ryots in your part of the country for occupancy rights?

The Raja of Parlakimedi: The whole discussion is irrelevant.

11007. *Rao Bahadur Muniswami Nayudu*: I am just proceeding to say that the ryots have no interests in the land?—That is not so, they have the right to compensation for their improvements in Malabar and they do get compensation when they are turned out. In other districts they do not get even that. If at all there is any difference, it is in favour of the tenants in Malabar.

The Chairman: Have you read the terms of reference? I leave it at that.

11008. *Rao Bahadur Muniswami Nayudu*: Have you visited the agricultural middle school in Malabar?—Yes.

11009. It is doing good work?—Yes.

11010. Do you think there is a demand for education from the agricultural classes?—I think so.

11011. You think if the school were located in a more central place it would attract a larger number of students?—Certainly.

11012. You think there should be a school in every district of the Presidency?—Yes.

11013. *Sir Ganga Ram*: Supposing you grow cotton this year, would you grow cotton next year?—Cotton is newly introduced in Malabar; they were not cultivating cotton before.

11014. When you sow cotton this year, you will sow cotton next year also?—Yes.

11015. Cotton after cotton?—Cotton, and then sometimes millets. There is no system of rotation.

11016. Cotton after cotton?—They do according as they like. I do not think they do anything systematically.

11017. You do not guide them as to what crops to grow?—We lease the lands and the tenants do according to their wish.

11018. *Dr. Hyder*: In reply to question 24 you say that the existence of numerous sub-tenures is always a great hardship to owners of agricultural lands in respect of carrying out improvements and that they are at present prevented from carrying out improvements. I ask you to turn your attention to the other side of the shield also. I put to you the question whether there are any factors tending to discourage cultivators of agricultural land from carrying out improvements in Malabar?—The only factor that prevents them from doing so is the want of money. I do not think there is anything else because on redemption the law allows them more than what they have spent. They get not only what they have actually spent but they get also a portion of the value of the improvements.

11019. I was wondering whether you, knowing intimately the circumstances of tenure in Malabar, think that the *Verumpattamdars* put all their energy and resources into the cultivation of land in view of the peculiar circumstances of tenancy in Malabar?—There is nothing at all to discourage them from putting their resources into land. On the other hand they have every facility because the landlord allows the *Verumpattamdar* the right to improve the lands according to his own wish and he is entitled to be compensated before he is turned out.

11020. Is it not a fact that the *Verumpattamdar* is threatened with ejection from the land every year?—In some cases it may be because the land is given for only one year. If he pays his rent properly there is no trouble. But in some cases he is unable to pay because of the very high rate of

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interest he has to pay for getting seed, cattle and other things and at the end of the year he finds, owing to some adverse circumstances or other that he is not able to pay the moneylender and the landholder and then he has to go.

11021. Do you think it is a good system under which the industry, the chief industry of a whole district is carried on, by a system of yearly leases and sub-tenures to which you were referring?—Though they are leases for only one year, they are not generally disturbed every year. There are instances where families have been in possession for 50 years and 100 years and they are never disturbed unless they become defaulters.

11022. Is it a fact that when the coconut plantation is about to bear fruit the *kanamdar* or the *janmi* comes to the tenant and says “ Either you get out or pay an increased rent ”?—It is not a fact.

11023. *Dewan Bahadur Raghavayya*: You say that a special staff for granting loans under the Agricultural Loans Act and the Land Improvements Act is necessary. Do you mean that special revenue officers should be appointed to push the work of granting loans or that the work should be done by the other departments of Government?—As long as the ryots are able to get the money easily it does not much matter who is in charge of it. Each system has its advantage. If it is the revenue officials they can easily get back the money along with the assessment. If it is the Agricultural Department they can say what money should be given and for what improvements. But I think the advantage will be to have the revenue officials in charge of it.

11024: At present the delays are mainly due to the multifarious work which the revenue agency has to do?—There is plenty of scope for a special staff for that.

11025. I gather you are in favour of legislation to prevent the fragmentation of holdings. You have put forward one method of consolidation. Assuming that another method of consolidation is found to be better, do you think that legislation to prevent fragmentation and to effect consolidation on an economic basis will be a popular measure and will not be resented?—I do not think it will be resented.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Tuesday, the 16th November, 1926.

Tuesday, November 16th, 1926.

COIMBATORE.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.	Mr. H. CALVERT, C.I.E., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.	Raja Sri KRISHNA CHANDRA GAJAPATI NARAYANA DEO of Paila- kimedi.
Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.	Professor N. GANGULEE.
Sir JAMES MACKENNA, Kt., C.I.E., I.C.S.	Dr. L. R. HYDER.
	Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU, C.S.I.	} (<i>Co-opted Members.</i>)
Rao Bahadur B. MUNISWAMI NAYUDU GARU.	

Mr. J. A. MADAN, I.C.S.	} (<i>Joint Secretaries.</i>)
Mr. F. W. H. SMITH.	

The Hon'ble Mr. H. TIREMAN, I.F.S., C.I.E., Chief Conservator of Forests, Madras.

Replies to the Questionnaire.

QUESTION 19.—FORESTS—(a) Yes, except that more use might be made of them for the supply of fuel. Please see reply to question 19 (b).

(b).—(1) *Firewood*.—The supply could be largely increased by the formation of plantations. It is almost certain however that such plantations would be worked at a loss if they were formed and worked by the Forest Department owing to the cost of supervision. It is possible but doubtful that plantations would be a source of profit if formed and worked by the Revenue Department helped in technical matters by the advice of forest officers, as the ordinary revenue establishment might possibly be able to supervise the working with the aid of low-paid special establishment. My reason for saying that plantations would be worked at a loss is that the ryot is not willing to pay a price for the firewood which would cover the cost of formation and working.

The real remedy would seem to be to persuade the people to grow firewood plantations of their own. I believe that in the prairies of Canada and the United States of America a very considerable area of private woodlots has been created as a result of Government propaganda, and this could equally well be done in Madras if the people could be persuaded to undertake the work. It is a big 'if' however in this country and I very much doubt the utility of such propaganda.

(2) *Fodder*.—The only means which occurs to me is the growing of fodder crops. This is a matter for the Agricultural Department, and is one on which I have no knowledge.

(c) If agricultural soil is meant I should say not to any appreciable extent in this Presidency, but I have not much experience except in the western

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districts. In the tracts where deterioration of forests has been greatest the rainfall is comparatively light. In the tracts of heavy rainfall the forests are fairly well preserved except in the Agency and in parts of Malabar where forests are being ruined by shifting cultivation.

If forest soil is referred to there has been considerable erosion in the private forests in Malabar owing to over-exploitation of timber, and I believe this has also occurred in the Agency owing to shifting cultivation, but I have practically no personal experience of the Agency tracts.

(d) Whether forests increase the rainfall or the supply of moisture is, I believe, still a doubtful point. The question has been under investigation for years in various European countries, but I am not up to date regarding the results. There can be no doubt that forests regulate the supply of water in the soil, and hence in canals, but there are not many localities in Madras where action is a matter of practical politics. I believe that for political reasons it is difficult to interfere to any extent with the practice of shifting cultivation in the Agency though this is being gradually regulated where the forests belong to Government. Much damage has been done to the *sholas* (strips of evergreen forests alongside streams) on the Nilgiri and Palni plateaux by the practice of annually burning the grass on the hills. This is now however being regulated, and I have recently ordered the preparation of a scheme of afforestation in the Nilgiris with a view to replacing the burnt out *sholas* by new tree growth. The work is easy and its extent is only limited by the amount of money Government are willing to spend. At present there is very little money to spare.

(e) I have dealt with this in my reply to question 19 (b).

(f) From grazing *per se* I should say not to any appreciable extent. Considerable damage however is done, especially in Guntur district, by hacking branches off the trees to feed the cattle. The only remedy is restriction of grazing which can be brought about only by reducing the number of cattle kept by the ryots. Whether this is practical politics, however, is not within my province to say. I doubt it.

Oral Evidence.

11026. *The Chairman:* Mr. Tireman, you are Chief Conservator of Forests in the Presidency of Madras?—Yes.

11027. You have put in a note of the evidence which you wish to give before the Royal Commission, and which is to be read, I take it, in conjunction with the memorandum supplied by your department for the Commission at an earlier stage?—Yes.

11028. Would you like to make a statement of a general character or shall I proceed to ask you one or two general questions?—I should like to make a short statement, if I may. There seems to be an impression abroad, I do not know whether it is shared by the Members of your Lordship's Commission, that certain matters which, in my opinion, pertain chiefly to agriculture, such as the improvement of grazing grounds, growing of fodder crops and making of manure, are matters which largely concern the Forest Department. If I am correct in thinking that this impression does exist, I think the reason for it is the fact that in this Presidency particularly, and, I think, to a certain extent in the rest of India, there are large tracts of land which are called forest reserves, but which are really nothing more or less than grazing reserves; they are called forests merely because they have a few trees on them. When they were reserved, I think I am right in saying that there was no Agricultural Department, or it was a very small one. That was 40 or 50 years ago; and in the absence of the Agricultural Department the Forest Department was naturally the one which was considered most suitable to administer these big tracts. These grazing grounds were very largely in the public eye and their administration and management was considered as one of the most important duties of the Forest Department. I think we managed these areas fairly efficiently, but the fact that we had to pay so much attention to them led to the neglect of what in my opinion is our legitimate duty, that is the looking after and administration of the big timber forests of which in this Presidency they are very considerable areas of very great potential value. I have broken away from tradition in this matter and got Government to sanction a proposal of mine to transfer very considerable areas of the tracts I am speaking of to the Revenue Department to be managed by panchayats working under the local Collectors. We could no doubt go on administering these lands, but it is not our job; the forest officer's job is the job for which he has been trained, *viz.*, the management chiefly on commercial lines of the valuable large timber forests. You have now got an Agricultural Department, and, if I might suggest, instead of looking to the Forest Department for the administration of such tracts, improvement of the grazing grounds and the like, such matters should be considered as part of the duty of the officers of the Agricultural Department who must know considerably more about the subject than the forest officers do. There is just one more thing I would like to say. I do not know whether it is realised by your Lordship's Commission, that in this Presidency, where the really big forests exist, they are not of very great help to agriculture, because there is not much agriculture there; they are mostly in out-of-the-way places, chiefly on the West Coast. In tracts where I take it agriculture is most important there are no real forests. The position is therefore very different from what it is in Europe where you may have agriculture all round a timber forest and where that timber forest can be of great help to agriculture. With all the good will in the world the Forest Department cannot really be of very much assistance to agriculture in this Presidency.

11029. We are very grateful to you for that statement; it clears up the position. Is that all that you wish to say?—Yes.

11030. How soon do you expect this process of handing over what in fact are grazing lands to the Revenue Department to be managed by the panchayats will be completed?—It is rather difficult to say. I should think there are about 4,000 square miles concerned of which I think we have handed over about 2,000 square miles; I should say the rest ought to be handed over within two years at the most, and possibly within one year.

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11031. It is a rapid process?—Yes, quite a rapid process.

11032. Leaving that area out altogether, and turning to the forests which will remain under your department, do I understand from you that the whole of that area will be large timber forests?—No. There are two classes of forests apart from the ryot's forests which are going to be handed over; one is commercial forest, which is remunerative, and the other is protective such as you might have seen when you were in the Nilgiris. The forests on the slopes of the Nilgiris and such hill ranges are for protective purposes.

11033. After the transfer to the Revenue Department and the panchayats is completed, will your department still be responsible for certain forests contiguous to agricultural districts?—Yes, the larger forests. The forests we are handing over to the panchayats are those which are only of local importance. We try to draw a line between forests of local importance, and forests of provincial importance; the extent has a great deal to do with that.

11034. As regards forests of local importance, as you describe them, I take it that the services which the Forest Department, I will not say gives the agriculturist, but which the Forest Department controls so far as the agriculturist is concerned are those of grazing, grass cutting and fuel cutting?—Yes, and such things as thorns for fencing.

11035. Thorns for fencing, certain wild fruits and so on?—Yes.

11036. Now, is it your view that there exists at this moment a sufficiently sympathetic touch between your department and the Agricultural Department as to the services which the forests can render to agriculture in the respects I have mentioned?—As far as I know, yes. But I would like to ask Mr. Anstead what he has to say about it. From our point of view, we are only too willing to do all we can to help.

11037. So that on those essential points you have not so far consulted Mr. Anstead?—I am in rather a peculiar position; I have just come back from five months' leave, and I wrote my preliminary statement just before going on leave. I sent it to Mr. Anstead for his views, and he has kindly given them to me, and they are printed together. But I have not seen him since until just now, so that I have not really had time to consult him on the subject.

11038. That was activity consequential upon the news of this Commission's existence but before that you have not had a meeting round a table to discuss with the Agricultural Department whether any further service could be rendered to agriculture or cattle improvement by you in the Presidency?—We have not had any regular formal sitting-down meeting, but Mr. Anstead and I have often discussed matters of that sort.

11039. Do you think it would be helpful in this Presidency if some of your young officers who have a taste in that direction were attached for quite a short time to the Agricultural Department in districts where agriculture and forestry are contiguous and in a sense mutually dependent, so that they might see matters from the agriculturist's point of view?—I do not think it would be of any practical use.

11040. You do not think it would be of any good?—No.

11041. As regards the more important forests, the commercial forests, do there exist in this Presidency areas of large forests to which herds of cattle or buffalo are taken at certain seasons of the year and grazed by those who make a profession of that work?—Yes; they are chiefly in the dry districts towards the East; Guntur is the chief district where such grazing takes place and the grazing there is grazing of cattle which are used by the cultivators in the deltas; during the cultivation season there is no grazing available in the deltas and they send them to the uplands.

11042. There is thus a further bond of interest between the cultivator and the Forest Department?—Yes.

11043. Do you control areas in which such grazing is or is not allowed?—We do.

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11044. You do that according to the age of the timber and other factors of that sort?—Those forests are all more or less poor things; as far as I can see there is not much chance of our ever making much out of them commercially; we just control the grazing more from the point of view of the quantity of grazing available.

11045. So that, there your function is more agricultural than forestry?—It is.

11046. As regards timber forests of commercial importance, is there grazing in those areas?—Not very much.

11047. To a certain extent there is?—Yes, but there is no problem as a rule; it is very easily managed.

11048. Have you areas in which you allow grazing in certain seasons of the year but not in others?—Not very much as far as I can remember.

11049. Are there any areas where grass cutting is allowed but not grazing?—Yes; but in almost all areas grazing is allowed; the chief places where grazing is prohibited are fuel coupes, that is to say where fuel has been cut and coppice growth is coming up we keep cattle out for a few years. But apart from that there are very few areas that are closed to grazing altogether.

11050. I see that you suggest in your memorandum that something might be done to encourage the villagers to plant trees?—Yes, I suggest that that would be a solution of the fuel difficulty.

11051. Are you thinking there of belts of trees as well as of individual trees, or small clumps of trees on the cultivator's land?—I was thinking more of a belt of trees, or small clumps of trees, not so much individual trees. What I was thinking about is what has been done in Canada and the United States, on the prairies, where a great deal of this sort of work has been done.

11052. Would damage from domestic animals be difficult to avoid?—Yes, it would be very difficult to avoid it, and the ryots who made such plantations would have to fence them very carefully at first for a few years.

11053. Do you think it is within the financial means of the ryot to carry out that work?—That, I am afraid, I cannot answer; I do not know enough about it.

11054. So that, on the economic side, you are not satisfied that it is a feasible scheme?—I am not satisfied that it is feasible for Government to do it; whether the ryots can do it or not I cannot say; I do not know enough about their financial position.

11055. Of course, the difficulty in all these schemes is that the investor has to wait so long for his return?—Yes, he has.

11056. I gather from your preliminary statement that your department does nothing to cut and make fodder as a famine reserve?—No.

11057. Has that never been done in this Presidency to your knowledge?—Yes, it has been done, not as famine reserve, but it has been done when famine or scarcity of grass has occurred.

11058. Not as a reserve?—I do not think so; I cannot remember any cases where it has been done.

11059. Do you happen to know what practices exist in other Presidencies or Provinces?—I have no exact knowledge, but I believe they do something of that sort in Bombay.

11060. Are there large areas of grass where, provided you were given the means, you could make important stores of preserved fodder?—There are such large areas, very large areas, but I submit that that is work which would be better done by the Agricultural Department.

11061. Instead of you I will say the person charged with the duty?—Yes, we have got any amount of land of that sort.

11062. You know, of course, that there was a fodder famine very recently in this Presidency?—Yes.

11063. Large numbers of the cattle died, extreme hardship being thereby inflicted on the poorer class of ryots?—Yes.

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11064. Does it not seem to you unfortunate that this store of fodder should not be taken advantage of so as to insure against the worst consequences of fodder famine?—It does; it is very unfortunate; the whole thing is burnt every year, or wasted anyhow.

11065. Even if there is no famine, such precautions need not lead to complete loss financially because after the fodder has been kept for three years, it can always be put on the market for what it is worth?—Yes.

11066. And a system of constant turnover can be adopted, which leads to at least two years' good fodder being in store at any moment?—Yes; I have no experience of that; I would rather not express any views as to the feasibility of doing the thing for profit.

11067. Has there been much denudation of soil in this Presidency, due to shifting cultivation, or as you call it *kumri* cultivation?—We call it by several names; there has been a great deal of it, chiefly in the Agency tracts on the Eastern Ghats. I have not any personal experience of that country, as most of my service has been on this side of India, but there is no doubt that there has been a great deal of denudation.

11068. Of course, serious denudation is a permanent dissipation of Imperial capital which can never be replaced?—Yes, I agree entirely.

11069. You lose soil for all time?—Yes; it is a very serious problem.

11070. But it is not one with which you have any personal contact?—It is one which we are only too ready to help to stop; it is a political matter chiefly. I am talking about the Agency tracts; there are certain tracts in the east and north of the Madras Presidency which lie on the Eastern Ghats, or below them, which are outside the ordinary revenue districts, and are under special administration. They are peopled mostly by aboriginal hill tribes, and they are accustomed from times immemorial to carry out this *kumri* cultivation, and any interference with it is always liable to lead to rebellion.

11071. Is it the territory between the Southern margin of Mysore and this Province?—It lies chiefly in the districts of Ganjam, Vizagapatam and Godavari, between the Central Provinces and the plains.

11072. Who, in these Agency tracts, is responsible for the control of shifting cultivation?—The Agency tracts are administered by the Collector of the district, who is known as the Government Agent for that particular tract, and he and his assistants administer the whole country; they do their best to stop this shifting cultivation, but it still goes on.

11073. Who advises that officer on the technical forest points?—I do, or the local Conservator of Forests.

11074. Does he ever consult you?—Informally, yes. I have been consulted often.

11075. I ask because in certain districts, this shifting cultivation, although it is not prohibited, is very closely watched and to some extent controlled, always with the idea of preventing undue soil denudation?—We do control it, as much as we possibly can. The Government Agent, in many cases with the help of the Forest Department, does control it to a certain extent, but it is a difficult problem, because the people are difficult to deal with.

11076. Has the practice of shifting cultivation and consequent denudation caused serious silting in the lower reaches of the water-courses?—That is a question which I cannot answer; I have not enough local experience; I think it must be so.

11077. Of course, dangerous practices at the head-waters may bring unfortunate consequences upon the population living on the alluvial tracts which populations are in no sense responsible for the practices in question?—Yes, there cannot be any doubt about it, that silting has been the result of this, because a similar practice goes on in Malabar on the West Coast and there is no doubt that streams have silted up to a large extent.

11078. Do you feel yourself that more control should be exercised over shifting cultivation?—I do.

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11079. Have you ever suggested that to Government?—I have, but not with regard to the effect on agriculture or the effect on the low country.

11080. With regard to the effect on agriculture in the whole country, owing to denudation?—I proposed to Government some time ago that Government should take over control of all the private forests in Malabar, for the reason that two years ago there were very heavy floods in this Presidency, and a tremendous lot of landslips occurred in the private forests in Malabar, owing not so much to shifting cultivation as to denudation caused by over-exploitation; it is a distinction without a difference. They were cutting too many trees. I addressed Government on the subject, but Government would not listen to my proposals; I think it involved too much expenditure.

11081. *Sir Henry Lawrence*: What are these private forests?—Practically all the forest lands in Malabar belong to private people, all the slopes of the Western Ghats.

11082. Are they big zamindars or landholders?—Yes, they are called *janmies*. There is a peculiar land tenure in Malabar, and I do not know much about the details of it. The land, in most cases, belongs to the *janmies*, who would be called zamindars in other parts; it is the same thing.

11083. *The Chairman*: Have you any responsibility for forest management in those lands?—No; we can interfere under the Forest Act to a very limited extent.

11084. *Mr. Calvert*: Do they own the trees as well?—Yes, the whole thing.

11085. *The Chairman*: Have you in hand any important schemes for the re-afforestation or planting of areas which are threatened with denudation, so as to prevent scouring?—Yes; there is one such scheme; it is not a very big scheme, and it would not cost much, but it is an important scheme. The scheme is for re-stocking the western portion of the Nilgiri plateau with tree growth, which has been destroyed by continual fires. There has been no case of shifting cultivation up there, but the same result has come about from the practice of burning grass every year. There we have a scheme for re-stocking that particular area with tree growth, as much as we can.

11086. *The Raja of Parlakimedi*: How do you collect the grazing fees? Is it done departmentally?—It is done departmentally; the actual collection is done by the foresters.

• 11087. Do you have different rates for different animals?—Yes.

11088. Is there much difference between the rate charged for the buffalo and that for the cow?—Generally speaking, buffaloes are charged twice the rate of cows.

11089. What is the reason?—I have not thought much about it, but I suppose it is because they do more damage; they are heavier animals, but I really could not say why.

11090. I suppose they go under the trees and break the branches?—Yes, I suppose so.

11091. Do you discourage sheep-grazing in reserve forests?—That is rather a difficult question to answer, because sheep only graze in the reserves which, I have said just now, are going to be handed over to the panchayats, and because these reserves are going to be handed over to the panchayats, the Forest Department is not worrying itself much about them. So, I cannot say that we do discourage sheep-grazing, but possibly, if you are going to keep these reserves permanently under the control of the Forest Department, we should discourage it to a certain extent. I think sheep-grazing does not do anything like the damage that goat-browsing does.

11092. Of course, I ask that question because sheep do contribute some important manurial necessities for the agriculturist?—Yes. Of course, when I say discourage sheep-grazing, I mean I would discourage excessive sheep-grazing; sheep-grazing in moderation does very little harm.

11093. In forest areas where there is a smaller number of trees, I suppose you have no objection to sheep-grazing?—No objection.

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11094. In Ganjam, shifting cultivation is being controlled indirectly by planters from Assam. There is such a demand for cool labour in Assam, that they have to import large numbers of labourers from Ganjam?—Yes.

11095. Is there not any such industry round about Malabar to control shifting cultivation in the same manner?—No.

11096. There are lots of tea estates here, and labour could be diverted to those places?—The people who mostly carry on shifting cultivation in Malabar are people who do not go to the estates.

11097. *Professor Gangulee*: You referred to the Forest Panchayats in answer to the questions by the Chairman. Has this system of Forest Panchayats minimised the friction between the ryot and the Forest Department?—Very largely indeed.

11098. Do you find that these Forest Panchayats are generally interested in preserving the area under their control?—That is difficult for me to answer, because I have no longer any concern with these panchayats. The matter does not come before me now, and I have got to rely for information on this subject on an officer, who is called the Forest Panchayat Officer, who works under the Board of Revenue; he assures me that in a very large proportion of cases the panchayat people do really take a genuine interest. I would like just to add one thing: in one particular instance which I have inspected several times, a place about 15 miles from Madras, I was astounded at the thoroughness with which these people had taken on the job of improving the forest; they have done it far better than any Forest Department ever could have done.

11099. So you say the system of Forest Panchayats is successful?—I cannot say it is successful, but generally successful.

11100. At least the general complaint very often made that the villagers are rather uneconomical in tapping the resources of the forest area does not hold good?—It is very difficult to say. The Forest Panchayat Officer has told me that in a very large proportion of cases in which the forests have been handed over to the panchayats the people are taking an intelligent interest in them and are doing the work well; but I have only his word to rely on.

11101. Is this idea a new one or the revival of an old idea?—The idea of handing over forests to panchayats started some 12 or 15 years ago; no progress was made for some years. I have been in charge of this in my present appointment, for 3½ years; when I joined it I found there was no progress being made in the handing over of forests to these panchayats. I investigated and found that it was due to the very obvious reason that the panchayat people were forced to pay far more than they could afford. I mean, this system has been going on but only in the last three years has it made any real progress, because I altered the rules altogether, cut down the rates to reasonable rates and immediately the system jumped into popular favour.

11102. Have any steps been taken to educate these panchayats with reference to the economic exploitation of forests?—There again this does not come within my province, but I understand that the Forest Panchayat Officer is doing a great deal of propaganda work and lecturing to the people; he has under him a number of district men who do the same.

11103. In matters of forest economy?—Yes.

11104. *Sir Henry Lawrence*: Is the Forest Panchayat Officer a forest officer?—No; he is a Deputy Collector.

11105. What is his name?—Mr. Viraswami.

11106. Has he had any training in forestry?—He has training in this particular branch of forestry; he was trained by one of the Conservators for a short time; after all, this particular branch of forestry does not require any intensive training. A month or so going about with a forest officer is sufficient.

11107. *Sir Ganga Ram*: When you talk of a particular branch of forestry will you kindly explain what it actually means, about grazing and so on?—There is no necessity for scientific forest management as the forest officer understands scientific management. There are practically no trees to worry about. The

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only management required is keeping goats out and perhaps restricting the number of cattle allowed to graze.

11108. *Professor Gangulee*: Perhaps he should know something about the quality of grass grown?—Yes; after all it does not matter much; whether he knows it or does not know it will not alter the quality of grass.

11109. He can, with the Agricultural Department's help, alter the quality of the grass?—Yes, but all that means money.

11110. With regard to fodder, you say in your printed note: 'The only means which occurs to me is the growing of fodder crops.' Do you suggest that the cultivators should grow fodder crops on the lines on which they raise commercial crops?—I would leave that to the people themselves. I do not profess to know much about it; what I wanted to bring out in that answer was that either on their own land or in the panchayat forests they could do it.

11111. Which administrative body levies the tax for grazing fees, the Forest Panchayats or yourself?—Are you talking about forests which have been handed over to Forest Panchayats?

11112. Yes?—They do it. The system is that the rates which they are allowed to charge are approved of by the Board of Revenue.

11113. Subject to the approval of the Board of Revenue?—Yes, as regards the rates and as regards the number of cattle which may graze in any particular area. Those two points are laid down by the Board of Revenue and, for the rest, the panchayat itself has control: it issues permits and so on.

11114. *Mr. Calvert*: Apart from the agency tracts and Malabar, is there any tract in which you think that conservation should be pursued further in the interests of posterity?—Only, I think, on the hill ranges of the Nilgiris and Palnis, because all the other large hill ranges where you could do work we are already doing as much, I think, as is feasible, simply by protection.

11115. You do not think that this taking of free fuel and free grazing is leading to any permanent damage?—Generally speaking not in the forests over which the Forest Department wields control; but about the panchayat forests I should not like to be so positive.

11116. Your Department of course is confining its activities strictly to areas notified under the Act?—Yes.

11117. Outside those areas there are waste lands unsuited to agriculture owing to their being badly eroded or cut up into ravines. Do you think that something could be done by afforestation?—I do not think so; it all depends on whether it is a business proposition or not. Of course it might do good to spend money on planting up such areas and so on, but it would never pay and I do not think that, as far as I know in this Presidency, the area of such tracts is great. We have not any of those extraordinarily denuded areas that you see in the United Provinces. I think the reason is generally that, where denuded areas occur, they are areas of low rainfall. You do not get heavy rainfall; where you have heavy rainfall you get big forests.

11118. Given ravine land of the type lying around Jhansi, would you place that land under the Forest Department or the Revenue Department?—Under the Revenue Department.

11119. Is the Forest Department in Madras undertaking any subsidiary industries?—By subsidiary industries do you mean industries apart from timber?

11120. Something like resin-tapping and so on?—No. I cannot think of anything at the moment except lac; we are just beginning to investigate that.

11121. Is not the local wattle good for basket-making?—I have never heard of its being used for basket-making.

11122. Have you in Madras any suitable material for barrels?—Yes. We actually turn them out; we have got a sort of research station; we have a mill designed on the very latest and up-to-date ideas, working partly on a research scale and partly on a commercial scale down the line here at Olavakot about

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30 miles away: there we are trying woods for all purposes; we have had great success so far in this.

11123. Do you find suitable wood for chip-basket for carrying perishable fruit?—Yes, bamboos; in this country baskets are made of bamboos.

11124. Is paper-making possible?—Yes. We have a big scheme under which paper is to be made in the Tinnevely district out of bamboo reed which makes very good paper.

11125. So you are dealing with this question of possible subsidiary industries?—Yes; we are going on; we are doing a lot of research work at present; we are gradually pushing ahead.

11126. Have you anything to say as to whether goats are a source of loss or a source of gain?—To the community?

11127. As regards damage to your own forests?—I have never thought of it in the light of benefit to the community, but, from the forest point of view, goats ought to be absolutely banned.

11128. *Rao Bahadur Muniswami Nayudu*: In the constitution of Forest Panchayats and in the fixing of rent to be paid in the villages, are you consulted by the Revenue Department?—I regret I cannot answer that question. I have just returned from five months' leave and I do not know whether any changes have been made while I have been on leave.

11129. You were being consulted before you went on leave?—I think so.

11130. May I know if, before you went on leave and before the forests were handed over to the Revenue Department for management, the rent demanded from the Forest Panchayats was more than what you were getting when the forests were directly under the control of the Forest Department?—No. I always tried to fix the rent at about what the net revenue was to the Government before. In some cases the net revenue was a minus quantity, and in these cases a nominal rent was fixed.

11131. Have grazing fees been raised recently, during the last six years?—I am afraid I cannot answer that. There has been so much change of grazing fees during the last ten years or so that I cannot say whether they have been recently raised. I think in one or two districts they have been raised and there they were ridiculously low before.

11132. *The Chairman*: Perhaps you could put in a statement at your leisure?—Yes.

11133. *Rao Bahadur Muniswami Nayudu*: Grazing fees are collected in one lump sum at the beginning of the year from the cultivator on the number of cattle that the man owns and for which he wants licence?—Yes, on the number of cattle.

11134. Do you not consider that it is very hard for the cultivator to be asked to pay the grazing fees in one lump sum?—I do not think so. The amount which a cultivator pays is in many cases as low as three annas per cow per annum; I do not think anybody who can afford to keep a cow or two could reasonably say that three annas per cow per annum is a hardship.

11135. Do you know that a ryot owns not one cow but probably 15 or 16?—If he can afford to own 15 or 16 cows he can surely afford to pay 15 times 3 annas.

11136. I do not mean cows alone; there are the bulls, buffaloes and others and he has to pay 15 times the licence fee in one lump?—I do not see any hardship whatever.

11137. He pays his revenue in four instalments to the Government. Why not grazing fees also?—I do not see any hardship whatever; if he were grazing those 15 cows on lands belonging to private individuals he would have to pay a much higher rate; some of the panchayats are charging Rs. 2 per animal.

11138. Would you consider the question of allowing payment in two instalments, paid half-yearly?—As a forest officer I should prefer that it should not be done in that manner because it is a very difficult thing to collect these fees. The lower they are the more it costs to collect them proportionately. It would

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mean more establishment and more cost and there is always the danger, from the point of view of Government, of people failing to pay the rest of their fees.

11139. Do you hold forest conferences with the ryots?—No, we have so little to do with the ryots that we do not do that.

11140. Do your district officers hold conference with the ryots?—I do not think very many nowadays. They used to, but as most of the ryots' forests are being handed over to panchayats for management the necessity for such conferences is considerably less than it used to be.

11141. May I take you to a particular district, say Chittoor? Are there not a large number of forests which are not reserved forests but which are close to villages and cultivation?—I cannot say because I do not know the Chittoor district very well; but I should say that there are considerable areas of such forests close to cultivation.

11142. In connection with such areas do you think that the District Forest Officers should know what the ryots have to say?—There is absolutely nothing to prevent them holding a conference.

11143. Would you advise them?—If it was brought to my knowledge that there was a demand. I think it would be a waste of time if there were no real desire on the part of the ryots. If there is a desire by all means the district officers should hold the conference.

11144. Do you know whether there is a demand for management of forests by panchayat system in the case of the Chittoor forest itself?—I do not know. But it is extremely likely.

11145. Would you favour the proposal of the management being entirely with the Forest Department subject to the payment of rent?—I do not quite follow you.

11146. You know that at Tiruvannamalai there are second and first class forests managed by Forest Panchayats. The control is entirely in the hands of the Forest Department. I want you to say whether you would extend that principle to the forests in other districts also?—I am against it because it means yet another system of management. We have already two systems, control by the Forest Department absolutely and control by panchayats. I am against introducing the confusion which is incidental to another system. I am advised that the system in Tiruvannamalai should be given up in favour of the regular Forest Panchayat system.

11147. So you are opposed to entrusting the people who are living very near the forests, and who have to go there for all their requirements, with the power of managing those forests through their panchayats?—That depends entirely on whether the forest is a forest of local importance or a forest of provincial importance. If it is a forest of local importance it has been, or should have been, classed as such and it should be managed by the panchayat. But if it is and has been classed as forests of provincial importance I do not think that it is right, having regard to the general interests of the public of the Madras Presidency, to leave such forests of provincial importance to the management of local villagers.

11148. You are satisfied that so far as the forests entrusted to the panchayats are concerned they are being managed satisfactorily?—I am not personally conversant with the subject. I am informed by the Forest Panchayat Officer that generally speaking the management is fairly good.

11149. *Mr. Calvert*: Forest conservation is a highly technical subject?—Conservation of what I call forests, not conservation of tracts which the member is talking about now.

Rao Bahadur Muniswami Nayudu: I am talking only of the grázng facilities.

11150. *Sir Henry Lawrence*: The Forest College here at Coimbatore is under your charge?—Yes.

11151. For what class of officers do you conduct your teaching there?—The staff of teachers comprises five, the Principal and four Instructors. The Prin-

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cipal and two of the Instructors are members of the Imperial Forest Service. The other two Instructors are members of the Madras Forest Service.

11152. I am asking you what class of officers you are training there?—I beg your pardon. We train Foresters already in the Forest Department; we train them to be Rangers; Ranger is the next higher grade.

11153. Are you training men for direct appointment to the Forest Service?—At present the training is entirely confined to men already in the Forest Service. That is because there was previously over-recruitment of men who were recruited with the idea of working for a short time in the department and then going to the Forest College. Until those men are trained we confine the training to men who are already in the service; after that we shall take people from outside. Perhaps I ought to explain a little further. This college does not only train Madras men. In fact out of 120 men there are only 16 from Madras. It takes men from the Central Provinces, Bombay, Bihar and Orissa, Coorg, Ceylon, Travancore, Hyderabad. With the recruitment of these men I have nothing to do; they are simply sent by those Administrations and we are asked to train them.

11154. Do men go from this college to Dehra Dun?—No.

11155. You do not train any one for the Provincial Service?—No.

11156. That work is concentrated at Dehra Dun?—Yes.

11157. Do you carry out any research work here?—No, not in connection with the college. The research work that we do is of two kinds. One is silvicultural and concerns the methods of growing trees; the other is research into the economic side, that is the quality of timber and that sort of thing. Silviculture is carried out by a special officer. He works under the Conservator of Working Plans. Working plans are, shortly, detailed plans prescribed for the administration of forests for ten years or so. The other research is done in Madras more or less in co-operation with the Engineering College at Guindy; that is research into the economic side of timber.

11158. Economic use of the timber?—Not only timber but minor products such as myrobalans; that is done at Madras.

11159. At what college?—It is done by one of our own officers. He works in connection with the Dehra Dun Research Institute and does testing of timber with the Engineering College. He is chiefly engaged in the collection of information for pushing the sale of timber.

11160. Have you ever tried in your forests the manufacture of manure from Lantana?—No.

11161. Has any research been made?—Some French gentlemen spent a good deal of money in working out a scheme for utilising the oil from Lantana in Coorg; but as far as I know nothing has come of it.

11162. There was a suggestion from the Director of Agriculture that the Forest Department could make large quantities of manure; has that been ever tried?—I am very much against trying it, because my officers are not trained to that sort of work and we have not yet got our timber forests working really efficiently.

11163. You do not foresee any difficulty in officers of the other Departments entering your forests?—No, no.

11164. Would you agree to have that work done by others?—Yes. My point is that forestry is a highly technical subject and it is waste of time to put a man trained for three years in forestry, at large expense, on to carry out works such as you suggest when there is any amount of real forest work to be done.

11165. There is serious annoyance to the forest and the villagers where forests harbour noxious plants, like Lantana?—In some cases Lantana is gradually destroying the forests.

11166. And overrun the neighbouring fields?—Yes.

11167. So it is a matter of sufficient importance to take notice of?—Very much so. As far as the Forest Department is concerned the remedy is not

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very difficult. In my opinion the remedy is to continue to burn; it reduces the density very much.

11168. Is there any difficulty in burning it?—No; it is fairly easy in the hot weather.

11169. You say your department has been engaged in large timber operations. Do you accept the view of some people that you are becoming the timber merchants of Government?—Not altogether. My object is to show the market and the world at large that the species of timber which grow in the Madras Presidency are really valuable. Hitherto many of them have been looked upon as useless. We are trying to prove the value of these timbers and we have been very successful although we started operations only three years ago. Supposing we can show the world that our unknown timbers are really valuable we might expect private enterprise to come and take concessions from Government.

11170. Can you indicate any success in the work you mentioned?—There are two timbers which, three years ago, were unknown to the trade; in fact I do not think they have any local trade names. One of these timbers we have recently sold at a price which approximates very nearly to that of teak.

11171. What is that timber?—One is *Acrocarpus fraxinifolius*. I do not say we can get teak prices for all of it, but some has actually been sold for a sum which approximates to that of teak. Another is *Polyalthea fragrans*. Two years ago no one had ever heard of it; it had no local name; even the jungle-men did not know it.

11172. Have you a very large demand for those timbers?—The demand is very large. Even now we cannot meet the demand from one company alone, the Standard Oil Co.; we cannot meet the demand which exists from that company for making boxes. There are other timbers in which success has been attained, but I cannot give you any details.

11173. Sir Ganga Ram wants to know whether those timbers are fit for railway sleepers?—They have not been tried for railway sleepers, but I should say they are not.

11174. Can you tell us the yearly revenue of your Department for the past few years?—It varies from 48 to 50 lakhs.

11175. What is the expenditure?—That is about 48 lakhs; both expenditure and revenue hover about the 50 lakhs line.

11176. In former years you were working at a loss?—We were working on a very much greater profit; there was a surplus of 20 lakhs or so because chiefly, the establishment then cost very much less; but we shall work at a very much greater profit in a few more years; it is only a question of organising. In this Presidency till recently the administration of ryot's forests which I spoke about this morning was very easy. The forest guard was paid Rs. 8; he is now paid Rs. 25. It was easy, because you had not to invest any money in roads and buildings or anything else; all you had to do was to have a man to collect the revenue. These forests assumed a false importance, and the result was that Government, or the head of the Forest Department, which was then the Board of Revenue, looked to the districts where these forests chiefly grew as their chief source of revenue, with the result that the real forests were neglected. That was possibly all right as long as you paid the forest guard Rs. 8, but when you are paying three times as much, it does not pay.

11177. *Dr. Hyder*: Are these forest guards now under the panchayats or are they under you?—Some are under us, some under the panchayats. I was speaking of these guards in general for the purpose of giving an example.

11178. *Sir Henry Lawrence*: Is your revenue likely to be affected by the transfer of these lands to Forest Panchayats?—No; on the contrary it will improve the revenue, not the gross, but the balance, because these lands were costing us a very great deal to administer, and we can get rid of all the establishment. By the end of last March, although this transfer had only been going on about a year or two, we had saved considerably in establishment.

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11179. When you are pressed to reduce grazing fees and other such things in favour of local ryots and it is only a question of conflicting interests of the general tax-payers and of the local residents, you as a rule decide in favour of the general tax-payer; is that a fair way of putting your policy?—I do not decide it; the fixing of grazing fees, etc., does not rest with me, but with the Government; they, I think, have been a little too lenient in the matter.

11180. Lenient to the local residents at the expense of the general tax-payer?—Yes. There is a great deal to be said on both sides; we have never really tried to improve the ryot's grazing grounds.

11181. In the note of the Director of Agriculture which you have seen, it is suggested that forest officers should be in charge of these reserved forests on the ground that the local people possess no expert knowledge of either forestry or agriculture. You do not accept that view?—No; I do not, because as I said before, the forest officers are trained for a particular purpose and not for that sort of work; my point is that the training that is required for the administration of the forests in question is a thing which can be acquired by any intelligent man in two or three months; it is quite a different thing from training in real forestry.

11182. Then the Director of Agriculture has also made a suggestion that the Forest Department might assist in matters of silage, and in growing seeds for *kolinji*, wild indigo, and *daincha*. Do you consider that you have any staff available for carrying out that kind of work?—No. We have not.

11183. Do you wish to have that staff?—No; because that staff is bound to cost us a lot. I do not know whether it will cost the Agricultural Department more or less, but it certainly will be inefficiently supervised by the Forest Department. It would be quite another matter if you had such operations as silage making and other fodder operations alongside big timber forests, but most of these places are hundreds of miles away from our real forests; that means imperfect supervision on the part of the superior officers and therefore increased cost. I do not know much about the details of the posting of agricultural officers, but I should imagine that the agricultural officers would have to be more or less on the spot to be able to supervise that. I do not wish to be understood as in the least antagonistic to the Agricultural Department; we are ready to help them in every possible way, except by putting on our trained forest officers to do work which in my view they are not trained to.

11184. You are in close touch with the Agricultural Department?—I think I may say so.

11185. Do your officers work without friction?—We have very little to do with the Agricultural Department. When you asked me whether we were in close touch, I took it that you asked me whether I was in close touch with Mr. Anstead. As a Department we are not in close touch; we have generally very little to do with the Agricultural Department.

11186. You think it is a duty which should be performed by somebody else?—Yes.

11187. If it is to be performed by the Agricultural Department the officers of the Agricultural Department will be working in your areas. Would it be possible to work without friction?—Certainly it would be possible. If there were frictions Mr. Anstead would inform me and I could see that there was no friction. I think that sort of friction is absolutely unnecessary; we are ready to give every possible help.

11188. Quite so; I see your position. The only question is what is the best system. If you can work in concord, then the object will be attained. You are prepared to see that that is done?—I am.

11189. *Sir Ganga Ram*: Have you made any researches into the products of your forests such as examination of trees for the making of wood pulp, chair-making, etc.?—We do not do much research here in this Presidency; such research is done at Dehra Dun.

11190. But have you any product in your forests fit for the manufacture of wood pulp?—I believe no feasible scheme has yet been worked out for India.

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for making wood pulp to be used as paper. But we have got a scheme under which private enterprise is now negotiating with Government for the right to use a reed (a small bamboo) for paper making.

11191. Is that a product of this Presidency?—Yes.

11192. Have you any other product; say a product for basket-making?—Basket-making is a thing which has never occurred to me, because it is a cottage industry, or rather the jungleman's industry.

11193. We want to find some subsidiary occupations for the agricultural classes, and what I ask you is, can you suggest any product of your forests which will lead to the establishment of a subsidiary occupation of that kind?—I cannot, because the real forests where such material grows are far removed from the agricultural people. About these subsidiary industries, I may say wherever the agriculturists live near forests, *e.g.*, in South Kanara and Malabar on the West Coast, there is employment of that sort, making baskets, etc.

11194. Do you grow pine trees?—There is a plantation of pine trees at Kodaikanal on the Palni hills.

11195. Do you make any use of pine?—No.

11196. Pine trees are imported from America for ceilings; have you any timber to suit that purpose?—These pine trees that we grow are absolutely useless, because they grow on hill tops and they cannot be got at. But as regards the imports of timber into this country, which amount to some crores of rupees in value, we in the Madras Presidency can supply every stick of timber that is imported.

11197. Do you import a large amount of timber into Madras?—No, we do not; I was speaking of the imports by the trade.

11198. What part of it can you supply?—Everything; every part of it.

11199. You can supply all that demand?—The timbers that I have just mentioned are found to be very good for making boxes; there are other timbers that are good for construction, which we can supply.

11200. Is there manufacture of planks in this Presidency?—The timber industry is undeveloped; there are a few mills down on the West Coast.

11201. Is there any timber which is fit for making matches?—Yes; many kinds of it.

11202. Have you supplied them to people here?—Yes.

11203. Is there any match factory here?—There is a small cottage industry in matches.

11204. What timber have you got for matches?—The silk-cotton tree, which is a common tree on the West Coast; and there are several others. But that is not my special line, and I cannot tell you much about it; but there are plenty of them.

11205. I suppose they could cut them?—Yes.

11206. And you would have no objection to giving them?—No. The difficulty about matches at present is to obtain enough timber of suitable species within a reasonable distance of your factory. It is a very different thing in Sweden; you have got your factory at a certain place and all round it are large forests which contain only one kind of timber. In this country you may have a factory but may not get in the surrounding forests more than one or two trees per acre of suitable species.

11207. When the monsoon fails, do your forests suffer too?—No.

11208. It has no effect?—Are you talking about big trees?

11209. Big or small; when the monsoon fails does your department suffer in any way?—No.

11210. Out of your income, can you say how much is due to the old forests, and how much is due to your exertions or is the product of your industry?—The great majority of the income is derived from the primeval forests, not from the forests we created.

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11211. From old forests?—Yes.

11212. *The Chairman*: Your exertions are almost creative of new trees?—We do a great deal of it.

11213. *Sir Ganga Ram*: Have these Forest Panchayats any civil or criminal powers?—That I am afraid I cannot say, because, before I went on leave, the whole thing was more or less in the melting pot.

11214. In whose hands is the responsibility for counting the number of cattle? Who makes out the bill for the grazing fees? Is it the forest guard?—It is not done quite in that way. A man comes and says “I have 25 heads of cattle, I want 25 permits.” Then he goes and grazes his cattle. The forest guard comes into the forest and checks the number of cattle which are being grazed with the permits; they are not counted beforehand.

11215. Supposing, instead of 25 cattle the man grazes 35, has the forest guard the authority to interfere?—It all depends on the arrangement which he makes with the forest guard, but according to the book the forest guard is supposed to prosecute him, or rather to report him.

11216. Or allow him to go, on receipt of some commission?—That is illegal gratification; he is not allowed to let him go.

11217. In your reserved forests, do you allow the people to collect leaves of trees for the purpose of manure? Supposing they take away the sweepings of leaves of trees, would you allow it?—Not as a general rule.

11218. You would have no objection to that?—I would have an objection; it depends on the local circumstances entirely. On the West Coast, in South Kanara and Malabar, where rainfall is copious and the growth is very fast, the people are allowed to take as much manure leaf as they like. This does no harm in my opinion; but I am a heretic in this respect, and some other officers do not agree with me. But in the dry districts, if you collect all the leaf on the ground, your forest will very soon die out.

11219. Do you suffer from incendiarism?—Yes.

11220. Do they do it for mischief?—Yes, for mischief, or having a grudge against the forest officer.

11221. Can you suggest some trees which will grow on the borders of fields, very easy growing trees, which will supply the cultivator's requirements?—I think *Casuarina* would be the best in this Presidency; it gives the best return, and is quick-growing; possibly some species of *Eucalyptus* might be tried.

11222. Have you encouraged any ryots to grow them anywhere here?—It does not come within my province to do so.

11223. I do not understand the meaning of shifting cultivation. Can you explain it?—It is known all over the country by different names. It is called “*podu*,” “*kumri*,” etc.

11224. People can go anywhere into the forest and cultivate?—They go into the forest, cut down trees, and they grow one or two crops possibly, and then go off to another place, and start over again.

11225. Are there any areas in this Presidency which require afforestation?—A certain amount, as I said before, should be done in the Nilgiri district, on the Nilgiri hills, and the Palni hills.

11226. Is it not very necessary to afforest them, because they contribute to the floods?—Yes. Not a very great deal is required, because the grass, to a certain extent, holds up the water, but a great deal of damage has been done during the last 100 years by the practice of burning the grass annually; the strips of evergreen forests which grow alongside the streams are spoiled by these fires, and in many cases have been entirely destroyed.

11227. What remedy do you suggest for the purpose of retarding the velocity of the water flowing down?—Planting suitable species of trees.

11228. Would you not terrace them in order to have some cultivation?—that would be a superhuman work; you are dealing with enormous areas.

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11229. Supposing a man asked you to give him the land for that purpose, would you give it to him?—If he promised to do it.

11230. If ne asked for land to make terraces on the bare hills, would you give it to him?—If there were some arrangement, by which we could enforce our conditions, certainly I would be very much in favour of granting the permission.

11231. I understand there are waste lands in this Presidency; do you look after them?—No, the Revenue Department looks after them.

11232. Is there nobody to take any steps to afforest them?—No.

11233. Are they not contributing towards floods, if they are left alone like that?—Yes, to a certain extent I suppose they are, but it is not very serious.

11234. *Sir Thomas Middleton*: You have alluded to the great need for supplying village fuel reserves. Would there be any difficulty, from the technical point of view, in making out a list of suitable species of trees for such reserves in any part of the Madras Presidency?—No, there would be no difficulty.

11235. Even in the driest tracts, you can provide suitable species for fuel reserves?—Yes.

11236. Under the most favourable conditions, in your best climates, what rotation would be necessary to give you a good fuel supply?—How many years would be required?—Casuarina can be grown on a rotation of 7 years, that is under expert care and constant attention. I do not suppose you can do this on a large scale however; say 12 or 15 years.

11237. From 7 under the best conditions up to 12 or 15 years under inferior conditions?—Yes.

11238. So that, the difficulty of accumulated interest does not disturb one so much here as it would in the case of European forests?—No.

11239. You referred to the fact that in Malabar there has been too rapid exploitation. I think you said that the forests there are in private hands, and that at present, you have no jurisdiction. Is that so?—Yes.

11240. From the technical point of view, would there be any difficulty in remedying that state of affairs?—None whatever. The west coast is the forest man's paradise. All that you have to do is to throw the seed down, and the forest comes up; it is the easiest thing in the world.

11241. I happened to see some young plantations of Australian trees in that tract yesterday, and I was surprised at the rate of growth. You agree that the technical problems are very simple?—Yes, they are simple enough.

11242. In the case of those forests where you permit grazing at 3 annas per cow, is the supply of grass greatly in excess of the demand?—No; the other way about; the demand for grass is in excess of the supply.

11243. Still, you stop at a charge of 3 annas per cow?—Yes, but we limit the number of cattle which may graze.

11244. *Dr. Hyder*: I am quoting the figures from the Government Order dated the 13th September 1926 relating to the Administration of Forest Panchayats. The total area under the administration of these Forest Panchayats is 1,290 square miles; the number of panchayats working in the Presidency is 623. The fees payable to Government were Rs. 6,000; the grazing fee charged per cow varies from 1½ annas to Rs. 1-2-0. How does the total amount paid and the grazing fee per unit cow compare with the charges which you levied when the reserved forests were in your hands?—The fees differ so very widely from district to district that it is not possible to give you any very definite answer. I think I am right in saying that our fees in forests under the control of the Forest Department vary from 3 annas in the case of a great deal of them to Re. 1 in a very small number of cases. I should say it varies from 3 to 8 annas, generally speaking.

11245. With regard to making technical advice available to these Forest Panchayats, I understand that that has been a failure in the Coimbatore district. Three out of eight were suspended. Coimbatore has a first class Agricultural

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College, and I understand it also possesses a Forest College?—May I ask if the three cases you refer to are in this report?

11246. Yes; I am referring to three out of eight panchayats under the control of the Revenue Divisional Officers in the Coimbatore district?—I think you have got hold of something else, if I may say so. That is a case of unreserved lands, I think; it is not the ordinary Forest Panchayat.

11247. Are your Forest Panchayats partly under the Revenue Divisional Officers?—I do not think they have anything to do with the Revenue Divisional Officers at all; they are under the Collector. The panchayats you refer to are some under an old system, which has nothing to do with the Forest Department. I am not sure, but I think I am right in saying that.

11248. My point is this: do you not think that it is desirable that these Forest Panchayats should have the advice of the Forest and Agricultural Departments?—I do not think there is any necessity for these panchayats to have the advice of the Forest Department as such. They have the advice of the Forest Panchayat Officer, under whom works the local Forest Panchayat Deputy Tahsildar as he is called. Those officers, especially the Forest Panchayat Officer himself, have been taught all that is necessary for them to know by senior forest officers. The Forest Panchayat Officer is a man of three years' experience in dealing with these matters, and if he cannot teach the people everything they require to know, then he is not worth the pay he gets. I do not think there is any doubt that he can teach the people everything they want to know. Sometimes it is the other way; the panchayat can teach something to the officer. It is a matter of common sense, and not of any great technical knowledge.

11249. The growing of plants and grasses does not require technical knowledge?—The growing of any plant, after all, is the ryot's trade, he knows how to grow an ordinary plant; it is just a matter of substituting a tree for grass, and some fodder crop or some cereal; it is not a difficult thing for a man who is accustomed from his childhood to grow things. I do not think there is any necessity to get the advice of the more technical forest officer on the subject.

11250. Take the case of the *shola* forest; I understand there has been a rapid deterioration there. Is there any provision under which advice is given to these people?—No.

11251. No advice is given either by the revenue or the forest officers?—No; might I add, if it were given, it would not be acted upon.

11252. Take the case of the match industry; is there any match factory in the Madras Presidency?—I do not think there is anything except as a cottage industry. I am not sure, and I could not be certain about it, but I think the only match factory is one in the State of Travancore.

11253. South Kanara is in your Presidency?—Yes.

11254. In the neighbouring State of Mysore, near about Shivgaon, they are starting a match factory; I imagine perhaps you know whether the timbers available there are of the same kind as in the district of South Kanara?—Probably.

11255. So far, no match factory has been started in this Presidency?—None that I know of.

11256. What difficulty is there? Is it the absence of private enterprise?—That is a very big question; the absence of private enterprise, yes. Private enterprise being absent it is necessary for the Government to get the timber out; to get timber out of these forests is a very difficult and complicated thing requiring a tremendous amount of organisation; the forests in which these timbers grow, most of them and the best of them, are in very inaccessible places, particularly with practically no roads, or buildings; for seven or eight months in the year there is heavy rain and leeches are bad; the forests are feverish. You can understand that in order to organise work in places like that a tremendous lot of spade work is necessary. We have to lay out roads, we have to build houses for the subordinates and we have to get machinery to work and so on. all that means a lot of expense and the reason why the thing is not organised at

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present is that Government has not been able to face the necessary expenditure in the past. We are now doing as much as we possibly can with the establishment at our disposal in organising large scale exploitation of forests with the hope that private enterprise will see that it is a paying thing and come in.

11257. Leave alone the question of machinery and things of that kind. Would you admit that no forest property is of any use unless you have also the provision for the construction of roads? Are you undertaking an active programme of road construction in your forest property?—We are not undertaking any particular programme of roads at present; but we have just drawn up a programme which is going to be submitted to the Government, a programme for the next five years.

11258. These forest roads are under your department. They are not under the Department of Public Works or some other department?—No; under the Forest Department.

11259. *Dewan Bahadur Raghavayya*: I have only one question to put to you. Before putting that I would explain that the class of panchayats to which Dr. Hyder referred are not the Forest Panchayat proper but a few panchayats which were begun years ago and run by Revenue Divisional Officers. They are languishing and they are being gradually transferred to the Forest Panchayat Officer. The question that I wish to put is the very same question which Dr. Hyder put to you. May I ask you to consider that question again about the need for technical advice, co-operation of the Forest and Agricultural Departments by way of offering technical advice to the Forest Panchayat Officer and his staff in the matter of working these Forest Panchayats?—The present Forest Panchayat Officer and his staff stand in a somewhat peculiar position, do they not? The present Forest Panchayat Officer was trained by you for two years or so and his staff was also trained by you. But you cannot expect that state of affairs to continue. If the present man goes another man might come, but he will not have the training which the present man has had. I find that the Forest Panchayats are engaged actively in tree planting and that they planted about 33,000 trees within the last year. Do you think that this operation of tree-planting and the operation of introducing exotic grass, or improving the present grass supply in these reserves, should be done efficiently by these panchayats without the staff getting some sort of technical training or at least technical advice through the co-operation of your Department and the Agricultural Department?—As regards grass and the Agricultural Department, I am afraid I cannot answer; I have not enough knowledge of them. As regards tree planting I think the ordinary ryot in planting the trees does as well as the ordinary forest officer, and I think it would be a waste of material to have a regular forest staff to supervise such works. But on the other hand if it is shown to be necessary I should be only too glad to lend the services of a forest officer when and where necessary. But I think to keep a man permanently on work of that sort is waste of material.

11260. What is in my mind is periodical visits by your responsible officers or District Forest Officers to these reserves, and offering of suggestions in regard to the way in which plants should be raised, suggesting the kind of plants that should be raised and so on?—It would doubtless do good; but the question is whether it is necessary and whether it is worth the expense.

11261. *Professor Gangulee*: Have you ascertained whether the Railway Department imports any sleepers from outside?—Yes, they import large quantities from outside.

11262. Cannot you supply their needs?—We cannot for the reason which I gave just now, that we are not organised. As soon as we have organised, we can supply every single sleeper required in India.

11263. If there is any merchant you will give facilities?—Only too gladly. Let him come forward; but so far I have not met any.

11264. Have you any method by which you bring your timber from districts to the market or to the rivers, such as tramways and so on?—That is a technical

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matter with which our technical branch, the Forest Engineer, deals. I am afraid I cannot answer that.

11265. But are you aware of any such method?—We have not got any at the present moment.

11266. *Sir Thomas Middleton*: The present Panchayat Officer was trained by you?—Not by me personally, but by one of my subordinate officers.

11267. Assuming he vacated his post, would his successor not also have the same forest training? Is it not a necessary condition?—I think it would be necessary; but the point has not arisen yet.

11268. I inferred from the question put to you by Mr. Raghavayya that there is some danger if this forest officer were to vacate his post that his successor might not have a similar technical training?—The training is a matter of a short time; two months, I think, will be enough.

11269. *Dr. Hyder*: How much pay does this Forest Panchayat Officer draw?—I really cannot say; he gets his pay as Deputy Collector, *plus* an allowance.

11270. Could not your Rangers or Foresters undertake such work?—Rangers could undertake the work quite well.

11271. So it would be a good policy to transfer Rangers to that post?—I do not think that all the Rangers can do the work now done by the Forest Panchayat Officer himself, but there will be one or two exceptions who could do it. For some reason or other Government are opposed to that.

11272. They do not favour the transfer from your department to the Revenue Department?—No.

11273. *Professor Gangulee*: Regarding creative activities of your department do you have any forest nurseries?—Not in the sense in which they are known in Europe, nothing permanent. Our chief creative activity is at Nilambur in Malabar where we have about 6,000 acres of teak forest. We are planting there and make temporary nurseries as required.

11274. Do you extract tannin?—I do not know.

11275. Is any research carried on?—Not here, but at Dehra Dun.

11276. You mentioned that private enterprise was negotiating with you for the manufacture of paper. Is that enterprise an European enterprise?—I do not know whether I am correct in answering a question of that sort. It is confidential at present.

11277. But private enterprise is negotiating?—Yes.

11278. With regard to coffee and tea plantations, they are increasing in area, are they not?—Yes; the area under coffee is not increasing to any considerable extent; the area under tea is increasing as fast as land can be got.

11279. That would be a serious drawback; it would affect the forest area very much?—If the forest area is not suitable for commercial management for the growing of timber and so on, I would rather see it under tea than lying waste and my policy has been to give all possible facilities for tea growing.

11280. *Mr. Calvert*: Is the Forest Department here Reserved or Transferred?—Reserved.

11281. And this Panchayat Officer, is he Reserved or Transferred?—Reserved.

Dewan Bahadur Raghavayya: As Deputy Collector he is a Reserved officer.

11282. *Dr. Hyder*: The Department of Panchayats comes under the Transferred subject, does it not?—I am sure it is a Reserved subject because it is dealt with by the Hon'ble Dr. Usman Sahib.

11283. *Mr. Calvert*: Both Reserved?—Both Reserved.

11284. I should like to ask whether your department will send us a brief account of the work done at the research station in connection with the utilisation of forest produce for industrial purposes. Will you send us a note on the subject?—Yes.

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11285. *The Chairman*: One question. I noticed in Mysore that within a few miles radius there were quite a number of plantations, I think they were Casuarina plantations. Is that right?—Yes.

11286. Do you happen to know whether they are encouraged by the State in Mysore or whether they are private ventures?—I believe that all of them round Bangalore are private ventures. But what the policy of the Mysore State is I cannot tell.

11287. For fuel?—Yes, for fuel. It is a paying business.

11288. Would it be a paying business here?—It all depends on the locality. It is a very paying business in Madras. All round Madras you see the same thing; but I presume it is not a paying business in a district like Coimbatore because we do not see the plantations here.

11289. You think that it does exist where it would pay?—Yes.

11290. You do not think there is anything that you can do to encourage the planting of these trees?—No, I do not think so.

11291. *Sir Henry Lawrence*: Are the plantations here in Madras under the Forest Department?—They are entirely private. Some were originally made by the Forest Department. Some years ago Government announced that they were adopting the policy of giving up all such work.

11292. But the system was introduced by the Forest Department?—I cannot say whether it was introduced by the Forest Department or not. Probably private people also introduced it. I think it was a question of supply and demand.

(The witness withdrew.)

Mr. K. T. PAUL, O.B.E., B.A., National Secretary, National Council of the Y. M. C. As. of India, Burma and Ceylon, Salem.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(c) It is my impression that there is not yet in India adequate appreciation of the necessity for research work along lines of Soil Chemistry and Soil Bacteriology. I was struck by the enormous importance given to this line of work in America and particularly since the War, on the Continent, more especially in the Eastern countries of Europe. This impression was confirmed for me by the Head of Rothamstead, with whom I discussed it in 1919, and compared notes in 1924; and also by Dr. Mann of Cornell University whom I ran across in Prague, 1924. It is my belief that very considerable light will be thrown on the value or otherwise of the empirical agricultural tradition of India when the organic aspects and possibilities of soils are studied. It is high time that this line of research is given the importance that it deserves, alongside, of course, of other lines of research.

I am not a student of science: my observations are those of a student of economics.

QUESTION 2.—AGRICULTURAL EDUCATION.—What is agricultural education for?

- (a) For the millions of Indian farmers;
- (b) for a staff for demonstration, propaganda and educational purposes (who should be several scores in India);
- (c) for securing very high grade scientific workers (who should be few in number).

In a country like India where agriculture is practically the occupation of its millions, the only logical way of providing agricultural education in all its grades is to make it absolutely part and parcel of the general scheme of education which is provided for the whole country. The entire scheme of rural education should bear a very strong, I should say highly preponderating, agricultural bias.

In the old days (down to my memory) almost every caste village had its school, the teacher like all the village artisans, etc., being entirely supported by the village itself, payment being in kind. The teacher was himself a farmer, sometimes cultivating himself, sometimes through a tenant. (The Panchmas were outside the privilege of this school.) With the statutory provision now secured for the registering of village panchayats it should be possible to revive the good features of this system. Education would then go to the village child (of both sexes, as indeed in the old days in South India) and not as now all the enterprising, well-to-do and intelligent children eventually drawn away from the village. Such a revived rural education, which should as soon as possible, by design, submerge the present plant of rural education, should be biased with agricultural facts and principles.

This in itself should suffice for securing the first of the objectives noted above for agricultural education. The insurance of this lies in the quality of training and attention which the rural teachers get. Provided they are themselves products of an agricultural middle school and their pedagogic training has been related to the atmosphere of such a school, provided they are helped by Supervisors attached to the agricultural middle school, and also provided that as a rule they are themselves farmers, the ordinary rural education of the country ought to suffice for (i) giving elementary general knowledge in regard to many aspects of life important to the villager, (ii) literacy and (iii) a general capacity for receiving and assimilating the further knowledge, theoretical and practical, brought to them by

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Agricultural Demonstrators and propagandists, by co-operative organisers, by Health Officers, etc.

Agricultural education, strictly so called, should be a natural outreach from such a rural education. The needs of a Province cannot be met merely by an agricultural college or dozens of agricultural middle schools spotted up and down the country, while rural education is altogether devised as a preparation for something else. The answer to question 2 (i) in the Questionnaire is that the institutions and therefore the teachers will continue to be insufficient for India until there is a remodelling of the whole of the rural education and agricultural middle schools arise up and down the whole country at the call of such a remodelled primary education.

May I take the liberty of presenting a copy of the Report of the Commission on Village Education in India, on which I happened to be a member. There are many references to agricultural education in the course of the report but more especially I would invite attention to the proposal for vocational middle school (which should be the main source for the supply of teachers). This idea, it may be mentioned is the father of "Moga" which is now so widely known in missionary educational circles as standing for a new type of rural education.

According to the suggestion in the foregoing paragraphs the ideal would be somewhat as follows:--

- (1) One Agricultural college for the Province.
- (2) One Agricultural middle school with Teachers' Training section in each taluk. This should be staffed by graduates of the Provincial Agricultural College. Half the duty of the staff will be the supervision of the village schools in the taluk, and regular demonstration work in that area.

(ii) This also is implicitly answered by the above remarks. According to my view there would not be any district without one or more Agricultural middle schools to serve the needs of the rural population.

(iii) As a matter of fact it is very difficult to draw a line between agricultural classes and non-agricultural classes in India. Almost every one, even artisans like goldsmiths and priests like *purohits* are all indirectly and in some cases even directly concerned with agriculture one way or another. I cannot therefore answer the question as it stands. I would rather say that a farmer should be the rural teacher even more so than a rural teacher being a farmer. In other words, given a thorough remodelling of rural education it should be quite possible in every village to find a man who is actually a farmer to devote a part of his time, not necessarily every day but every season to the running of a small village school. This was pretty much as it was from ancient times till within our memory.

(vii and viii) I would suggest the Commission to visit and study the experiment carried on at Moga in the Punjab.

(x) There is certainly everywhere keen feeling in favour of land as an investment, rather of agriculture as a personal occupation. The "Middle-Class youth" in most cases has his own or family property which is cultivated by tenants. His settled attitude is that of an absentee landlord. If by the question is meant, getting him to take to agriculture as a personal occupation, it is a question of profit and loss, of making it really an alternative to be considered in preference to those other occupations which are now becoming more and more congested. Already we have the fact that Matriculates ("Eligible S.S.L.C.'s") and even college men are turning to farming, some of them in personal labour and some in organising the labour of their tenants or servants. Public opinion in this matter is already showing signs of improvement. If more attention is devoted hereafter to the betterment of rural conditions, the consequent demand it will involve on the services of the middle class youth, their personal interest in agriculture will become fully established. The question then is, how to make Indian Agriculture really pay a decent dividend?

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(xii) All the answers to section (iii) will serve to answer this sub-section.

(xiii) I do suggest that a very courageous attempt be made without any loss of time to extend (a) elementary schools in the villages and (b) concurrently the education of the rural adults without necessary recourse to literacy. The village schools should be entirely in the vernacular, should cover no more than four years and should carry a curriculum on the lines of the Moga principle. I am enclosing copy of Dr. Mason Olcott's recent book "Village Schools in South India" in which will be found several alternative curricula.

This will imply that a very large number of training schools of the lower and higher elementary grades be organised throughout the land. It will also mean the employment of a considerable number of Supervisors to keep rural education up to standard.

Having provided the necessary preparation in this way, I would expect each village practically to support its own education. There is no reason why it should not, provided the teacher is one of the farmers. It should be the aim of all official and non-official organisers of rural education to secure such an arrangement as fast as it can be managed. The work accomplished by one Taluk Board, Cheyyar, in North Arcot district may be taken as an earnest of vast possibilities in this line.

The administration of such rural education should be mainly or even entirely for maintaining standards for encouraging rural teachers and in no sense should be a censorious supervision to exact work from the teachers. The educational work of the teacher should be really controlled by the educational demand of the parents in the village itself. It is the public opinion of the village that should keep the teacher alert, this public opinion being substantially represented by the perquisites of the teacher from threshing floor to threshing floor. The "Supervisor" (who should also be a Demonstrator) should be part of the staff of the Training Schools and should form the link between the Training School and the village, on the one hand keeping the village school master up to standard and facing the actual day to day problems of the farmer and on the other hand keeping the Training School up to the actualities of current life. The district should have an "Inspector" on its staff to guide and regulate the work of the "Supervisors". The "Inspector" would be the district Demonstrator and the "Supervisors" the Assistant Demonstrators, under his guidance, but still part and parcel of the staff of the middle school.

The financing of the village school should not be charged, eventually, on provincial finance. The village itself should bear all the expenses, capital and recurring. Payment will usually be in kind. The expenses of training, supervision, inspection and general administration, i.e., middle schools, Supervisors, etc., will be of course on a very large scale. Towards this I recommend that money be found by drastically decreasing State aid to secondary and University education. It is quite unnecessary to labour the point that education in India is too top-heavy. The Sadler Commission Report has established this fact beyond any further necessity for argumentation. Since the Sadler Commission things have become worse and not better, and the problem of the unemployment of the educated youth of the country has in recent years become a national problem amounting to a calamity. It is no longer justifiable to expend money out of State revenues to further assist secondary and University education, especially as the bulk of the State revenue is drawn from the rural population. As in most countries the privilege of "higher education" should be paid for in full by those who desire it. The country will be ruined if there is not a continuous stream of men and women with the highest possible University equipment that is humanly possible. But we have reached a stage when this fact is appreciated so widely in the country that it will be paid for by a sufficient number of people to maintain first class standards and sufficient to provide leadership for the real needs of the country. There will of course be highly capable youths who are handicapped by poverty. They ought

certainly, in the interests of public good, to be financially assisted to go through a University course. But such cases will be relatively rare: private benefactions will probably take care of them. Still a limited number of scholarships should be established and awarded exclusively on the dual ground of poverty and merit,—without any distinction of caste, creed or sex. These scholarships should be available for students of every grade, so that deserving boys may be picked up in every stage and pushed along right up to the top.

Such a drastic step as the withdrawal of State aid from higher education could of course be done only in a period of years. So will the needs of the remodelled rural education expand only in a period of years. I would suggest that the former be on a diminishing scale looking forward to entire disappearance, say, in ten or fifteen years.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—We in the "Rural Reconstruction Department" of the Y. M. C. A. consider demonstration and propaganda as fundamentally a process of education; education in theory and education in practice.

Educational opportunity of the sandai.—In India there is a very ancient institution, still absolutely vigorous, which lends itself splendidly to the education of the adult villager. Once every week in a convenient centre the villagers from five to seven miles radius come and assemble as a market. In the Tamil country it is called a "sandai" in Bengal it is called a "hat." Almost every villager, man, woman and child, who can at all physically go, were it only for an hour or two, does make it a point to go to this weekly market. Considerable amount of business is transacted at the market. But it is partly for business and partly for pleasure. Many a person goes there merely to buy the week's supply of tobacco; it is really to meet friends.

It will be obvious that this national institution, ready-made and live, offers a splendid opportunity for educational purposes. Here the educator can touch (a) practically everybody on the countryside and (b) practically the same set of people every week. In our Y. M. C. A. Rural Reconstruction work we have used this opportunity to good purpose. It is our experience that villagers, men and women, are willing to spend a good deal of time listening to our talks, examining our charts, scrutinising the implements, and asking many questions, intelligent and based upon practical experience. Our Secretaries have secured in this work the co-operation of the Government officials of the Agriculture, the Co-operative, the Health and other Departments.

We advocate that in connection with every one of the larger markets, to begin with, and eventually with every market in India, there be established a centre for demonstration and propaganda, *viz.*, education.

Taking a whole countryside, say two or three consecutive taluks, these weekly markets are so arranged that the professional vendors of cattle, grain, cloth, etc., could conveniently go from one centre to another. If the weekly market is at Centre A on Monday, it is at Centre B on Tuesday, B being say eight to fifteen miles from A. And so every day of the week is occupied, the vendor coming round to A on the eighth day. So it is quite possible for the demonstrator or demonstrators of agriculture, health, education, etc., to conveniently move on from day to day in the same traditionally appointed circuit.

The Farmer-Demonstrator system indispensable.—But there will not be that effectiveness in the demonstration that we desire until the farmer is able to see for himself that what we recommend can be translated into profitable practice in the conditions in which he is condemned to be. The Indian farmer is really very shrewd. He suspects, in most cases rightly, that our demonstration is under conditions so really different from his that it is of really no value to him. His hesitation is due not merely to conservatism but to a disbelief in our practical business capacity. Nothing is economically sound which omits to reckon in any of the conditions actually

entering into the proposition. This difficulty can be overcome only when demonstration is done through selected farmers on their own lands in conditions true to the whole countryside. We recall here the American method of "Farmer-Demonstrators." In close proximity, as close as possible to the site of the weekly market, an intelligent farmer should be persuaded to act as a demonstrator. The department should be willing to devote a great deal of time and attention towards making his farm a model farm. By "model" we mean utilising every implement that would make his practice perfect, using the right kind of seed, the most suitable fertiliser and the most fruitful method of cultivation. But more. His farm cannot be called model until with all such things it is also patently proved to be profitable. It should be of a size average to that area, the farmer should be paying market value for implements, the seeds, etc. He should be using only bullock power, he should in fact be an average normal farmer of the area. If in those conditions the Agricultural Demonstrator with the advantages of his science and superior organisation is able to show distinctly better profits for him, there will be no difficulty whatever in all that is demonstrated there being accepted.

It is within my own experience (I am a farmer myself) that *kichilisamba*, one of the paddy seeds recommended by the Coimbatore College has become very popular among the ryots of Salem district, because it was proved by actual experiment to produce better outturn and also to be free from the ordinary diseases of paddy. We may take a leaf from the sister occupation of weaving. Some thirty years ago Government established a weaving centre in Salem for inducing the weavers to adopt the fly-shuttle loom. Salem had at the time about thirty thousand individual looms. But the number of those who adopted the fly-shuttle method was negligible, and the school was removed to Madura, abandoning Salem as hopeless. Within a year from that date hundreds of weavers in Salem had of their own accord introduced the fly-shuttle. What was the difference? This. The Government School recommended the Churchill loom which meant a frame and accessories costing something like Rs. 75. Meanwhile the Salvation Army said to itself, "Why the frame?" The weaver digs a pit for himself and so nature provides the platform. All the improvement necessary is a fly-shuttle. And so the Salvation Army devised a loom called "The Poor Man's Loom," which costs only Rs. 10. Some Salem weavers visiting relatives seventy miles away had noticed it, learnt it and on their return introduced the improvement in their own looms. Their neighbours saw it and adopted it rapidly with the result that within a few months after the Government School had ignominiously retreated, one could walk through streets after streets of Salem and hear continuously the music of the fly-shuttle through every window.

♥ Pamphlets are of no use, because of illiteracy. Lectures, films and charts create interest. They do certainly have some effect. But the actual translation of interest into action will take place, and take place very rapidly, and when the Government Demonstrators are bold enough to challenge that their practice, without any advantageous conditions, does produce greater profit.

QUESTION 4.—ADMINISTRATION.—(a) Agriculture is the essential industry of India. It ought to be lifted out of all dangers arising from the fluctuations of finance and personnel incidental to party system in all countries. Germany has a telling example in this respect. The War ruined German industries and commerce: on top of it came the colossal debt to clear. The new Republic was threatened momentarily by the undoubted elements within the populace of Bolshevist extravagance and Monarchic reaction. Politics was in the hands of ten parties. If in these conditions Germany has been making very steady economic progress it is because, very early in the game, learning from the War experiences, it appointed an Economic General Staff, to take care of all "essential industries," and freed this department of the State from all interference from the party in power, whichever it might be. Universal acceptance was forthcoming because of

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the palpable fact that there was no shadow of a possibility of recovery for ruin and bankruptcy excepting through an absolutely relentless programme of reconstructing all essential industries.

Agriculture and elementary education are of such essential importance for everything else in India, that universal willingness should certainly be forthcoming for a similar arrangement. A certain percentage of revenue or the revenue from certain sources ought to be severely earmarked for these purposes as irreducible minima. This should apply to Imperial as well as Provincial Revenues. The principles of administration should be laid down and from time to time revised by a Central Board consisting of a majority of 'experts' a minority of others, with a limited number of co-opt. It should be a part of the responsibility of this Board to determine the irreducible minima to begin with and to revise it from time to time. Otherwise, the Central Board should have no executive functions not even with reference to the Agricultural Department of the Government of India. Indian States which are willing to accept some conditions should be welcomed to join in the Board. The details of administration should be in the Province. With the continuous education of public opinion regarding relative values, it is to be expected that the Provinces will feel the necessity to expend far more than the minimum indicated.

The service of the Government of India should be toward :

- (i) Upstream technical research, not necessarily all in a Central Institute like Pusa, but in collaboration with Provincial Colleges. Still, if high grade research is to be maintained, not merely from the local utilitarian view point but also in the interests of pure science (which is so absolutely necessary as ensuring true and continued progress in the art of agriculture), the Government of India must maintain a first class Research Institute, which will also provide the opportunity for training Indian agricultural graduates of adequate previous preparation and proved aptitude for advanced work. Surely India ought to afford one such Institute in the interests of her national profession. The value of such an institute should be not only in the work done there, research and training, but also in the real prestige it bears in the scientific world. In other words India cannot afford to have anything in this way, but what is absolutely first class. If it cannot be first class, let us not have it; let us be content with the work of the Provincial Colleges.
- (ii) Industries subsidiary to agriculture in their pioneering stages, chiefly where inter-provincial collaboration will be profitable, or where attention to conditions in foreign countries is necessary. Assistance to such will be as called for by each case.
- (iii) Determination of the Principles of Progress, through the Central Board.

It is understood that recruitment to higher posts, and of experts will be the various Public Service Commissions.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—

- | | | |
|-----------|--|----------------------|
| (a) (i) { | For food and clothing | } In the bad years. |
| | For fodder | |
| | For renewal of work-cattle | |
| | { | } In the good years. |
| | For repayment of prior debts | |
| | For marriages and such domestic ceremonies | |
| | { | |
| | For litigation | |

In the bad years it is sheer necessity. In the good years the ryot is a victim to others, moneylenders, impecunious relations, law-sharks.

(ii) His source of credit, even with all the spread of the Co-operative Credit Banks in this Province, is still the usurer whose direct interest is against the ryot discharging his debt quickly.

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(iii) Once in the grip of debt, the ryot seldom gets relief to the end of life, mainly because of his own ignorance and easy credulity, which place him practically at the mercy of the creditor.

Another reason is that he seldom, if ever, has a margin above bare necessities, to meet debts with their rapidly mounting interests. Whatever margin he might have is swept off into the pockets of middlemen, who can wait to sell, whereas the ryot can never wait till prices rise above the minimum to which they always sink during the temporary glut of the harvest season.

(b) Every form of law can be subverted by the usurer and his vakil; so it looks. In the pre-British days the moneylender was in wholesome dread of the countryside, which he could ill afford to over-irritate. The strong arm of law now protects person and property from those who might be inclined under provocation to take law into their own hands. Duplicity has here the advantage over the long suffering honest ryot who is often driven to bitter despair. One remedy is in the administration of law. The old habit of village panchayats should be revived; the Co-operative movement and the new Panchayat Act are already assisting in this respect. Through the village panchayat the public opinion of the whole village should be brought to bear constantly on the professional moneylender. Where cases pass beyond the village and go to the town, *Munsifs* should be encouraged to go far enough into cases to discover the equities and commit them to appoint panchayats for adjudication. In criminal administration we have Juries: in regard to debt and interest, we should have panchayats appointed by Court, whose decision should be binding.

Otherwise I would leave contracts free. I would trust to adult education, elimination of middlemen, the increase of earning power through better cattle, better farming and better organisation, and the rise of self-respect in the mind of the ryot.

QUESTION 8.—IRRIGATION.—(a) I have most earnestly to urge that exhaustive consideration be given to the situation in Salem district.

(i) Unlike most other districts Salem has no good river traversing it: the only one which may be called large is the Ponnai, which however, very seldom brings any water down. The Vaniar and the Vellar become good after they leave Salem: any decent scheme to tap their upper reaches is pre-empted because of the large irrigation interests already vested in their waters below Salem.

(ii) Among all the Tamil districts Coimbatore and Salem are the most liable to famines. Of these Coimbatore is better protected with such good rivers as the Bhavani and the Noyai, and its 391,300 acres commanded by perennial wells. If Salem has far fewer wells it is due to the worse geological conditions of its subsoil.

(iii) The standard of Government is that 0.4 acre per head of the population should be protected in a district in order to insure it against famine conditions. On this standard Salem has $\frac{1}{10}$ th of protection while Coimbatore and Trichinopoly have $\frac{1}{3}$ rd of protection, and Tanjore has more than this standard protected.

The past four years have been very bad years, and the suffering of people and ever more of cattle has been intense. Many thousands emigrated from Atur, Namakal and Trichengode taluks. Early this year the distress in the latter two taluks was very severe.

In view of this I would suggest two remedies.

1. That a share be given to Salem in the Mettur waters. The present proposal is to benefit primarily Tanjore district, and in a measure Trichinopoly and Coimbatore districts. Salem has been entirely left out of consideration. And yet the Cauveri is the only good river in the vicinity of Salem, forming its western boundary. When a gigantic scheme is projected to impound its waters, if no drop of it is to come into Salem district, the very last hope will be gone and it will be perpetually doomed to the present

condition of precariousness and uncertainty. The following statement will illustrate the comparative claims of Salem:—

	Agricultural and pastoral population.	Area at 0·4 acres per head.	Actually protected now includ- ing wells.	Balance requiring protection.
Salem	1,497,061	598,824	61,900	536,924
Coimbatore	1,526,191	610,476	223,800	336,676
Trichinopoly.	1,362,298	544,919	198,700	346,219
Tanjore	1,638,164	655,265	685,600	—30,335

The only objection to the proposal is the cost. If the water is to come at all it must be through a channel which takes off at the dam so as to get it at 700 feet level. That will involve cutting through rock over some distance. We have made what calculation we could with the assistance of professional experts and it appears to us that such a scheme would irrigate about 28,000 acres (mostly in Trichengode taluk and a little in Namakal taluk) and that the expended capital will repay as well in the other three districts if the land tax be levied at about Rs. 28 per acre, which our ryots are certainly willing to do. Already with all disadvantages, taking water from very great depths, the ryots are raising tobacco and similar crops, which with intensive cultivation make the labour worth while. With a canal in their midst it will not only mean one rice crop, but also higher subsoil water-level, throughout the whole taluk, much beyond the reach of the canal water.

Nor would such a canal interfere with what is contemplated for the other districts. Salem can touch only flood water, for it is 700 feet above the bed of the river. The chief purpose of the scheme is to regulate the "living stream" supply for Tanjore, when the rainy season is over. Salem could not touch that level.

2. But the Mettur waters cannot help more than one taluk and a quarter of another. There are seven other taluks needing help, Government promised to investigate the Toppiar river. Salem has little faith in that river, for its entire catchment area is in the centre of the district, and Salem knows what the local rainfall conditions are.

The remedy is in wells. Apart from the two coasts, with their deltas, the remedy for the whole of the triangular plateau from the north of the Narbada in the Central Provinces to the north of the Tambraparni in Tinnevely district, the sole relief is through wells. For this area seldom gets full benefit of either monsoon, and is perpetually in the agony of the uncertainties of rainfall. So the question of wells is of more than local importance.

The Government of Madras sent its Industrial Engineer abroad to make an intensive study of modern boring practice in Great Britain and America. He came back in January 1925 with a fund of valuable information. His report is carefully enshrined in G. O. No. 1391, dated 22nd September, 1925.

The average ryot, not even the extraordinary landlord can possibly afford to undertake the expensive experiment of trying boring. The Paliakottai Pattagar, the premier cattle farmer of this district of Coimbatore, tried it and I believe lost over Rs. 3,000. I would suggest that Government at its own cost make experimental boring in typical areas in the Provinces, selecting the neediest spots first, and ascertain for each area the average cost in maxima and minima. The ryot would then know what it would involve, and he would be in a better position to decide about the matter either as an individual or in co-operation with others.

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QUESTION 14.—IMPLEMENTS.—There are several implements which can be and are used by our own ryots requiring no more than man or cattle power, and are being benefited very considerably thereby.

The problem is to get the ryot into the habit of using them. Two ways will be useful :—

1. Through the Farmer Demonstrators suggested in answer to question 3.

2. Through the new Middle Schools suggested in answer to question 2. What the village boy has actually handled for two or three seasons is what he can be trusted to use. On my own farm, it took years to get the older men to come of their own accord to prefer even the wheel barrow to the ridiculously tiny basket filled by a man and carried by a woman, or the chaff-cutter to the country *koduval* with the consequent wastage of 10 to 15 per cent. of the fodder. But their children who grew up to them, find no difficulty in such preference, and are indeed much more ready to take to newer tools given to them. So also the older men used to complain of the heavy draught of the iron ploughs although the condition of the cattle showed no signs whatever of any strain. Their sons have come to despise the old wooden plough. Presently more and more educated men will be getting interested in agriculture. The Demonstrators should specially visit and help them to introduce new tools.

QUESTION 16.—ANIMAL HUSBANDRY.—(a) (i) The weekly market (*sandai*) referred to in reply to question 3, is an excellent opportunity for making available the services of a stud bull. As there is a weekly market every day not beyond reach to the ryot accustomed to walk three to seven miles, he will make use of the stud bull regularly. In connection with the larger weekly market I suggested Farmer Demonstrators. On their farms (not all, but in connection with the very best of them) stud bulls may be permanently stocked. By such an arrangement a gradual improvement of the stock may be secured. The ryot does appreciate better service. If breeding is so haphazard, it is entirely because there is no option.

But what is a 'better breed'. On my farm the test is, can it easily draw the iron plough, in fact thrive on it and do heavy work? With this one test in view, just an existing country breed of small stature has been attended to on the selection basis: and we have now cattle which look no different from others in the neighbourhood in build, but which easily do fifty per cent. more work.

(b) The ryot has affection amounting to veneration for his cattle. Usually he knows how to care for them under ordinary circumstances. But his ignorance is profound, and his resources are very limited: so limited that sometimes he has to choose actually between food for his children and fodder for his cattle.

In the inland districts, though rainfall is precarious, there are hills with grass on them many months during summer, and the elevation generally seems to be favourable for cattle. Why is not the silo method taught at Coimbatore? There are immense possibilities in it as a relief in the whole of the inland area, wherever any hills are within reach. Silos can be organised on co-operative basis.

In Salem, there is still plenty of grass on the hills in March and April. Much of it is suddenly scorched up, uneaten in April and May. Cattle suffer very severely in May, June, July and August till the *Adi** rains come.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(a) Depends on the water: canal, well or rain. He has no useful occupation for the off-season.

(b) Demonstration, adult education, better rural schools. Let the industries be as a rule related to the staple crops and a really available market; then they are sure to catch on, as the process of education is persisted in.

(c) The chief obstacle is in marketing. It is difficult enough for the ryot to learn a new industry. He has neither the knowledge of the world nor

*Tamil month, roughly from the 15th of July to the 15th of August.

the capital or enterprise to organise means for disposing of his products, whether it be eggs, silk, honey or twist. Recently within a couple of miles from my farm a man started the industry of woollen twist-making. He supplied the *charkas* and the wool, and offered to buy all the twist at a certain rate. He started the thing off by employing a man for a month to teach the art. Practically the whole village was spinning within the month. The twist was all taken to a carpet factory, woven into rough *kambliis* and shipped off to America. The villagers knew nothing of what happened to the twist once it left their hands. An absolutely new industry has been established in that village now.

Some one, non-official or official agency, has to go beyond the stage of mere education and put the new industries they wish to introduce on a business basis. The middleman's place must be taken by a co-operative society. A number of co-operative societies, it may be, should as a union do the market. Obviously then the market must be first secured and as it were orders registered ahead before the industry is introduced not as theory but in terms of cash value.

Our own difficulty, in the Y. M. C. A. in regard to poultry is marketing.

(d) As the Government of Madras did with aluminium, it would be well-advised in helping to pioneer certain carefully selected industries.

(h) Organise and register a village panchayat and give it such responsibility. The sense of self-respect is certainly effective. It must be kept warm and fertile by various processes of education.

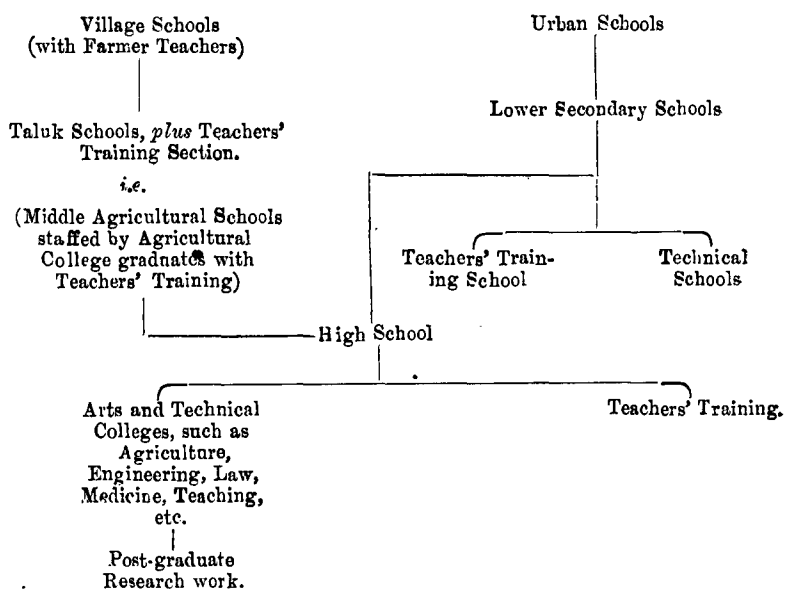
QUESTION 22.—CO-OPERATION.—(a) In this Province the problem is not to further extend the movement, but to turn it toward avenues other than credit. There are over one hundred lakhs of rupees of surpluses in the various co-operative credit societies and their financing banks just now. Non-credit work, so called, is still very shy.

(b) Societies for cattle insurance and for silos should be added to the list.

(c) Yes.

(d) Certainly.

QUESTION 23.—GENERAL EDUCATION.—The following chart may illustrate what I attempted to suggest in my answer to question 2.



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(a) Deserving boys go from rural middle schools to the high schools and then on to college, including agricultural college.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(a) After twelve years of work in the villages it is our conviction which we have laid down for ourselves as a fundamental principle that there is such an indivisible unity in the life of the villager that the only way in which we can possibly help him effectively to help himself is to try to serve him simultaneously on every phase of his life and relationship we can possibly touch: education, health, debt-redemption, arbitration, temperance, agricultural improvements of all sorts, marketing produce, subsidiary industries, etc. The villager is so ignorant and so confiding in those who are persuasive, that he is equally impressionable to good influences which help him and to evil influences which relieve him of all advantages. He is so surrounded by people who because they know just a bit more, are quite capable of exploiting him, that work for him on a large scale and in comprehensive scope should be undertaken immediately. Obviously this is work for the non-official more than for the official. But our experience has shown that official assistance, willing and enthusiastic is always forthcoming to the non-official organiser and social servant. I wish somehow this service could be laid on the conscience of the educated community. At the present moment I am engaged in promoting a movement among the students of Madras city toward vacation service. In this Province many non-officials have thrown themselves into work in the co-operative movement. Similar interest and service for rural reconstruction will not be long in developing.

Oral Evidence.

11293. *The Chairman*: Mr. Paul, you are the National Secretary for the National Council of the Y. M. C. As. of India, Burma and Ceylon?—Yes.

11294. You have put in an interesting, if I may say so, original note in answer to the Questionnaire issued by this Commission and my colleagues and we are greatly obliged to you for it. Do you wish to make a statement of a general character at this stage or shall we proceed to question and answer?—I should like to make one statement. I had very little time to the preparation of these answers. I should like to have developed my answer to the last question as to the welfare of the rural population and if I am permitted I will forward a memorandum to the Commission at a later date.

11295. There is no reason why you should not let us have that if you can find time to do it?—Yes. There is one word I want to say in connection with that, namely that it is our experience in the Rural Department of the Y. M. C. A. that we get the best results only when we tackle the rural problem as a unit. It is really an indivisible problem. When we have attended to economic relief we have not really benefited the villager, or when we have attended to agriculture with a view to increasing his earning power in any way either by increased production or subsidiary industries we have not really dealt with the problem.

11296. If there is to be an advance it has to be all along the line?—Yes; some kind of agency, preferably non-official, should assist the villager with that object in view.

11297. *Professor Gangulee*: Why do you emphasise that it should be through the medium of a non-official agency?—Well, for obvious reasons I think. First of all the magnitude of the task is so great and secondly I think the non-official agencies are able to get nearer to the villager than the official agencies.

11298. *The Chairman*: The Commission would like to hear from you very shortly what your training and experience in this matter has been?—To begin with I am a farmer myself; I come from a family which has been farming for many generations, I mean the farming caste. I have been a teacher taking to education, I hope with interest, as a vocation. Then since I joined the Young Men's Christian Association in 1912 I have devoted the bulk of my time to the study of rural problems. The first year I spent entirely in going round India which was already familiar to me, with the rural problem in view. Since then I have been Head of the Rural Department of the Y. M. C. A. At one time we had a staff of 42 Secretaries in that department chiefly concerned in helping the formation of co-operative societies for credit and other purposes. After seven years of experience in that line our department went forward to re-organise on slightly different lines; but all through this time from 1913 onwards I have been chiefly responsible for the rural work of the Y. M. C. A. We have worked in three different Provinces, chiefly in the Madras Presidency.

11299. I think we ought to have it on the notes if it is the case, that the Y. M. C. A. knows neither religion, caste, nor sect in this general work that it carries out; is that the position?—Quite so; in our Rural Department we recognise no sectarian or other limitations. To make it perfectly plain, it is not a proselytising body.

11300. The Commission has been interested to read what you say of research. How closely are you in touch with the research carried on in this Presidency?—My statement is only an impression.

11301. So that you would not wish to press home too far the impression that research is not receiving the attention it has deserved?—No, the point is, I was much impressed by what other countries are doing.

11302. On page 219 you say: "With the statutory provision now secured for the registering of village panchayats it should be possible to revive the good features of this system." I should just like to have on the notes what

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statute that is?—There is a law in this Presidency for the restriction of panchayats.

11303. Recent legislation?—Yes, recent legislation since the Reforms. I believe there is something like it also in the Punjab and the United Provinces.

11304. You then go on to say: "Education would then go to the village child of both sexes as indeed in the old days in South India." Is it historically true that both sexes enjoyed something like equal educational opportunities in the old days?—Yes. It is so to-day; the village school is mixed; the little lads and lasses go together to school. I have referred to this book which I have sent to your Commission, Dr. Mason Olcott's *Village Schools in India*.

11305. I have read it with your note. But it is your view that, so far as the State can control these matters, an equal chance is given to girls and to boys?—Yes, I should think so as far as rural education goes.

11306. Do you think girls are taking advantage of it?—Yes, up to a point; of course the boys do not take much advantage of it either.

11307. Do you really compare the extent to which girls take advantage with the extent to which boys are taking always of it?—Not nearly so much.

11308. This ancient system of village education held good at a time when the village community was as a rule completely isolated from the outside world, did it not?—Yes, but I do not think that was or need be a necessary condition.

11309. I quite follow that; you say so in your note. I am only trying to test the historical facts. I ask for information; I do not pretend to know; was the education founded upon religious teaching?—No.

11310. Definitely not?—No, except with regard to Mahomedans only.

11311. *Dr. Hyder*: Were not the village *tols*, more or less under the Brahmins?—The *tols* were in Bengal, not in the Dravidian country. In South India I believe that most of the village schools were in the hands of Non-Brahmin village teachers; it was a caste.

11312. Was it secular or religious teaching?—Yes, secular. But everything in India is religious; I mean to say religion entered into it, but it was not dominated by religion in the same sense as the Koran Schools are.

11313. *Chairman*: Can you give us the date when this system flourished?—As I have been saying the system has not yet died out.

11314. I am asking you for an indication of the date when the system flourished?—I should say within about 30 or 40 years.

11315. Have you any facts which you can lay before the Commission as to the result of this system of education at the time it flourished?—In our language, the Tamil language, we have very extensive continuous literature; the authors were mostly products of this, as I may call it, national education. By 'national' I mean widespread rural education. For instance the author of the most widely accepted book on ethics was a weaver all his life.

11316. What I am merely concerned with is not the contributions made to Tamil literature by this or that individual but with the standard of literacy obtained by the system of education at the time when it flourished?—I have no records as to that; as regards Bengal there is a very helpful book written by Mr. Stark.

11317. I suggest to you that a system of this nature never has, in fact, made a substantial contribution to the literacy of the cultivating population. Do you agree?—Is literacy necessary for education?

11318. I am talking about the power to read and write?—Yes.

11319. *Sir Henry Lawrence*: Are your remarks confined to Dravidian villages?—South Indian villages.

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11320. But I heard you use the word Dravidian; were you definitely speaking of Dravidian culture?—No, I did not mean to press that point in any way.

11321. You mentioned the word Dravidian, did you not?—Yes, but as covering Tamil, Telugu, Kanarese.

11322. All South India?—Yes.

11323. *The Chairman*: I am trying to get from you whether this system did, at the time it flourished, make a substantial contribution to the percentage of literates amongst the cultivating classes?—I do not imagine it did.

11324. On page 219 you are detailing the objects which you have in view in education: “(1) giving elementary general knowledge in regard to many aspects of life important to the villager, (ii) literacy, and (iii) a general capacity for receiving and assimilating the further knowledge, theoretical and practical, brought to them by Agricultural Demonstrators and propagandists, by co-operative organisers, by Health Officers, etc.”. Would you not put literacy first of those three?—No I would not.

11325. That is deliberate?—Yes.

11326. What do you mean by “many aspects of village life important to the villager”? Do you include the practice of cultivation?—Not only that.

11327. But you do include it?—Yes, I do.

11328. Further would you go in for vocational training before you went in for literacy?—Not vocational training; I am thinking of the primary school right in the village; but there the boys are apprenticed with their parents and get practical agricultural training. I would give them more knowledge, and, what is even more important, the aptitude for getting more knowledge.

11329. How early in life do you suggest that boys should go to these schools?—They would start at about 7 or 8.

11330. And leave?—We should offer a four years' course.

11331. Is it your view that you could teach the children general knowledge in many aspects of life of importance to the villager, in the general practice of husbandry so far as they do not learn it on the farm, and other methods and also make them literate, all in four years?—It might seem unbelievable, but, in the first place, I think it is the opinion of most educationists that a great deal of time is now wasted in the elementary schools; what could be learnt in one year is now spread over two or three years. In the second place if the projected method of education, with regard to which I have suggested a visit to Moga in the Punjab is practised, it would achieve precisely what I am suggesting. I do not know if you want me to explain that; I can do that in two or three minutes.

11332. You know that in Scotland one of our principal exports is the export of educated people. Probably you have observed that?—Yes.

11333. We have found there that literacy cannot be taught in one year, if that is what you want to attempt here. I am very interested in your suggestion on page 219 that the whole basis of education should be changed. You will agree with me that this is a fundamental change that you are suggesting?—Quite; I am not talking theory; I am only stating here certain principles which have been accepted now by the great missionary bodies. In most of the language areas of India the missionary bodies are co-operating to bring about such a change in the rural education which they are offering to the Indian Christian communities in their charge.

11334. You say that until there is a remodelling of the whole of the rural education, and agricultural middle schools arise up and down the whole country at the call of such a remodelled primary education, things are not going to move forward; that is your argument, is it not?—Yes.

11335. The bed-rock of your proposal is that the village community should be self-contained in the matter of the control of education?—Yes.

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11336. How do you work that in the constitutional position of the Education Department, following on the Reforms of 1919?—I do not follow the point of the question.

11337. You think that the educational machine of the Provincial Government would not lose control, would not lose prestige, and would not to some extent lose its future, if the whole primary education of the country were handed over to the village community?—No; because the village community would be dependent for its staff of teachers on the Education Department. There is of course secondary and University education which is apart, but so far as rural education is concerned, the main service of the department would be in the training and supply of teachers.

11338. But it is your hope that the pay of the teachers, the capital and current expenditure in your own words, of the whole system would be met by the village community without a subsidy from the Central Government?—Yes, eventually.

11339. You have thought the matter over and it is definitely your view that a change of this nature is entirely consonant with the principles of Representative Government and the constitutional position as it now exists?—Yes.

11340. On page 220 you are talking about a Report of a Commission on Village Education in India of which you have been good enough to give us a copy. You are dealing with vocational middle schools which you say "should be the main source for the supply of teachers." Is that going to be a vernacular system of middle schools?—Yes.

11341. Entirely vernacular?—Yes.

11342. No English as an optional subject?—No; I should not think so.

11343. Of course all boys or girls who pass through the vocational vernacular middle school would not become teachers?—No.

11344. What do you think the ones who did not become teachers would do?—Those who go to the middle schools would be mainly from the 8 million people who are absentee landlords now.

11345. You do not suggest that the son of an ordinary village cultivator should not go to the middle school?—I would not prevent him.

11346. I wonder whether you thought that the absence of English, in its effect upon closing the door to a University education, might limit the usefulness of vocational vernacular middle schools?—My answer to that is that I believe in the vernacular being very much more used in the future in University education. In this Presidency the move is entirely in that direction up to the entrance to the University. The University is already planning to teach through the vernacular.

11347. Let us be quite clear about that. Is it your ambition that a boy should be able to pass through the whole school system and obtain a University Degree without learning English?—Not the whole University system, but to pass on from the middle school class, that is when he is about his fifteenth year, or in his later teens, I should say, between 15 and 19.

11348. He should leave the middle school at about 19?—No, he should leave a little earlier.

11349. Say 16?—Yes.

11350. So that up to 16, he would have no English at all?—No.

11351. Where would you send him after that?—He would go on to the high schools.

11352. You are an expert on education in this country; is it your view that a boy who is not taught English up till his sixteenth year can acquire his English and be equal in the University, to boys who began English when they were fourteen?—It depends upon what the University demands at that time.

11353. I am not sure that you catch my point?—With the University course as it is now it will be very difficult for him.

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11354. So that you are concerned with radical reform of the University as well?—Exactly; but I am more concerned about giving education to the 230 million people in India than about the few who go to the University.

11355. Do you agree with me that any attempt to place a barrier of non-English teaching schools between an able boy and his opportunity to go to a University if he so wishes is doomed to failure from the start?—I do not see that.

11356. Do you think you can place a barrier between an able boy and his University carrier by refusing him an English education to him until he is sixteen? Is that a good idea?—Such able boys will be always very few, and remember my concern is for the masses.

11357. I know that, but where in your scheme, are you providing for taking up the able boy? Is he going to the vernacular vocational middle school?—He goes to the vocational middle school. For the able boy I am providing, as you will see, scholarships to push him on to the University.

11358. I am still on the point of when he will begin his English?—When he leaves the middle school.

11359. After he is 16?—Yes.

11360. But you do also agree that delaying the beginning of his education in English till that time means you will have to make important alterations in the University course?—Yes.

11361. I have read all that I can find to read about the Moga School; and I am deeply interested in it; it has to some extent reproduced itself in the North of India, has it not?—It is in the North of India.

11362. But I ask you whether it has to some extent reproduced itself, I want to know whether several schools on the Moga principle have been started?—Yes; Moga itself is a training school for teachers. Training schools for teachers are being started in Southern India and elsewhere, but Moga enables us to get teachers to start a different type of village school, and in that sense it is propagating its idea.

11363. It is teaching teachers to teach by the means which those teachers are going to use when they come to teach the ordinary schools?—Yes.

11364. Do you think it has had an important and beneficial influence upon the teaching in those schools where Moga-students have gone to teach?—Yes, exactly; in so far as it makes education practical and rapid.

11365. What I am concerned to find out from you is this, whether you are quite satisfied that the Moga principle is capable of transplantation to these latitudes?—Yes.

11366. You are satisfied that it would be a success in, for instance, the Madras Presidency?—Take for instance the first year in Moga; in the whole of the first year the boys just build a village home; the whole of the ten months all that they do is to construct a small hut in the class room; but in the course of that one year they have not only read through three readers but have also got a great deal of arithmetic and mensuration and considerable practical knowledge as to the necessity of doors and windows and they have used their hands all the time. That is the project of the whole of the first year. In the second year is the project of the farm; in the third year the project of the village; in the fourth year the project of the post office. So that in these four years they get to know all that a villager need know for himself and in regard to his relations with the wide world. He becomes literate and learns a great many things.

11367. According to the paper which was provided for us by the Educational Commissioner with the Government of India that particular system works extremely well, but I will repeat my question. Are you satisfied that that principle would be as successful in this Presidency as it has been in the Punjab?—Yes.

11368. Of course the population of the Punjab is different from the population in Madras?—Yes.

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11369. All I want from you is an assurance that in your considered opinion you take the view that the scheme would work as well in Madras as it has worked in the Punjab?—If I may speak frankly I think it will work better.

11370. I see you contemplate the teacher in your village school being one of the local farmers?—Yes.

11371. You would take him away for a course of training?—Yes, he would have gone through the middle school.

11372. In opening your system you would not wait until the middle school boy was available; you would choose the local man and train him?—Yes.

11373. On page 221, you very wisely say that in the end education must depend on the demand. I want to ask you whether, in your experience, there is any demand at all for education in the villages?—There is a very big demand now.

11374. A very active demand?—Yes, it is active, but it is indefinite.

11375. It is a latent demand, which requires to be stimulated by the provision of the right type of education?—Yes.

11376. In your view, it is most important that the goods offered, if I may use a commercial simile, should suit the market, otherwise you will have disappointment?—Yes.

11377. Is the demand which you describe as indefinite in any way vocal?—It is seen in action. If I may give a particular example, quite recently one of my own tenants who knows very little, started a school in his own village, because he could not help doing so.

11378. Are you in favour of the provision, according to which local areas may, through their elected representatives, decide to adopt compulsory education?—Yes.

11379. On page 222, you are talking about agricultural demonstration and propaganda; I assume that under the heading "Educational opportunity of the *sandai*", you include demonstration propaganda?—Yes.

11380. You mean the opportunities for propaganda?—Yes.

11381. Apparently, all the village makes an effort to go to the market, to see their friends, to buy a few necessities and, I suppose, to sell as well?—Yes.

11382. Are you enthusiastic about the co-operative movement in this country?—I am very enthusiastic about it.

11383. Do you want to see selling societies?—Yes.

11384. Do you think that members of selling societies ought to go to the *sandai* and there market some of their produce, or do you think they ought to market it through their co-operative societies?—While I am in favour of selling societies, it is an extraordinarily difficult thing. I would favour selling societies more in urban areas than in rural areas.

11385. I do not know whether it is so in this country but, in my own, one of the real obstacles to the progress of co-operative selling concerns is the fact that whatever the farmer is pleased to do, his wife insists upon going to the market?—The problem of the villager is not so much to sell as to wait; the problem is whether he can wait and sell; it is there that a co-operative selling organisation could help him to wait.

I am quite certain that with your knowledge you are not going to say that a co-operative selling organisation goes off to market, *en masse*, because it does not, does it?

11386. On page 223, you say: "Pamphlets are of no use, because of illiteracy": I want your best attention to this point, because the evidence before the Commission is not at all clear one way or the other. Some people agree with you; other witnesses have said that sooner or later, if the literature is of the right kind, interest is excited, and the few who can read convey the information to those who cannot?—Yes.

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11387. You do not agree with that?—I do agree with that; but I have put it more strongly than I ought to have.

11388. You do agree with that?—Yes; pamphlets are of some use.

11389. On page 223, you are talking about the advisability of taking the general direction and administration of agriculture out of the normal constitutional channel in which it now runs and of handing it over to something in the nature of an Agricultural General Staff. Is not that broadly the effect of your recommendations?—Excepting this, that I would make it a federal General Staff in constitution rather than a centralised General Staff appointed from the top. There are two principles there; we want the interested co-operation of the Provinces based upon public opinion in the Provinces; it would be fatal to prevent that. We also want, at the same time, to save agriculture, which is the essential industry of this country, from the fluctuations that may happen owing to the changes in the weather of politics. We could best combine it, I think, by constituting a General Staff on a federal basis, each Province having a vital part in it.

11390. So that, whatever the merits or demerits of any particular suggestion, you are definitely in favour of some centralised body, which could attend to agriculture throughout British India. Is that your idea?—That is my idea.

11391. On what do you found yourself in that view?—I fear that already, after the Reforms, there has been too strong a temptation to neglect certain things which do not, so to say, pay in the matter of votes.

11392. You are referring to the local electorate?—Yes, and it would be highly prejudicial to the interests of the country as a whole, if agriculture should at all be subject to such risks.

11393. Of course, when you quote the instance of Germany and the creation in that country of an Economic General Staff after the War, I am sure you had in mind the fact that what is possible in this world in moments of crisis is not necessarily feasible in normal times?—No, but the Economic General Staff has continued; I have been in Berlin this year.

11394. On page 224 of your note you are talking about agricultural indebtedness. Have you had experience of the operation of such statutes, whether All-India statutes or provincial statutes, as have been designed to deal with this matter of debt, and with their working in this Presidency?—Just a little here; there is the Punjab Land Act.

But not in Madras?

11395. *Mr. Calvert*: The Alienation of Land Act?—Yes.

11396. *The Chairman*: What special statutes are you thinking of in Madras?—I am thinking of the Usurious Loans Act.

11397. The All-India Act?—Yes.

11398. Not anything else?—No.

11399. Do you see a danger in the rapid spread of the co-operative movement, if the effect of that progress is merely to place facile credit at the disposal of co-operators, without education and better appreciation of the economic position, which is the natural corrective to a too ready acceptance of such facilities?—I am very much inclined to say that we have come to that stage in the Madras Presidency, except that I do not want to put any damper on the good co-operative work which is being done; but I think it is high time, in this Presidency at all events, for people to attend to the non-credit work.

I do not think that people who have the interests of co-operation at heart are averse to a considered policy of pruning where the green wood has grown too fast.

11400. In the note you suggest that, amongst other activities which the college and the dairy farm at Coimbatore might render, would be the teaching of the use and demonstration of the practice of making silage?—Yes.

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11401. Is it within your knowledge that that practice is not, at the present moment, being carried out in Coimbatore?—That is what I heard quite recently.

11402. Would you like to give us the source of your information?—The Agricultural Demonstrator told me.

11403. Then apparently, the Agricultural Demonstrator and the Director of Agriculture are at a difference of opinion on that particular point. I should like to be quite clear about it. Were you told that the silo pit was not in use or were you told that special lessons were not being given?—He did not know anything about silos.

11404. The Agricultural Demonstrator?—Yes; he knew nothing about it.

11405. You were surprised?—I was very much surprised.

11406. Have you any experience of the silo?—Yes.

11407. Do you regard it as a useful contribution to agricultural practices in India?—Yes, exceedingly useful and practicable.

11408. Have you practised it on your own holding?—No, I could not do it up till now; I wanted the Demonstrator's help to start a silo pit on my own farm.

11409. The silo in India appears to be like heaven; everybody wants to go there, but nobody seems in a hurry to get there?—Quite.

11410. How do you account for that cautiousness in the case of the silo?—I cannot.

11411. *Dr. Hyder*: Very little is known about it, I suppose?—Yes.

11412. *Sir Henry Lawrence*: Is this Demonstrator an officer of the Agricultural Department?—Yes.

11413. *Professor Gangulee*: Did he tell you that some experiments were going on here?—I did not ask him; I asked him "Do you not know all about it?", and he said, 'No.' I should be very sorry if I have inadvertently said anything which does not square with the facts, but I feel that silos are a great blessing and ought to be demonstrated up and down the country.

The Raja of Parlakimedi: I think Mr. Littlewood, the Livestock Expert, has written a pamphlet on the subject of silage.

11414. *The Chairman*: You have placed a very clear statement before the Commission in the matter of your views on Irrigation. You will admit that those views are only to be tested by technical criteria, and that probably it would not be helpful if we went into the details to-day. I do not know whether you can tell the Commission whether you have placed these proposals and views before the proper authorities?—I have already done so.

11415. How long ago?—Within the last three or four weeks.

11416. The rest of your note appears to be very clear; but I should like to know two points about your paragraph on General Welfare. Does the organisation for which you work attempt to cover the whole Presidency, or have you any definite area with a definite number of villages?—The Y. M. C. A. have four centres in South India, and our idea is to make them demonstration centres; we cannot possibly cover the whole country; it is our earnest hope that others will follow our example and we are prepared to give any assistance that we can.

11417. You say that after twelve years of work in the villages, you think you have laid down for yourselves the fundamental principles, which you describe. How far, in your view, have you been able to effect that fundamental principle in any village or group of villages?—Right in Coimbatore we are trying to do that.

11418. What stage have you reached?—We have been putting this particular method into practice now for four years there.

11419. Are there any indications?—I should say generally speaking, that they are very successful; I have the latest report, and can give each member a copy. May I send them to the Secretary?

Mr. K. T. Paul.

11420. Thank you very much. One word about adult education, I rather gather from your note that there again you are not so much concerned with literacy as with the quickening of the mind for matters relating to the particular line?—Yes.

11421. Have you placed great faith in Dr. Mason Olcott's experience?—Yes.

11422. You have his book before you; would you turn to page 190? He says, "Inasmuch as millions of the voters in India are illiterate villagers, a thorough and persistent campaign for adult literacy," not adult education but adult literacy, "is absolutely vital to the political salvation of the country." Now, whom do you favour as an expert on this particular point, the writer Dr. Mason Olcott or yourself?—That is rather a delicate question to answer. - |

11423. I am sure it is, but I cannot help it?—In regard to what Dr. Mason Olcott says, it is the ideal but with the increase of population at the fearful rate that India is having, is it possible to expect adult literacy within a measurable time? If I may point out Dr. Mason Olcott himself says that at the present rate of increase of elementary schools that is, to provide for 12 per cent. of the population, it will take 100 years to cover the country, not reckoning on any increase in the population.

11424. This is a counsel of perfection, but you would not be afraid to take a road the end of which is 100 years hence when you are dealing with an Empire like India?—I would, but when I advocate adult education I am not putting adult literacy out of it. But in the meantime the villager wants information and training in regard to certain things for which literacy is not essential and which he could have without literacy.

11425. Would you agree with me, that in this country the absence of literacy amongst parents is the most potent cause of the relapse into illiteracy among boys who have at one time been literate?—Possibly that is one of the causes. There are other causes.

11426. I say one of the most powerful. Perhaps I said 'the most powerful'. But you agree that it is an important cause, the fact that the boy having become literate at school, returns to a home in which no one can read, no one can write and in which there is no literacy. You agree with that?—Yes, that is perfectly obvious.

11427. If you agree then do you think it is worth while to spend important sums and precious effort on teaching literacy to children unless at the same time you apply all the reserve forces at your disposal to attain literacy amongst the adults?—There again I would welcome such a thing, but I do not think the present generation ought to wait. There is only a certain amount that India can spare. I believe all of it ought not to be spent in conferring a literacy which is of a very doubtful permanency; but I think a great deal of it ought to be spent in giving education.

11428. But I am not sure I accept the suggestion that my proposal involves waiting. It seems to me that your proposal involves waiting. You are going to educate the boys and let them lose that education in illiterate homes. It was only a suggestion in the converse principle. Surely it is a question of applying all the resources available on attempting to establish literacy amongst the children and at the same time a certain degree of literacy amongst the adults so that you bring out a community in the village of which, let us say, 50 per cent. is literate. You would never have to face the same degree of illiteracy amongst the adults once you set the ball rolling; that at any rate is the theory?—Perhaps I am too much obsessed with the fact that according to the traditional methods in India a great deal of knowledge and aptitude is, as a matter of fact, acquired by our people without books, without knowing how to read and write. A great deal of literature itself is absorbed in their minds without their being able to read or write. Perhaps in that particular point India is slightly different from Western countries.

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11429. Do you not attach great importance to a cultivator being able to keep his own accounts?—Quite so. But he does a great deal of accounts without knowing how to put the figures on paper. The milk seller who comes round to our houses, the *dhoby* or the washerman know all the accounts of a whole lot of houses without knowing how to put down anything on paper.

11430. I am sure that education destroys the memory—after all the most reasonable excuse that most of us have—but at the same time when a thoroughly literate middleman is dealing with a cultivator who can neither read nor write, who is quite unable to record the prices which he is offered or to read the market prices which other people give him, I very much doubt whether a bargain struck on those lines is a fair bargain as between the middleman and the cultivator?—There I agree with you.

11431. Do you not agree with me also that no greater service could be rendered to the cultivator than to ensure for the cultivator a fair share of the value of the produce which he grows?—I agree.

11432. Are you not coming towards literacy as a primary objective of education in India?—Literacy is a part of the education, I should say.

11433. As an essential part?—A very important part; I am willing to go so far.

11434. *The Raja of Parlakimedi*: For vernacular education among rural areas, would you advocate books to be written with the least Sanskrit influence or the most Sanskrit influence?—It all depends upon the locality selected. After all some Sanskrit words are as familiar to our people as the vernacular words, if you put it like that. But certainly it ought not to be pedantic; it ought not to be in any way high-flown, but as simple and unequivocal as possible.

11435. Yes, it should not be high-flown at all; but books should be in the same style as that in which the village children are accustomed to talk, and express their ideas?—Quite so.

11436. With regard to village sanitation and education as an All-India affair, would you suggest that those subjects should be handled by non-official bodies in preference to Local Boards which are going to function as non-official bodies as quickly as possible. Otherwise the country will be in a hopeless condition. I trust that the Local Boards, the Taluk and the District Boards will quickly get out of the official attitude and function as non-official bodies?—When I speak of non-official bodies I include the Local Boards.

11437. For instance suppose a Taluk Development body is existed in a particular area, would you prefer that sanitation and education should be handed over to that body in preference to Local Boards?—That depends, I should say, upon the particular area.

11438. Do you not think that the people who constitute the Taluk Board are the people who constitute the Taluk Development Board?—I do not see if there be such a cleavage.

11439. *Sir James MacKenna*: In answer to the Chairman you threw out the suggestion, I think, that it would be preferable if English were not introduced into the curriculum at an early stage?—Yes.

11440. You would say that the result of the present system of education is that a boy is taught in a foreign language?—Yes.

11441. And you consider that as a serious educational loss to the country?—Yes.

11442. That is to say, the boy is not trained in the literature of his own country?—No.

11443. Is it a loss to the country that boys should know English better than their own language?—Yes, because it creates an impassable gulf between the parents and the children. That is very general in India.

11444. You also made a remark in reply to the Chairman that the demand for education was strong. You have considerable experience of the whole of India?—Some.

11445. Would you apply that remark to the Presidency which you know best?—I think it is general.

11446. That is the impression you gather?—Yes.

11447. There is another point about Agricultural Colleges. Wherever we have been one of the arguments put forward was that they were in the first place training staff for the departments and in the second place training young men who wanted to go back to their own land. I think you probably know, to put it in a general way, that this second object has not been met to the extent hoped. Do you think that there is really a demand for this sort of education by well-to-do boys who are going back to their own estates?—I should not think so. I do not think a man who wants to cultivate his own land, either by his own efforts or through tenants, is really thinking of the Agricultural College at the present time. That is my impression.

11448. That of course is more or less the experience of all countries, is it not?—Yes.

11449. One final question with reference to the Association of which you are the National Secretary. I take it that probably the Young Men's Christian Association is the best organised body on social service and public work of that kind in India. What agency do you use to influence the general mass of the educated young men of the country so as to instil or introduce the idea of social service?—We work in all the different centres and among the University students. I am just now engaged in organising something in the Madras City on these lines. During the next week I am booked to speak in all the colleges in Madras on this particular subject of rural welfare.

11450. That obviously is the best way to disseminate the principles which you so clearly lay down in your memorandum?—Yes.

11451. *Professor Gangulee*: Can you give the Commission some information with regard to the scope of the Village Panchayat Act?—I am very sorry I cannot give the details just now.

11452. Are you of opinion that the Village Panchayat Act of 1920 was supplying a first step towards rural reconstruction?—Yes, I think so.

11453. That is your considered opinion? Now, can a village panchayat undertake any work without the sanction of the Taluk Board?—There again, the Village Panchayat Act gives perfect freedom to the Taluk Board to devolve responsibility on the village panchayat if it chooses to do so. I have here a very interesting document issued by the President of a Taluk Board in the North Arcot district from which I gather—I have not visited the Cheyyar Taluk Board—that the Taluk Board there has organised about 150 panchayats and it has decided to devolve considerable responsibility on the panchayats.

11454. Supposing the Taluka Board did not, is there any means by which the Taluk Board can be made to work?—I am sorry I do not know the legal question; it is a technical one.

Devan Bahadur Baghavayya: They can.

11455. *Professor Ganguli*: Do you think the Panchayat Act has given a statutory sanction?—Yes.

11456. It may be considered to be the first step towards rural reconstruction?—Yes.

11457. What other local bodies encourage these panchayats?—As a matter of fact I am afraid there is not such activity on those lines. If I welcome the Village Panchayat Act it is as a very necessary assistance, a very necessary foundation for further activities on the part of the Local Boards and non-official agencies to reconstruct village life.

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11458. You think this is a foundation on which rural reconstruction can be built in spite of forces working in other directions, I mean administrative affairs and economic affairs?—I would take up this attitude. In our own organisation we started reconstruction work before the Village Panchayat Act was passed. But we try now, it is our aim now, to fit our organisation in with the Village Panchayat Act.

11459. My difficulty is this. There was a time when the centre of gravity, political and administrative, lay in the village. Now with the development of centralised forms of Government, with the expansion of commercial and economic activities, is it possible to have that sort of orientation which you desire in these village panchayats?—Half the trouble lies in the centralised judicial system. With the village panchayats already in existence and with the administration of justice on the spot I think we would have gone half way towards securing village reconstruction. It could not be done by an Act but by co-operative societies and education.

11460. Let me make my point quite clear. In terms of scientific language two forces are working, one centrifugally and the other centripetally. Now the centrifugal force operating in rural life has to be overcome by another force?—Yes.

11461. Do you think it possible under the present conditions, the twentieth century conditions?—The question is, is it possible or is it desirable?

11462. Many things may be desirable, even to go back to Arcadian India, but whether it is possible is the question I have in my mind?—I do not think it is entirely possible, but a great deal ought to be set right and it can be.

11463. Are you in touch with the co-operative movement?—Yes.

11464. You had occasion to observe the actual working. You are in touch with the village organisations. Has this co-operative movement actually reached the peasant?—Yes, I should say so.

11465. It is clear?—In a measure, not as far as you like but the real dynamic constructive force it has got.

11466. The dynamic character you refer to, is it already there?—Yes.

11467. When you start credit societies do they start better farming societies or primary education of their own accord without any initiative from outside? Do you discover such tendencies in the co-operative movement in the Presidency?—It entirely depends upon leadership in addition to official supervision.

11468. Have you organised societies?—Yes. We are responsible in this Presidency for 700 societies.

11469. Through your own efforts?—Yes.

11470. Where do you train workers?—We send them to the Co-operative Department.

11471. So you have that link with the officials?—Yes.

11472. Have you developed non-credit aspects of the co-operative movement?—To some extent.

11473. With regard to the question of literacy and illiteracy, do you not think illiteracy is a serious trouble in the development of the dynamic character?—Would you believe that our most successful Secretary in the Cuddappah district is a woman, totally illiterate? She went round with her rice pounder and collected the dues without any difficulty. The man who kept the accounts is a village teacher. The members are mainly Christian untouchables. The real *de facto* Secretary was the wife. It is the collection and not the keeping up of accounts that was dynamic; that is my point.

11474. You had no difficulty in getting the village panchayat in your rural work?—I should not say that we had no difficulties. We succeeded in some things but not without difficulty.

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11475. Now with reference to leadership, how do you explain the fact that although the majority of students in our Universities come from rural areas there is no indication of our young men undertaking the task of rural reconstruction?—It is due to the extraordinary ignorance on their part.

11476. They do come from the rural areas and it is extraordinary that they do not understand the problem. Is that due to the bad system of education or the social system, or what?—They come from the rural areas, but they come mainly from the middle classes. Taking the average college into consideration I should say that 90 per cent. come from the villages rather than from the towns. At the same time, of those 90 per cent. 88 come from the middle classes and do not realise the situation as it is in the villages. I have had opportunities of talking about conditions to students; they do not know what interest is being paid on loans; how the farmer is being exploited; all those questions of middlemen and other interested people carrying away the share of the producer and such things. These problems are totally unknown to the students. But they respond once their interest is awakened and I am sure that, with a systematic education on these lines, they will become interested in the work.

11477. Would any improvement in the system of education by the introduction of rural economics and rural sociology in the University curriculum make any difference?—It is not merely an addition to the University curriculum; I favour adult education. We should have extension courses attached to colleges just as we have in England. Groups of professors and tutors ought to be willing to go out to investigate with groups of students.

11478. Is not economic pressure a factor?—Yes, it is.

11479. You make a reference here to the work done by the Taluk Board of Cheyyar. Is that a solitary instance of success?—I should not say so. I have had instances of similar work before the passing of the Panchayat Act. I am not so familiar with other Provinces. In this Presidency a considerable amount of non-official work has been put into the co-operative movement.

11480. Non-official individuals?—Yes, non-officials, quite a number of non-officials.

11481. Are these individuals in touch with the agricultural farms?—Yes.

11482. You know that?—Yes.

11483. So that you have favourable conditions in this Presidency. Do you distribute seeds through your centres?—Yes.

11484. From where do you get your seeds?—From Government.

11485. Now one very big suggestion you have made on page 221 is to decrease State aid to the University and secondary education, and to increase the aid to primary education. Will that be acceptable to the public?—The public would be opposed to it at present.

11486. Do you think the time has come to take such a drastic step?—I fully believe so.

11487. One word about adult education? You say you have been very successful in adult education in your village work?—Yes.

11488. I went through the articles you sent me sometime back about your experience. I have got those papers here. You state: "We simply have got to educate the adult to enable him to read ordinary matter in his vernacular." Your idea of adult education is not then merely what you are trying to tell us but it is literacy?—Quite. As I have been trying to explain I am not opposed to literacy at all; I am looking at the question from the practical point of view.

11489. How do you adapt your method of adult education in your rural areas? How do you proceed?—When we take a rural reconstruction centre, the idea is that we should work from a centre for all the villages within a radius of five miles. One of the first things we do is to construct an open air theatre, because the drama is a good method of education; the cast for each

play is drawn from the villagers themselves; in that way education is imparted not only to the boys who are trained but also to the whole countryside. These things are staged four or five times in the year. We take care to see that a day school is organised in each of our villages, not by ourselves but either by the local body or by a mission; our business is to get hold of the day school staff for the purpose of establishing a night school.

11490. Are you satisfied with the attendance you get?—We are satisfied. We use also magic lanterns slides for conferring literacy on the whole village side; then again we believe in making people read much earlier than write; these are little practical details; we insist on carrying on night schools in every one of those places, and in those night schools we have pupils ranging from 14 to 40 years of age. In a year three readers are finished, the infant reader, the first reader and the second reader.

11491. Do adult girls also attend those schools?—No.

11492. Only adult males?—Yes.

11493. What subsidiary industries have you been able to introduce in the villages?—It depends upon the particular centres; it depends upon the materials available.

11494. You use the raw materials available in the area?—Yes; some new things we have experimented on are the making of fast dyes using the country materials (what can be bought in the bazar for 4 or 5 annas per *viss*): we have been experimenting on different shades and tints making them fast. Another thing is bee-keeping.

11495. All these industries which you are referring to are run on economic lines?—Yes; we are pioneering as you know. What we do in regard to subsidiary industries is to take in apprentices and to demonstrate in the weekly markets; then again we have six or eight weeks' training schools, summer schools, where elementary school teachers are taught.

11496. I am trying to find out whether these industries are run on economic lines?—That is what we are trying to do; I do not know whether we have succeeded.

11497. Can you say to what extent these dye industry, poultry-farming, etc., are paying or not in these villages? Have you no figures?—No, not yet.

11498. *Mr. Calvert*: I should like to ask you a few questions about the Moga Colony school. Are not the qualifications of the teachers at Moga rather higher than the ordinary standard?—No; Moga is of course in the Punjab; the qualifications are usually up to what we, in this Presidency, call the Lower Secondary.

11499. I am talking of Moga boys?—By Moga boys, do you mean those who are taught, or those who teach?

11500. Those who teach at Moga?—Yes, they are of a higher type.

11501. Is not the Moga school under the control of an American gentleman?—Yes.

11502. On page 220 you refer to Agricultural middle schools which you say, should be staffed by graduates of the Provincial Agricultural College. Do you think it is a practical proposition for a poor country to have graduates for staffing middle schools?—The graduate of the Agricultural college does not have very high qualifications.

11503. To turn out a graduate of an agricultural college costs about Rs. 1,000 a year; to turn out a graduate of an Arts college about Rs. 200 a year. Do you have graduates as Headmasters of middle schools in this Presidency?—That is the requirement. We have no middle schools; we have what are called higher elementary schools or lower secondary schools. The Government requires that the Headmaster should be a graduate.

11504. The graduate in a technical line is more expensive to turn out than the ordinary arts graduate?—Yes, but the whole staff need not be graduates of the Agricultural college, though I believe it would be much preferable.

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The suggestion I have made is that the staff should perform the dual function of training of teachers as well as of demonstrating over the countryside.

11505. But do you think it is a practicable proposition in a poor country to have as your staff in middle schools graduates of a very expensive training as your agricultural graduates are?—I have not worked out the figures, but my system would call for such a thing.

11506. Can you give us an idea of the expenditure per pupil at Moga?—It is worked out in the report; I am sorry I do not carry the figures in my head.

11507. Is it higher than the cost at ordinary schools?—You mean ordinary training schools?

11508. Yes?—No; I should not think so, that is my impression.

11509. Do you agree or disagree with the dictum that in education the teacher is the chief element?—I do agree with that.

11510. If you can get highly efficient teachers you can have quick results?—Yes.

11511. But in a poor country you have to take what you can pay for?—I am trying to improve the condition of things.

11512. Still the budget would restrict the choice of teachers?—If it is general education, I would reduce the number of schools.

11513. You would have fewer schools with more highly trained teachers?—Yes.

11514. There are distinct limits to teaching even at Moga; if you ask a question outside the curriculum, they cannot answer it?—May be not.

11515. This project method is good within certain limits. If you go a step forward from the project method, the boys cannot answer the question?—The project method tries to cover the whole of rural life.

11516. You think it would be a good thing if you could afford to reproduce that system?—Yes.

11517. Have you seen the new rural economy classes in the Punjab intended to imitate the Moga system?—No; I have not seen.

11518. When you are discussing education without literacy, are you thinking of the type of education given to members of co-operative societies?—Also that.

11519. You find you can instil economic ideas into the cultivators without their being literate?—Yes.

11520. Is not lack of literacy an obstacle to co-operation?—I should say illiteracy is a very heavy handicap.

11521. Dealing with agricultural indebtedness you make a remark which is not clear; you say "In the bad years borrowing is a sheer necessity." I think you mean in the absence of organised thrift?—Yes, in the absence of organised thrift.

11522. Where you have organised thrift then borrowing is no longer a necessity?—In the absence of sufficient food?

11523. You say the ryot seldom if ever has a margin above bare necessities. Is it your experience in your own co-operative societies that they cannot afford to pay their small share capital?—Yes; in unlimited liability societies we do not insist upon the share capital being paid up; it is only a liability share rather than a paid up share; we gradually help them to pay up their shares.

11524. From their own savings?—Yes.

11525. That is to say thrift is possible?—Yes.

11526. Have you actually had any experience of the Usurious Loans Act being used with intelligence?—No. Of course the administration of the Act varies considerably, but I am afraid my general impression is that the Act is

not being administered as much to the benefit of the borrower as it might be. That is why I am suggesting the panchayat system.

11527. You think the original intention of the Act is not being carried out?—Yes; after all it is discretionary power that is given.

11528. Do you think that that Act has restricted the credit of the cultivator class?—No; I do not think so.

11529. On the question of the subsidiary industries, you lay stress on the need for marketing. Is it not the case that the cultivator largely grows crops for home consumption? If he makes ropes he makes them for his own use; if he keeps cows he keeps them to provide him with milk. Now, why should not the cultivator be taught to use his labour to raise his own standard of living? If you get the cultivators of a village to combine to repair their village roads, would not that be raising their standard of living?—It would be.

11530. Would it be a subsidiary industry in the sense of increasing their earning power immediately?—I do not understand the question.

11531. I am not talking in terms of money. If a man drains his village does he not raise his standard of living? If he improves the village water-supply does he not improve his standard of living? I think you can have subsidiary occupations for the village people without their products having to go to the market?—Yes.

11532. Then, from your extensive and intensive experience of village life, do you think you can organise the villagers for the common welfare?—Yes.

11533. Something on the lines of the Japanese system?—Yes.

11534. Do you find in your rural work that the village people are amenable to new ideas such as thrift?—Yes; it depends upon what the new idea is.

11535. That is to say, saving small sums of money?—In my own farm I have used the sentiment as regards property as an inducement to thrift. I induce the tenant to buy an animal for himself, a sheep, or a goat, or a bull, or a buffalo, whatever it may be; after a time I induce him to buy a small plot of land for himself, and to build a house for himself. That has the double effect of acting upon his self-respect and also the feeling of property comes into his mind; he requires guidance in regard to every such new idea.

11536. Do you not think that it is a practical proposition to encourage in these people the idea of better living through their own exertion?—Yes.

11537. It can be done?—Yes.

11538. Do you think it would go so far as to instil ideas, say of better maternity treatment?—That is more difficult. It will be more difficult to get them to realise the need of it.

11539. Would it be more difficult than economic improvement?—Yes.

11540. I think, in answer to the Chairman, you said there was a marked demand for education?—Yes.

11541. How would you reconcile that with the leakage between the first and the fourth class?—Partly economic necessity: in fact, the biggest leakage is after the first class; the greatest number of all the pupils in all the schools is in the first class; I think it is also partly due to the teacher; with a better teacher, things would improve. At present the teacher is absolutely haphazard in his methods; that is my observation; he does not know how to go about the thing at all.

11542. Do you think that better teachers can be obtained on the same rates of pay?—I have suggested part-time workers. In some Provinces, I believe in Bengal, school holidays coincide with the busy agricultural seasons. I should encourage the adoption of that kind of thing everywhere. The class hours also should be at different hours from the busy time; for instance, they could work three hours in the middle of the day; that would meet the need of parents to get some labour out of their younger children. I do not think the Education Department would interfere with a teacher if he did such a thing now, but there is no initiative in the teacher; he ought to make adjustments like that to suit his own conditions.

11543. On the question of assisting the parent, do you think that compulsory primary education in rural areas would be a source of economic loss to parents?—When the Chairman asked me a question about compulsory education, I wanted to say that I should use compulsion also in an elastic way. I should make it compulsory for a parent to see that his child does get at any rate a certain amount of education, or does conform to the educational requirements within such maximum and minimum limits as may be laid down, without seeing that he actually attends a certain number of days in a certain school. In applying the Act, I should see to the results. For instance, a parent should have the option of sending his son only to a night school, or to a seasonal school for 3 or 4 months, so long as he is honest about giving his child education. So that I should apply the Compulsory Primary Education Act also to suit the parents; that is very necessary in this country.

11544. The compulsion should be not to send the boy to school, but to make him literate?—Yes.

11545. You have had considerable opportunity for comparing co-operation in various Provinces. In Madras are the rural credit societies mostly self-managing?—I think they will have to go some way further before I can say they are self-managing, they are very much dependent on the Co-operative Department.

11546. Do you think they are making progress along the road to self-management?—Yes.

11547. They are still in need of a little control from Government?—Yes. For instance, the organisation of Supervising Unions has been a disappointment in some parts of the Presidency; in some parts they work well; the reason for failure, I am afraid, is because of the lack of personality.

11548. In Madras, do all castes take part in the management of the society?—Mostly they do.

11549. When you have mixed castes, do the lower castes have any complaint to make about being looked down upon?—No; but the untouchable castes have to be attended to separately.

11550. They have to have a separate society?—Yes; or, if they are in the same society, which is not often the case, they have to have special attention paid to them. Perhaps, you know that we organised, in connection with the Young Men's Christian Association, a special Central Bank for financing all depressed class societies in Madras; it had a turnover of Rs. 65 lakhs last year.

11551. Do you find that the members are taught the economic advantages of co-operation?—Yes.

11552. Do they understand the meaning of all the rules?—I think they are getting to understand them very much more now.

11553. Have you any opinion to offer on the main causes of the failure or success of these societies?—No, I have no general remarks to offer.

11554. In the Punjab, among your own societies of Indian Christians, some were very good indeed, but some others were very bad indeed?—Yes. In the Punjab my general feeling was that they suffered because they did not have a financial basis as in Madras. If we could have a credit society, and then on the top of the credit society, so to say, we had production or distribution societies, that would have fared better; but when a production society is dependent upon its own financial resources, it has a double load to carry.

11555. You have told us a lot about panchayats. What exactly is the difference in sphere between a panchayat and a co-operative society?—That is one of the problems that we will have to handle, I think. After all, there is only a certain number of leading men in a village; they are called upon for every kind of activity. As a matter of fact, the panchayat has nothing to do with the co-operative societies organically, legally.

11556. What kind of functions does the panchayat perform which the co-operative society cannot perform?—The co-operative society can perform almost all the functions, I think I am right in saying, that the panchayat is

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expected to do. But I would prefer that the co-operative society be issued from the panchayat, rather than that the panchayat be abolished in favour of the co-operative society. I would like the whole of the village to be organised on a panchayat basis, and the co-operative organisation or organisations there to branch off from the panchayat as a basis.

11557. Is not your panchayat a democratic organisation?—It is.

11558. What is the difference of organisation between a panchayat and a co-operative society?—None, excepting that the one is registered under one Act and the other under another Act.

11559. Is there any difference?—In the co-operative society they elect their own office bearers.

11560. Does not the panchayat elect its own *panch*?—Sometimes, I think Government appoint them.

11561. Do these Madras panchayats exercise any judicial powers?—If it is conferred on them. I am sorry I am not quite familiar with the working of the panchayat system; I believe they have judicial powers vested in them.

11562. By organising co-operative arbitration societies, could they not exercise far more plenary powers than are possible to a panchayat?—I should be sorry if the panchayats were to cease; the panchayat came later, when we started work; but under the co-operative movement we find that we can do everything that we want.

11563. That is my experience. I have not quite understood why you are laying stress on the panchayat?—I welcome panchayats in this Presidency, because the co-operative movement in this Presidency, unfortunately, is so overwhelmingly a banking movement. I think we will get a better orientation with panchayats, with possibilities of comprehensive service as a policy.

11564. Is it your experience that the credit society is the best foundation for all other kinds of activities?—Yes.

11565. And educatively, it is the best too, is it not?—Yes, educatively too it is very good.

11566. Working in your sphere, you do not in any way come into collision with official guidance?—No; on the other hand, we get whatever help we want from every department of Government that is around us. We have never come in collision, so far as I remember, with any department of Government in regard to service.

11567. *Rao Bahadur Muniswami Nayudu*: Are you in charge of any primary schools?—No, not in charge of them.

11568. You have long experience of the working of primary schools?—Yes.

11569. Have you seen any panchayat schools working?—No.

11570. You speak of panchayat schools started by the Cheyyar Taluk Board; have you any personal experience of those schools?—No; only what I have heard.

11571. Do you know under what Act the Taluk Board handed over the schools to the management of the panchayat?—I have the instructions here; I am sorry I cannot answer the question without a reference to the papers.

11572. On page 221, you say: “I would expect each village practically to support its own education.” Can you say whether the schools handed over by the Taluk Board of Cheyyar to the village panchayat were handed over on the understanding that the whole cost would be met by the village panchayat?—I imagine they have a grant; I am not speaking of what is possible to do, I am speaking of what eventually ought to be possible; that is in answer to the question how you propose to finance them.

11573. Are you connected with any Local Board?—I was for two terms on a District Board; that was before the War, in 1913.

11574. You know that there is what is called the land cess levied from the ryots, so much in the rupee on the land revenue payable by them?—I am myself paying it.

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11575. Do you know that after the Reforms, it has been increased from 1 anna in the rupee to 1 anna 9 pies in the rupee?—Yes.

11576. A portion of it is called the educational cess?—Yes.

11577. And that is intended for increasing the number of village schools?—Yes.

11578. Can you say whether the resources of the local bodies, as at present available, are sufficient to enable the local bodies to give each village a school?—From the cess alone, you mean?

11579. Yes?—I am suggesting a school which would be much less costly. If the teacher himself is partly self-supporting, he would not need so much assistance from a central fund like the local fund; besides, he would be paid in kind. I am suggesting a drastic reorganisation, which could not be estimated for on the present basis.

11580. May I ask you if it is in your knowledge that the tendency of the present-day village demand is to substitute the Board school for a private school existing in the village?—Yes.

11581. Do the villagers not demand a Board school, in preference to a private school existing in the village?—Yes, that may be the tendency; but the whole orientation of education is wrong.

11582. Would you, therefore, suggest that the villagers should be given the proceeds of the cesses that are levied and asked to run their own schools?—Certainly, I should favour it.

11583. I believe you have read the Village Panchayat Act?—Yes.

11584. Is there any provision in the Act which will statutorily compel the village to maintain a school of its own either with funds granted or raised by it?—I am suggesting a scheme.

11585. Under the present law?—I do not know what is possible under the present law. I am here trying to present a scheme which will be good for the whole country and which will entail considerable adjustment. For instance, I am asking for drastic cuts of grants from higher education. The present Act will not permit it and the present public opinion will not permit it. I am asking for a revolutionary thing.

11586. Do you think people will welcome any change involving extra taxation for the purpose of village roads or village schools?—It depends on the education of public opinion.

11587. From your experience of village life now, do you think they are prepared for such a responsibility being thrust upon them?—Again I must say that it depends upon education. Some villagers are anxious to get a branch school opened and they would be prepared to give labour or a part of the cost.

11588. Have you experience of any agricultural middle school?—No; I am suggesting that they should be started.

11589. Have you any experience of the Government agricultural middle schools at Taliparamba or at Anakapale?—I have heard of the school at Taliparamba, but I have not seen it.

11590. Some agricultural schools have been started in Chingleput; have you seen any of them?—I have seen the school in Chingleput; but it was started many years ago, some 30 years ago, and it was on old lines which I do not believe proved a success.

11591. Do you think there is a demand for such agricultural middle schools in the Presidency?—I do not know anything about it.

11592. You advocate them now?—Certainly, I do.

11593. And would you like a school of that sort to be started one for each taluk?—Yes, eventually.

11594. You know that the Government recommended having training schools for the training of teachers for village schools, one or two in each district, and giving stipends for about 40 boys for each class? Would you like those

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training schools to be converted into the schools of the type that you contemplate, with training sections attached to them?—Eventually they should be absorbed in the larger scheme that I advocate.

11595. You have got experience of the villages. What is the state of the road communications of villages? Do you consider that satisfactory?—No, I do not consider them satisfactory.

11596. Do you not think that a very large number of villages are without any proper or adequate means of communication with the nearest market?—Quite.

11597. And do you think that if these communications are improved or restored, the economic prosperity of the villages as a whole will increase?—Certainly, it will contribute very greatly to prosperity.

11598. Do you also think that if these communications are put in order as early as possible, the possibility of having central schools to serve a number of villages within a radius of one or two miles is great?—You mean village schools?

11599. Yes?—I deprecate the drawing away of youths from their own villages. It is not economic necessity nor the lack of roads which makes me advocate the village schools; it is the psychological aspect. I should like the school to be taken to the village, not that the boys should be drawn away from the village for that very elementary education.

11600. But so far as the Presidency is concerned, elementary schools intended for the villages are of two types, one up to the 4th standard and the other up to the 8th standard corresponding to the middle school. Now, would you like to increase them with the object that boys who are willing to continue studies up to these standards may do so? To increase such schools would you like facilities for communication so that boys who want to read in the higher schools may go to them?—Quite.

11601. In that manner improved village communications will help in the spread of education in the higher classes in the elementary stage?—Yes.

11602. You also know that so far as provision of medical relief is concerned, we generally have a dispensary or a hospital at a taluk headquarter station?—Yes.

11603. And the attendance of medical officers in villages where they are urgently needed is very often not secured because there are no communications at all to such villages?—Yes.

11604. Would you therefore advocate the increase of facilities for villages even for the purpose of making available medical relief from taluk headquarters?—Quite.

11605. Would you put the expansion of village roads as one of the most urgent things to be attended to next to education, or even on a level with education in importance?—I do not know about the order of importance, but I should like to advocate that as soon as possible.

11606. You think something could be done by eliciting village interest in the matter of village roads and so on?—I think so.

11607. But you also consider that the initial expenditure necessary for constructing a new road may not be within the possibility of a village or many villages?—Of course, it depends upon the length of the road and the number of villages it passes through.

11608. Would you then advocate that wherever it is not possible for a village from its own funds to lay a road, assistance should be forthcoming from either the local bodies or the Government?—Yes. I have so much faith in the educational value of conferences and in a policy of making people help themselves that in all such cases I would advocate that as far as possible a proportionate charge be levied upon the villagers themselves, for instance, the Taluk Board or the District Board should say that they will pay four rupees for every rupee the village puts up either in money or in kind. It helps solidarity; it helps all the time towards the habit of people trying to

help themselves and it prevents this eternal dependence of our people on the State.

11609. Do you know that some of the District Boards are tending to work in that direction by cutting village contract rates by 25 per cent, the difference being met by the village either in the form of manual labour or other?—I know.

11610. And you think that is a right step?—It is a very good step.

11611. And would you advocate a liberal grant to these local bodies if from their available resources they could not meet the villagers' demand?—Yes, I would certainly.

11612. With regard to village sanitation, from your experience of the villages, do you not consider that they are becoming more insanitary, ordinary little villages?—They have been bad enough at any time in my memory.

11613. And do you consider that in some of these villages in delta areas, owing to the division and sub-division of the village homestead the facilities for cattle sheds and other things are becoming more and more difficult? Would you advocate that Government or some other authority should acquire land for the purpose of allowing people to build homes under more sanitary conditions and on extensive grounds in the villages?—Certainly, I advocate it wherever possible. There are practical difficulties of course.

11614. Do you consider that congestion in the villages should be relieved as early as possible, especially in delta areas, by expansion of the village sites?—Yes, wherever possible.

11615. You are aware that under the Village Courts Act a panchayat is constituted by the Divisional Officer after a census of agricultural and other occupations in the village and that their institution is mostly on the elective basis. You are also aware that Forest Panchayats are constituted, but the persons who elect are persons who own cattle and who are interested only in grazing. Now, a village includes people other than those who do not possess cattle and who have no interest in that forest. With regard to the co-operative societies it is only those people who form a society and take the responsibility for the money who can be members and who can elect a panchayat and other people have no interest in it. You are also aware that moneylenders in the villages are averse to the formation of co-operative panchayats and do not join the co-operative panchayat. Keeping these points in view, do you consider it possible to have one panchayat to function adequately so far as village units are concerned, so far as rural credit is concerned, or do you advocate separate panchayats with special interests represented on them?—When I advocate the simplification of the machinery I have in mind two things. The first is the personnel; only a limited personnel is after all available in the village. The second is the facilities for supervision or non-official assistance. Those who want to help the village and serve the village should have to deal with a unified machinery. I quite see the point that you have mentioned now. With regard to co-operative societies essentially with unlimited liability, in regard to the primary banks, our experience is that it is always best to get the whole village; it leads to better financing of the society as it will have a larger aggregate property valuation. The co-operative society because of that unlimited liability and the leverage thereby available is able to have greater power. That is our experience too, for instance, for the starting of a school or for sitting as an arbitration court. When a co-operative panchayat sits as an arbitration court to decide disputes between members, whether they be money differences or other kinds of differences, certainly the decision of the co-operative panchayat carries much greater weight because of the fiscal leverage it has. On the other hand the panchayat under the other Act has judicial powers vested in it. That is why I say it is a problem to be carefully considered with a view to simplify the machinery. I am not prepared to answer off-hand a question like that. I should certainly consider it somewhat unfortunate that the poor villagers who are illiterate should be faced with so many organisations as you have mentioned..

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11616. But there is nothing to prevent an intelligent villager taking part in all the panchayats?—Quite.

11617. Have you any panchayats in villages where there are moneylenders whose interests clash with the co-operative society?—Yes.

11618. Have you been able to get their co-operation?—Very seldom.

11619. *Sir Ganga Ram*: You seem to know much about the wells. How much area does each well command?—That depends upon the depth.

11620. What depth do you generally get in these districts?—50 or 60 feet in the bad taluks.

11621. How much area can you irrigate?—A large well of about 30 feet by 30 feet or so in extent will probably command 2 or 3 acres of land for intensive cultivation.

11622. But does it pay?—It does not pay.

11623. Then why do people work it?—I advocate it because in the hot season it would command an acre or two. In the rainy season it would command 5 or 6 or 7 acres.

11624. How many pairs of bullocks?—2 pairs.

11625. How much would you get from this well irrigation per acre, can you tell me?—Roughly an acre grows a net 130 or 140 rupees.

11626. Per acre?—Yes.

11627. You grow garden crops?—Garden crops, fodder crops and cereals.

11628. The Mettur river project is under consideration?—It is one of the sanctioned projects.

11629. It will not benefit your purpose?—No.

11630. Have you represented that to Government?—Yes, we have done so.

11631. You have said that there are 8 million people. What acreage do they possess, from how much to how much?—I am talking of the whole of India.

11632. Can you give the figure for this Presidency?—No, I do not know.

11633. You seem to be not very fond of the Agricultural Department. You say there is only one good thing which they have done, viz., seed distribution. How much good has it done?—I do not want to give such an impression. But that is only one thing which the department have done.

11634. How much water is required for this particular kind of seed? After all water is a valuable element?—Yes.

11635. Does it require more water or less water?—Average I should say.

11636. The poor man, you have said, weaves yarn. How much does he get from his work on the loom?—I do not know; it depends upon the counts.

11637. Supposing he works six hours a day, how much does he get on the average?—It depends upon the material he uses.

11638. Four annas?—Much more than that, six or seven annas a day.

11639. Have you not represented that to Mahatma Gandhi; he is very fond of the *charka* which gives only one anna a day?—That is spinning, this is weaving.

11640. You said you would have a Land Acquisition Act in this Presidency?—I did not say that.

11641. *Sir Thomas Middleton*: When you said a crop was worth 130 rupees did you mean per acre?—Per acre.

11642. Did you include the labour of the owner and his family?—No; I only reckoned out-of-pocket expenses of cultivation, not land revenue or anything like that.

11643. *Dr. Hyder*: In answer to the Chairman you said you wanted to advance all along the line. I find that the different objectives are education, health, debt, redemption, arbitration, temperance, agricultural improvements, marketing, subsidiary industries, etc. You said also that you had at one time

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a staff of 42 Secretaries. I ask whether for such an advance you have the necessary number of workers in this Presidency?—It depends upon how far we can exploit and mobilise voluntary labour, how far we can get members of District and Local Boards to enter into the spirit of such a thing and put their shoulders to the wheel. If you succeed in putting these responsibilities on the conscience of our educated community it could be done.

11644. Would you make use of the University students?—Yes.

11645. It is only in the vacation time that the students can be utilised?—When they get habituated during vacations it is presumable that they would do something in their after-life.

11646. As regards the scheme of education which you have sketched at page 228 I ask you to follow the career of a boy and correct me if I am wrong. You have a boy in the village school?—Yes.

11647. From the village school he would go to the taluk school?—Yes.

11648. From the taluk school he would go to the agricultural middle school?—No; the taluk school is the agricultural school.

11649. From the taluk school the boy would go to the high school?—Very few of them, only exceptional boys.

11650. Your village schools would be under your farmer teachers?—Yes.

11651. Your taluk schools, in other words, your agricultural middle schools, would be staffed by the graduates of agricultural colleges. Do you not think that there is a very great disparity as regards the qualifications of the teachers in these first two schools?—Yes; there is bound to be.

11652. You think it is desirable to have such a disparity. Firstly in your lower secondary school the teachers are to be graduates?—No, graduates of the Agricultural College.

11653. They are graduates; they hold a Degree in Agriculture?—Yes, if you put it like that.

11654. I am quoting from memory from a book referred to in your evidence and I hope you will correct me. It is said in the Report of the Committee of which you were a member that the objection which the parent in the rural areas takes to his boy being taught agriculture is that the teacher knows nothing about the matter and the parents know far more?—Quite right.

11655. When you have a farmer and a neighbour teaching agriculture and also imparting some literacy to the boys in a particular village, do you think the other people will approve very much of the work done by the teacher or will they say, "He is one of us; he knows no better than we do?"—In the village school agriculture will not be taught as a school subject.

11656. I thought you were trying to give an agricultural bias. I am not thinking of agriculture as a subject but giving an agricultural bias to your village school?—In the case of the average villager to send the boys to the school at all is a big thing.

11657. Such a farmer teacher would command more respect and confidence than the ordinary teacher we have at the present day?—I should say so, because he has been through the middle school.

11658. On the question of the medium of instruction in relation to education, I gather that, in the primary schools and in the secondary schools which you call the agricultural middle schools, you would have the vernacular as the medium of instruction. Then in the high school you would introduce English?—As a second language.

11659. I was going to tell you that the only area at present in India in which an attempt on a grand scale has been made is the State of His Exalted Highness the Nizam. I was going to ask you what is your opinion of the success or otherwise of that system in that State?—I have no knowledge of the work there. I see that other countries like Japan and the countries of Europe find it possible to get an education without the English language. Take France; take Denmark.

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11660. English is one of the optional subjects at present in the Nizam's territories. But would you like your medium of instruction to be the vernacular?—The mother tongue.

11661. *Dr. Hyder*: You said also that certain matters have been neglected since the Reforms came into being. I should like you to tell me what those particular matters are, coming within our terms of reference; is agriculture one?—I was talking with reference to agriculture; I may be mistaken, but it is my impression that the tendency is to look at party prospects rather than the intrinsic needs of a particular line.

11662. I am now concerned with the distribution of provincial resources; that is the one test to go by. Do you think that since the Reforms enough money is not spent in the development of education, agriculture, etc., or rather do you think these matters have been neglected?—It is not a question of neglect; it is a question of apportionment between two competing demands. As a matter of fact India is very much in arrears as regards many things.

11663. Is there a rivalry between different tracts comprising the Madras Presidency?—Not tracts, but different lines of work. If I may say so it is only human to spend more money on something which appeals more to public imagination.

11664. I am not quite sure what are those spectacular things which you are referring to. I wish to be within the terms of reference. I ask again whether more money has been or has not been spent upon the development of agriculture?—*Mr. Chairman*, I would prefer not to answer that question, because it is really entering into a discussion of politics, particularly into the policy of an administration which is just closing. My recommendation might be construed into absolutely general terms. Whoever is the party in power there will be always the tendency to support certain lines to the exclusion of others. I am speaking on that broad basis.

11665. Then, I shall not refer to that. With regard to one allied matter, if you had a certain sum of money, would you rather spend it on the construction of roads than on the construction and equipment of schools? Which of these two would you prefer, roads or schools?—It is very difficult to answer a question theoretically like that. Off-hand, I would say I should put more money into education.

11666. Let us pass to another matter, the expenditure of public funds and the results thereof so far as education is concerned. I understand you are for giving education though not for creating literacy?—I am for more literacy.

11667. If you had more money you would go the whole way?—Yes.

11668. I want now to take up the point of relapse into illiteracy. Is it your object to create a sort of divine discontent in every peasant's household in your Presidency, and spend the resources that are available on an extension of primary education?—I took some trouble to study the methods pursued in the Southern States of America, where the situation of the Negro was pretty much what ours is to-day. In two generations they pushed up literacy to something like 70 per cent; I cannot swear to the figure, but that is my impression. They went about it by the process I mentioned; they did not worry about conferring literacy; they gave them so many ideas pertaining to their ordinary needs of life, that the peasants were stirred up and then began to demand literacy.

11669. Precisely; that is how I understood you want to go about it here. But I was calling your attention to the danger of relapse into illiteracy. If you had a peasant household in which there prevailed a divine discontent, the parents themselves would see to it that the boys went to the school and took up some kind of reading, the parents themselves having seen the desirability of such a course. Do you think so?—Yes.

11670. The danger of relapse into illiteracy would be less if there prevailed such a divine discontent which would grow by giving instruction?—Yes.

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11671. And if you had unlimited funds you would, of course, undertake the process of educating both the parents and the children?—I would start on it at once, in fact.

11672. With regard to another matter that has been raised, the cost of graduates, I ask you whether it is a fact that in this Presidency in certain places you have village *karnams* or village accountants who are graduates serving on a very small salary?—It must be rare.

Dewan Bahadur Raghavayya: I know of no cases.

11673. *Dr. Hyder*: What would you pay your teachers?—Which teachers?

11674. The farmer teachers and graduates of the agricultural colleges?—I think the situation in the country has already approached such a stage that graduates would be willing to take anything they can get, and the farmer teachers I advocate would be very happy to get what they can. I think the money value put upon University education hitherto has been a false quantity; it is slowly righting itself now.

11675. It is only a question of supply and demand. If you have only two doctors in a village you will have to pay heavy fees; but, if the number increases the health of the village will increase and the fees will go down?—Yes.

11676. Are you thinking of any such experiments as are carried on in Germany by way of Continuation Schools?—I do not know the particular schools you mention. Is it something like the Folk Schools of Denmark?

11677. Something like them, the boys go to the Continuation School as well as attend to their work either at the factory or the farm; they attend the school either during certain periods of the day or certain days in the week, and are given instruction in their profession and general education?—I have seen such a thing in Dresden. I would favour it. But that would be mainly for the industrial classes; it would be very difficult to do that for our masses. I am thinking of elementary education for the immense number of 250 millions.

11678. If we had these evening classes we might prevent the waste which arises from relapse into illiteracy?—How would you organise them in the villages? We might have seasonal schools, summer schools; we might organise such; we do that in our own schools.

11679. With regard to the question of cost, I was wondering whether you would favour a proposal in this Presidency that your land revenue should be standardised at 25 per cent, and the difference between the 25 per cent and the present assessment should be made available for the purpose of local development, purely for locally beneficial purposes, *e.g.*, education, roads, health, sanitation, etc.?—The land revenue comes from the villagers now; why should the urban population get the benefits of it; why should a pittance only be given to the villages? I should say the first charge on land revenue should be rural improvement, because it comes from the villages.

11680. Quite so, but you would not take up the extreme position that the whole of the land revenue should be earmarked for the purposes which you have in view; a certain portion should be available for general purposes. The difference between the present assessment and the standardised 25 per cent should be earmarked for the purposes of the particular locality where the revenue is collected, so that the people who pay the money will get the services right before their eyes?—I have not thought it out that way.

11681. On a point of information. You have referred to the Economic General Staff in Germany. I understood you to say that the Economic General Staff has cleared the debt?—It has not yet been cleared up.

The debt that arose from the financing of the War has been cleared by the inflation of the currency; that task was certainly not performed by the Economic General Staff.

(The witness withdrew.)

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Mr. D. G. MUNRO, B.Sc., General Scientific Officer, United Planters' Association of Southern India, Madras.

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—In the present organisation of the Scientific sections for the various products, rubber, tea and coffee, advantage has been taken as far as possible of existing sources of information and research. The results of the Rubber Growers' Association research schemes in Ceylon and Malaya are available to South India planters. Opportunities are given to United Planters' Association Rubber Scientific Officers to visit these countries and Java in order to keep up with recent research.

The same applies to tea. United Planters' Association Officers have had facilities to visit the Indian Tea Association Experimental Station at Tocklai and get the results of research work done there.

Both rubber and tea are fortunate in having so near at hand large areas of these particular products. These large areas are capable of spending a greater amount of money on research and scientific work generally and the results can be applied locally to the smaller areas in South India which by themselves could not afford to give opportunities for research on a large scale.

Coffee is not so fortunate as tea and rubber in having research work done so close at hand and it is, therefore, more difficult to obtain results and information. Consequently coffee should be spending relatively larger amounts in order to provide methods for growing the crop more economically and to stop the reduction in area which is going on. The area in 1896 was over 300,000 acres while the average for the last five years is 130,000 acres.

Generally what happens is that research is centralised in larger areas where resources are greater and the information so obtained is applied by scientific officers to smaller areas.

The same principle is seen in the structure of the Agricultural Department in India, viz., Provincial Departments and a Central Institute. The Central Institute should be strengthened considerably not only to supplement the research work done by Provinces which can afford it, but also to carry on research work themselves and act as a clearing house for information to Provinces which have not got resources for research.

Funds for the United Planters' Association of Southern India scientific sections are raised mainly by the industries concerned and supplemented by Government grants. Such Government assistance is necessary and should be continued. Coffee should receive special consideration. It is a crop which can be taken up much more easily by the man with a small amount of capital than either tea or rubber and is, therefore, of special importance.

QUESTION 2.—AGRICULTURAL EDUCATION.—(vii). The course of study at the Agricultural College, Coimbatore, is a 3 years B.Sc. Course. Graduates selected for departmental work should receive a further year's post graduate training at Government expense in such subjects as book-keeping, a certain amount of costings and the economic side of farming generally and also teaching methods.

The latter I consider, is of great importance as a number of these men will act as demonstrators to illiterate people. An improvement in their methods of expounding knowledge must help to increase the effectiveness of propaganda and demonstration work.

QUESTION 9.—SOILS.—(a) (iii). A considerable amount of work has been done in the prevention of soil erosion. The main methods are:—

1. Cover crops and cultivation.
2. Contour trenching and silt pits.

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3. Bunding.

4. Terracing.

QUESTION 10.—FERTILISERS.—(a). Fertilisers are being used more and more in the planting districts and a further extension in their use could be profitably made. Cattle-manure is difficult to obtain. Organic manures like fish, bonemeal and various poonacs are largely used and artificial fertilisers are in demand.

Great improvement in yields have been noted and good yielding estates may be kept at a high average for many years.

One coffee estate which has been manured regularly and well has averaged 6 cwt. per acre for the last decade. Estates not properly manured have gone back, e.g., one (not more than 3 miles from the above mentioned one) which in the decade 1905-1914 averaged 80 tons of crop annually has gone down during the decade 1915-1924 to 60 tons annually. While the total acreage of the estate has actually increased, manures had been scrimped and a general deterioration followed. Yields of tea also known to have increased very considerably by careful and continuous manuring.

(e) The effects of manuring with different manures have not been sufficiently investigated. With perennial crops the initial temporary effects of manures are of more importance than is the case with annual crops. The final and cumulative effects of different manures on crop production should also be more thoroughly investigated.

The effects of different manures on pests and diseases are also of importance with permanent crops. Interesting results have been obtained in coffee at Sidapur Station. The number of borer (*Xylotrechus Quadripes*) trees removed every year has been kept over a period of 5 years. They fall in the following order:—

Mineral manures. (No nitrogen).	51	trees per acre per annum
Control plots	28.2	„ „ „
Nitrogen manured (organic poonac, etc.)	23.4	„ „ „
Bulk compost manured	13	„ „ „

The result of 1925 which was a bad borer year ran in the same order:

Minerals (No nitrogen)	88	trees per acre.
Controls	66	„ „
Nitrogen	34	„ „
Composts	6.5	„ „

QUESTION 11.—CROPS.—(a) (i). There is no doubt but that planters' crops can be considerably improved. This is being done in rubber by selection and budding. Very little has been done in tea and a start has been made in coffee by selecting different types, self-fertilising and examining the progeny.

(c) Industries where the rainfall is too heavy and (where pests and diseases are specially bad), coffee does not thrive and has been and is being replaced by tea.

Oral Evidence.

11682. *The Chairman:* Mr. Munro, you are General Scientific Officer, United Planters' Association of Southern India?—Yes.

11683. You have your headquarters at Madras?—At Coimbatore.

11684. You have put in a note of the evidence and we are greatly obliged to you for that. Do you wish to make any remarks of a general nature, or would you like me to ask you a few questions?—I have no remarks to make.

11685. Will you tell the Commission what your own training and previous posts have been?—I am the son of a farmer, took my B.Sc. Degree in Aberdeen University. After demobilisation in 1919 I joined the staff of the Aberdeen College and worked on their staff until October 1920, when I came out to India and was posted to Madras; I stayed at Coimbatore for a few months and then took over charge of the Fifth Circle at Trichinopoly; I came back in 1922 to the College as Assistant Principal and Superintendent of the Central Farm; in August 1922 I took over my present office.

11686. Have you at any time been a member of any public service in India?—No; except in the Agricultural Department.

11687. You are still on the list of the Agricultural Department?—Yes.

11688. And you are lent for this purpose?—Yes.

11689. The crops with which the United Planters' Association deals are tea, coffee, rubber, cinchona and spices?—Yes.

11690. You have amongst your constituent members growers interested in all these crops?—Yes.

11691. In the memorandum which you have placed before the Commission on page 255 you give a general indication of the way in which the organisation is financed. Are the contributions made on an acreage basis or on a crop basis, or how?—We get a certain sum of money from the Madras Government which goes to the Scientific Department; the extra money required for rubber is raised by an acreage cess on rubber, the extra money required for tea is raised as an acreage cess on tea, and the same with coffee.

11692. Are these funds pooled?—No, they are not pooled.

11693. Coffee for coffee and tea for tea?—Yes.

11694. Are the operations of your society entirely confined to this Presidency?—No; there is quite a considerable amount of tea in Travancore and also some rubber. There is also some rubber in Cochin, coffee in Coorg and coffee in Mysore.

11695. How far are you in touch with the Indian Tea Association?—We are in touch with them to the extent that we pay a contribution of Rs. 10,000 a year, in order that we may get their results, and for the privilege of some of our tea officers there to see what they are doing.

11696. The Indian Tea Association of Calcutta with its headquarters in that city, does carry out research work for its members, does it not?—Yes.

11697. Are you satisfied that you are sufficiently in touch to get the full benefit of the research work carried out by that body?—I think we are, as far as possible.

11698. Can you tell the Commission how it comes about that different planters in this Presidency and in contiguous areas have organised a separate research in South India and have not been satisfied with the research carried out by the Calcutta organisation?—The idea down here is to keep the association as a complete association and treat the scientific department as part of the association; thus keeping the members together, as far as possible.

11699. I am not sure whether I have made my question clear. I gather you are doing separate research in Madras and I wonder how it came about that your tea-planting members, rather than create their own organisation here, have not depended upon the Calcutta organisation for research?—We do

depend upon them to a certain extent, in the matter of tea fermentation for instance.

11700. The fundamental problems are carried out there?—Yes.

11701. Their application is dealt with here?—Yes.

11702. Is it necessary in your view to do it here, having regard to the difference in environment?—Yes, it is; the climatic conditions make a considerable difference.

11703. Do you care to express any opinion as to whether the acreage cess which is levied restricts the membership at all?—I think about 90 per cent of the tea planters contribute towards this cess.

11704. And you do not think that the extent of the cess repels any considerable proportion of planters?—No.

11705. Upon what basis are the Government funds given to your association?—Up till 1924, the planting section was run by the Government. It was a planting district under the Director of Agriculture, and run by a Deputy Director of Agriculture. In 1924, the planters decided that they wanted more scientific aid; the Government decided that they were not going to give any more money than they could possibly help, and they cut the amount of money which they were spending on the planting districts at that time.

11706. At the present time, you are still getting Government funds; are you not?—Yes.

11707. A fixed sum annually?—Yes.

11708. Whatever you collect amongst yourselves?—Yes, whatever we collect.

11709. Are you in touch with the Agricultural Department of this Presidency?—Yes, as far as possible; we get a considerable amount of help from the Agricultural Department.

11710. Have you any proposals to make for closer working?—I do not think it could be closer.

11711. In your experience, has this principle of organising research according to crops been a success?—As regards South India, the area of the different crops is relatively small, and we cannot afford to put up the money to keep a big enough organisation going on to do fundamental research. The Agricultural Department could not give us all the information we required, and the next best thing was to go to the big associations where they had big acreages and could afford to put up money for fundamental research, and get their results.

11712. Then, is your own laboratory divided into sections according to different crops or how do you arrange your work?—The organisation now is to have different scientific officers in tea, rubber and coffee. The Rubber Specialist has got an experimental station and a laboratory at Mundakayam; the Tea Scientific Officer has got an experimental station and a laboratory at Nelakottai; the Mysore planters and Government are starting a fairly big experimental station for coffee.

11713. What are your own duties?—Touring and advisory work.

11714. Are you responsible for keeping these various branches in touch?—No.

11715. Your work is entirely touring?—Yes.

11716. And advisory on the spot?—Yes; it will continue until March of this year, but with the recruiting of different officers new stations have been opened at convenient places and the old stations have been shut down.

11717. On page 255 of your note, you are talking about agricultural education, and you give your views about the need for selected graduates receiving a further year's post graduate training at Government expense in various

subjects. Do you hold that view in reward to the needs of your own association, or is that a general view?—It is a general view.

11718. Under the heading of Fertilisers you give what appears to me to be very interesting and important results of experiments upon the effect of various manures upon the incidence of pests. When were those experiments carried out?—From 1919 up till last year.

11719. Could you give the Commission any indication of the comparative costs of these several manures?—Take the most efficient in relation to pests, bulk compost; that gave only 13 trees affected per acre?—That manure was gathered only in small quantities, from the roadsides, cart stands, drains and road cuttings.

11720. How about its efficiency as manure?—It is fairly good.

11721. You cannot give any indication of its cost as compared with other manures; that has not been worked out?—I have not got it here but I can get it.

11722. Have you experience of the areas in which small cultivators are growing the same crops as planters, on holdings contiguous with the planters' holdings?—In Coorg, about half the coffee is held by Indian planters and in Mysore the bulk of the coffee, I should say about two-thirds.

11723. Run by small people?—Yes.

11724. Ordinary cultivators?—Yes.

11725. Have the practices of the planters been copied at all by the small cultivators?—To a certain extent, but they certainly do not cultivate to the same extent as the European does.

11726. They do not copy so freely?—They do not.

11727. Is that due to the limitations of their economic position, or is it due to a slightly greater conservatism?—On this particular point of the borer, the average Indian cultivator will keep a great deal more shade on his coffee, in order to keep out the borer; the consequence is that with heavier shade he gets less crop; he is not willing to risk the loss of his trees by borer in order to get a bigger crop.

11728. He cannot afford to take the risk?—He could, really, if he got a bigger crop, and had more money at his command to replant up any bored trees there may be.

11729. Has your association a representative organisation or representative individuals with whom it is in touch in the London or other markets?—Yes, the South Indian Association.

11730. They are in touch with the South Indian Association; is it within your knowledge whether by that means, complaints from the consuming markets as to the way in which the produce is packed or graded, or as to its condition, come to the ears of the planters?—It may come that way, or it may come through the agents who are handling the goods at the other end.

11731. Is it your impression that planters get early and reliable information about any complaints?—Yes.

11732. You do not suggest any improvement in that direction?—No.

11733. You think that marketing information is always at the disposal of planters?—Yes, it is quite efficient.

11734. *Sir Ganga Ram*: What is the minimum height from sea-level for growing coffee, tea, rubber and cinchona?—Coffee will grow up to a height of 6,000 feet.

11735. Minimum?—It will grow from 1,000 feet up to 6,000 feet.

11736. Tea?—From sea-level up to 6,000 feet.

11737. Rubber?—Rubber is mostly a low country crop up to perhaps 2,000 to 3,000 feet.

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11738. Cinchona?—It is grown in Anamalais at 3,500 feet and in the Nilgiris at about 6,000 feet.

11739. With regard to cinchona there is a great demand for quinine. Do you extend the cultivation of cinchona?—They are doing so now. Government are opening up a very large block on the Anamalais under cinchona.

11740. Would these things grow on a sloping ground or on flat ground?—Either.

11741. They can grow on flat ground?—Yes.

11742. I thought sloping ground was necessary for drainage purposes?—If it is a question of drainage, give it drainage and cinchona will grow.

11743. Do you grow any of these trees?—Yes.

11744. Which do you grow? Do you grow potatoes and things like that?—No.

11745. Do I understand from this that your Government grant a subsidy or a loan?—It is a subsidy.

11746. How much is it?—Rs. 28,000.

11747. For the whole Presidency?—For the whole Presidency.

11748. Do you export the whole of your produce or is there anything spent here on home consumption?—There is a considerable amount of tea consumed in India nowadays. I think, the figure given by the Indian Tea Cess people is about 50 million pounds.

11749. You make all black tea?—All black tea. Practically no green at all.

11750. Any coarse leaf made into green tea? I mean we were told that there is a great demand for it and they make green tea from coarse leaf?—I think it pays better to make good quality black tea and send it to the European markets.

11751. Do you take special steps to collect farm yard manure?—I remember, they used to construct sheds, five miles apart, where the carts used to stand, and collect it.

11752. Do you do that?—That is still done in the planting districts.

11753. *Sir Thomas Middleton*: You deal with all these planter's crops. Which one gives most work?—Tea.

11754. That is because the area is much larger?—The area and the question of manufacture as well. It is a very hard one, a very intricate one.

11755. Now you refer to this experimental station in Tocklai. What is the nature of the work done there? Is it experimental work or manufacturing work?—Both. They do experimental work on the amount of cultivation and the kind of cultivation as well as experimental work on manuring and also on methods of pruning and manufacture.

11756. Is Tocklai a fairly representative station? Where is it?—It is in Upper Assam.

11757. Then it will certainly not represent the conditions in the Anamalais?—No.

11758. The point I was going to ask was whether it represents the cost of cultivation?—There are many fundamental things. Take the question of manuring, for instance; we have got a different climate down here and the possibilities are we may find a better time to put on manure than the time it is done in Assam.

11759. You think much is done for improvement in tea? Where does the tea planter of the south get his seed from?—Northern India mostly.

11760. Are the varieties in Northern India numerous or very few?—I know of no pure strains. But there are different varieties. There is the

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China, the Burma which is dark leaved and then there are three other indigenous light leaved varieties.

11761. I have heard of a special hybrid?—I do not think anybody knows it really. It may be a high elevation Burma or it may be a well-grown China or it may be a cross between China and one of the Assam indigenous varieties.

11762. I gather from what you say that practically no work is done on the improvement of the tea plant?—Not on the improvement of the tea bush itself.

11763. What are the coffee varieties?—The most popular variety in South India is Arabica. Some years ago a planter introduced a hybrid between Arabica and Liberia and it had not proved such a success as was anticipated. At the present time there is Kents hybrid which is in great demand, but there again the types are many as selected strains which come true to type have not yet been developed.

11764. Have the tea planters of this district begun to resort to manuring to any extent?—In some districts very largely.

11765. In the Anamalais?—Yes. The High Range have not to any great extent used it, but the High Range are carrying on a number of experiments and if they do start manuring they will have facts and figures to go on.

11766. Are they experimenting with organic manures or the ordinary commercial artificials?—Artificials and organic manures, both.

11767. Are there any indications yet of what types of manure are going to suit them?—Organic is more liked for the simple reason that it will not be so easily washed out of the soil if the manuring is done early in the season; but if the manuring is postponed till after the monsoon that does not hold to the same extent.

11768. But is there any indication that the soil growing tea is likely to want either phosphate or potash?—Only that deficiency of potash is connected in some way with disease.

11769. It responds to treatment?—Yes. The Indian Tea Association has done a fair amount of work on that and reckoned the ratio at 1: 1: 1 of nitrogen phosphate and potash as sufficient.

11770. *Dr. Hyder*: Does the United Planters' Association of Southern India possess any other scientific officers besides yourself?—There is one in rubber and one in tea.

11771. What is the total area that you three gentlemen have to look after?—188,000 acres.

11772. Including rubber, tea, coffee, cinchona and spices?—Yes.

11773. These two other officers are also lent officers?—No; they are engaged entirely by the Planters' Association.

11774. You are the only lent officer?—Yes.

11775. There are large coffee estates belonging to Indians. Who gives them scientific advice, for instance in Coorg, Mysore and perhaps Malabar?—In Mysore, the Mysore Department. In Coorg I advise.

11776. So that you have to advise both the members of the Association and also the Indians who are not members of the Association?—Very few Indians ever ask for advice.

11777. So they get on without any advice? With regard to the matter of funds you said in answer to a question put by the Chairman that the funds for the different industries for the purpose of research and also for the purpose of organisation were raised from one or two sources. On acreage only?—Acreage.

11778. Are you not aware that there is an Indian Tea Cess Committee which raises about 12 lakhs of rupees?—That is for propaganda only.

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11779. Is no amount spent on research?—No.

11780. You are sure?—We do not get it.

11781. It is because of the predominance of the tea merchant's interests in Northern India. I see your association is linked up with the Tea Association sitting in Calcutta. From my papers here I find that from the acreage the tea industry was only able to raise Rs. 80,000 while from the cess on the export of tea they raised about 12 lakhs of rupees?—I think that is the Indian Tea Cess which money is only used on propaganda work. The amount for the research work is raised by a special eight anna cess. Yes; that was only Rs. 80,000.

11782. *Sir James MacKenna*: Is it not the case that shortly the Association is going to have its own officers and you will be reverted to Madras?—Yes.

11783. Will they run the whole thing themselves?—Yes.

11784. Will the subsidy or grant from the Local Government be continued?—I do not know. It should be.

(The witness withdrew.)

The Commission then adjourned till 10 a.m. on Friday, the 13th November, 1926, at Madras.

Friday, November 13th, 1926.

MADRAS.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE,
K.C.S.I., I.C.S.

Sir THOMAS MIDDLETON, K.B.E.,
C.B.

Rai Bahadur Sir GANGA RAM, Kt.,
C.I.E., M.V.O.

Sir JAMES MACKENNA, Kt., C.I.E.,
I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.

Raja Sri KRISHNA CHANDRA GAJA-
PATI NARAYANA DEO of Parlaki-
medi.

Professor N. GANGULEE.

Dr. L. K. HYDER.

Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU
GARU.

Rao Bahadur B. MUNISWAMI NAYUDU
GARU.

Mr. J. A. MADAN, I.C.S.

Mr. F. W. H. SMITH.

(*Co-opted Members.*)

(*Joint Secretaries.*)

**Mr. N. MACMICHAEL, I.C.S., First Member, Board of Revenue,
Madras.**

Replies to the Questionnaire.

QUESTION 5 (b).—The existing rules under the Loans Acts are liberal both in regard to security, interest and remission in cases where the works fail from causes beyond the borrower's control. The popularity of State loans is evidenced by the fact that during the past ten years the amount of loans advanced to cultivators has increased from 7½ lakhs to 37 lakhs, as seen from the statement appended. There is no doubt that larger allotments can be spent as the ryot is always ready to borrow. Even at present, however, it is difficult to ensure that the loans taken for some purposes, especially those for the purchase of cattle, are spent on the purpose for which they are granted. Relaxation of the rules would no doubt be welcomed by the ryot but would only be possible at the expense of the general tax-payer.

Fasli year.	AMOUNT OF LOANS ADVANCED.			Number of ryotwari pattas.
	Land Improve- ments Loans Act.	Agriculturists' Loans Act.	Total.	
	Rs.	Rs.	Rs.	
1331	17,15,856	20,03,807	37,19,663	4,861,148
1333	17,24,680	18,37,781	35,62,461	4,861,148
1332	7,60,647	7,20,480	14,81,127	4,869,373
1331	8,22,255	13,15,956	21,38,211	4,869,373
1330	7,45,903	8,81,686	16,27,589	4,862,005
1329	5,89,543	8,66,708	14,56,251	4,222,543
1328	2,83,811	7,55,551	10,39,362	4,222,543
1327	1,98,179	6,26,393	8,24,572	4,222,543
1326	2,15,859	5,28,423	7,44,282	4,222,543
1325	2,39,721	5,11,530	7,51,251	4,222,543
TOTAL	...	...	1,73,44,769	45,435,762
Average for 10 years	...	...	17,34,477	4,543,576

The average per pattadar . $\frac{17,34,477}{4,543,576}$ of a rupee
= Re. 0 6 1 nearly.

Mr. N. Macmichael.

QUESTION 7 (a), (b) and (c).—I have no suggestions to make beyond those contained in the appended memorandum which was prepared before I was aware of the exact form which the question would take.

Memorandum.

Fragmentation of holdings is inevitable in such a country as India which is mainly dependent on agriculture for the support of its population. The spirit of the Hindu Law and of Indian agriculture favour a wide distribution of the land and its cultivation by peasant farmers. Fragmentation of holdings is therefore inevitable and the revenue system which has been framed to suit the sentiment and tradition of the population has necessarily to provide for such fragmentation. The essence of the ryotwari system which is in force in this Presidency is that each individual holder of land pays land revenue in proportion to the extent of his holding and to the quality of the soil. The Government looks to him independently for the payment of such assessment and in consequence, does not prevent him, but, on the other hand, actively assists him in sub-dividing the land according to his enjoyment. Such separate sub-division and enjoyment in turn give to the owner of the land certain privileges not only in the administration of the revenue laws and regulations but also in other respects.

2. There are no reliable statistics to show the extent to which fragmentation of agricultural land has proceeded in this Presidency. There are, of course, the statistics relating to holdings. Lands on ryotwari tenure are held under 'patta' and a *patta* may be in the name of a single individual or jointly in the names of several. These *pattas* are divided into grades according to the total amount of the assessment payable on each. The statistics of the number of holdings and the average extent of the holding in each of these grades during the last two decades show a tendency on the part of the smaller holdings to become even smaller, but no useful or accurate deductions as to the economic condition of the agricultural population can be drawn from them. A man may hold more than one *patta* and a joint *pattadar* may in addition have a *patta* or *pattas* standing in his name alone. Most of the smaller ryots have also subsidiary occupations. The figures give, after all, only the average size of a holding. This may itself be fragmented, that is to say, may consist of tiny plots situated in different parts of the village.

3. To a certain extent the increase in small holdings cannot be avoided. India has always been, and will, for a long time, be a purely agricultural country. With the establishment of a settled Government and with the assurance of peace and security of person and property there has been a general increase in population. The possession of land, however small the holding, is still considered as giving the owner of it a status in the village. There is therefore a general ambition to possess lands. This partly accounts for the increase in the small holdings.

4. It is difficult to lay down any definite rules to determine in what cases division of holdings is undesirable. The mere size of the holding is in itself no test; the real evil is the lack of arrangement by which holdings, large or small, consist of separate plots of land scattered more or less over the whole village area, perhaps in all directions from the home of the cultivator. It is difficult for a ryot to cultivate cheaply and properly a holding divided into scattered blocks. Unnecessary ground has to be covered by the workers, by the bullocks and ploughs and by the owner supervising the work: the smaller the holdings and the smaller and more scattered the blocks, the worse the situation becomes. The question is whether sub-division and fragmentation have been pushed so far that the land has been parcelled out in such a way that in many cases a large proportion of the peasant proprietors have not got 'economic holdings' or in other words, whether the holdings have been fragmented in a way for which there is no economic justification and whether the bulk of the land has been put outside the scope of effective cultivation or economical organisation.

There are no accurate statistics, but judged with reference to agricultural economies there is undoubtedly a large number of holdings that are too small

and too fragmented and it is impossible to contest the proposition that a large number of ryotwari *pattadars* subsist on 'uneconomic holdings.' It is not easy, however, to determine what is an 'economic holding' and the question when a holding becomes 'uneconomic' will depend on local conditions, the description of land, the fertility of the soil, the nature of the crop and the standard of living of the ryot, and it may be doubted whether fragmentation has gone to such an extent in this Presidency as to put the bulk of the land outside the possibility of effective cultivation or economical organisation.

5. Public attention in this Presidency was drawn to the subject of fragmentation of holdings by a resolution moved by the Hon'ble Mr. A. S. Krishna Rao in the local Legislative Council in May 1917. The resolution was in these terms: "This Council recommends that His Excellency the Governor in Council be pleased to consider the desirability of checking the minute subdivision of agricultural lands in this Presidency." In moving the resolution the Honourable Member threw out a suggestion that economic holdings might be formed by re-grouping the fragmented lands. This proposal to declare agricultural land below a certain limit indivisible and impartible was opposed by two leading non-official members. Government, however, accepted the resolution and undertook to consider the matter and to see whether any practicable steps could be taken in the direction suggested.

6. About the same time, Mr. Keatinge, the Director of Agriculture, Bombay, was interesting himself in the question of the prevention of fragmentation of agricultural holdings and the formation of economic holdings in the Bombay Presidency. Copies of the report which he made to the Bombay Government and his draft Bill on the formation of economic holdings were obtained. In the report, Mr. Keatinge dealt in detail with the causes and the economic evils of the fragmentation of holdings and explained how in other countries similar causes had produced similar results and what remedial action was taken to meet the evil. His report and the Bill will doubtless be dealt with in detail by the Bombay Government. Copies of the report and the Bill were, however, circulated and opinions were taken how far the proposed legislation could be made applicable to the holdings in this Presidency. The Bill was only permissive in character. It provided for the formation of 'economic holdings' by the Collector and also for special rules of succession in regard to them. It was intended to give the ryots an opportunity of reforming their holdings in such a way that they would cease to be uneconomic. Neither the ryots nor the officials were in favour of the legislation. General opinion was also sceptical as to the efficacy of the Bill. In the face of the opinions expressed by the officials and the non-officials, the Board considered that the Bill recommended by Mr. Keatinge was open to the strongest objections, the more obvious of which were summarised as follows:—

- (1) There would be the utmost difficulty in determining for the purpose of the Bill what constitutes an 'economic holding,' the value of land varying, as it does, according to the nature of the crops it can produce, the method of its cultivation, climate, the standard of comfort of the owner and so forth. ●
- (2) The Bill aims at creating a vast mass of petty impartible holdings all over the country in defiance of the whole social system of Hindu and Mahommedans alike.
- (3) Its operation would, as a rule, be confined to those families which are rich enough to compensate such members as are excluded from the economic holding, that is to say, to the very cases in which there is the least need for any special arrangements. In so far as the Bill could be applied to poor families it must tend to create a landless proletariat which is always a danger and doubly so in a country where industries are so little developed that they cannot absorb the surplus agricultural population.
- (4) It would afford an opportunity to co-sharers to effect collusive registration thereunder for the purpose of defrauding creditors.

- (5) Its general effect, it may be surmised, would be to impair the credit of the agricultural classes.
- (6) All transactions relating to land would be complicated by the question whether the condition of impartibility existed.
- (7) It would involve the revenue establishment in troublesome and often infructuous inquiries on applications for creating economic holdings and on complaints that the rule of impartibility had been broken.
- (8) It would undoubtedly prove a fertile source of strife in families.

Government were not prepared to undertake legislation even in a permissive form but they requested the Board to consider the possibility of carrying out an experiment for the rearrangement of holdings by consent in some typical villages in a district in which a special staff was engaged on *adangal* revision prior to a resettlement. The experiment was attempted in Trichinopoly, but it was found that the ryots were generally averse from any interference with their present law of inheritance giving each son an equal share of the family property and with the long established custom of partition, securing a mathematically accurate division of a holding amongst the heirs. Government considered that so long as sub-divisions had to go on for one reason or another in view of the traditions and practices of the holders of land, any attempt at consolidation of holdings was bound to fail and directed the experiment to be discontinued. It was decided that the real remedy for the evil rested with the people themselves and the solution of the problem apparently lay in educating them regarding the evils of fragmentation and the economic advantages of consolidation of holdings. With this view a pamphlet prepared by the Registrar of Co-operative Societies was published under the authority of the Publicity Bureau in the year 1920.

7. As things stand at present there is no limit set to the sub-divisions of fields except in three cases: (1) When a portion of a field is relinquished, it should not be less than 1 acre in wet and two acres in dry unless the relinquishment is made from causes beyond the ryot's control. (2) In transferring lands from wet to dry, the area to be transferred should not be less than 25 cents. (3) Sub-division for transfer from double crop to single crop or for compounding wet land for double crop charge is not permitted if the area is less than one acre.

8. The Punjab is perhaps the only Province in India where the problem of fragmentation of holdings has been seriously tackled. After much preliminary spade work some wonderful results have been produced there in the matter of consolidation of holdings by co-operative societies, and there is a striking contrast between the village maps before consolidation and after it. The experiment in the Punjab has thus proved that something can be done by the Co-operative Department in this matter. But whether the results will be permanent or not is a different question, as the forces of disintegration are at work and must, in the end, prevail. In any case, if the experiment is to be tried again in this Province, it is work that must be done by the Co-operative Department and not by the Revenue Department.

QUESTION 8 (a).—Before submitting my reply to the question I first refer briefly to what has been done and is being done in this Presidency towards the construction of irrigation works.

Government have as far as possible consistently with the resources of the State utilised the surface supply and have constructed several large irrigation systems and numerous smaller works where there was land suitable for irrigation. Some large projects have been sanctioned recently of which the Cauvery-Mettur Reservoir project and the Polavaram Island project in East Godavari district are the most important. The former will besides securing and improving the water-supply to the existing irrigated area of 1,038,000 acres bring under irrigation an area of 221,000 acres of first crop and 90,000 acres of second crop. It will also supplement the supply to an existing wet area of 80,000 acres now irrigated by inferior and unreliable sources of supply. The cost of the scheme is about Rs. 612 lakhs. The Polavaram

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Island project is a very much smaller scheme costing Rs. 18.5 lakhs and the irrigable area is about 16,300 acres. Some important new schemes, viz., the Upper Bhavani project (Coimbatore district) and the Bellary West Canal project (Bellary district) are under consideration. The former is a big project estimated to cost about Rs. 488 lakhs. It provides for the irrigation of 160,000 acres of first crop and 260,000 acres of second crop in the Coimbatore district in a tract which needs protection. The project is noteworthy for the reason that it marks the first important attempt in this Presidency to break new ground by designing a project for the irrigation of dry crops instead of the time-honoured swamp paddy crop cultivation. An experienced Settlement Officer has been placed on special duty to examine certain aspects of the scheme thoroughly. The Bellary West Canal project is estimated to cost about Rs. 90 lakhs and will bring under irrigation an area of 57,600 acres in the Bellary district. The district is in the famine zone and the tract which will be served by the project needs protection.

The following statement gives an idea of the extent to which the State has provided irrigation facilities in the Madras Presidency:—

Classification of works.	Total direct capital outlay to end of 1924-25.	Area irrigated 1924-25.	Value of crops. 1924-25.
	Rs.	Acres.	Rs.
Systems for which capital and revenue accounts are kept—			
Productive	6,63,35,000	3,583,000	38,89,84,000
Unproductive	3,92,63,000	282,000	2,18,77,000
Systems for which capital and revenue accounts are not kept	35,70,000 (outlay in the year).	3,164,000	

The new schemes sanctioned or under consideration will, if the projects are all executed, increase the area under irrigation by more than 10 per cent.

Project.	Outlay. Rs.	Irrigable area. Acres.
Cauvery-Mettur Reservoir	6,12,00,000	{ 221,000 plus * 90,000 „
Polavaram Island project	18,55,000	16,300
Upper Bhavani project	4,88,00,000	{ 160,000 plus * 260,000 „
Bellary West Canal project	90,00,000	{ 57,600 „ * 2,000 „
	12,08,55,000	806,900

* Second crop.

There is little or no scope for the construction of new anicut systems in the Presidency and resort must be had to expensive reservoir systems. The construction of works for the benefit of the Ceded Districts which suffer periodically from bad seasons is necessary, but the difficulty is that schemes which depend on the local rainfall are of no use as they would fail just when they are needed. A committee was recently appointed to examine the possibilities of new schemes for this tract. Its recommendations are under consideration.

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A charge that is sometimes brought against Government is that they do not give adequate consideration to the proper maintenance, repair and restoration of the smaller systems for which capital and revenue accounts are not kept. This is far from being the case. The gross annual revenue from such works is about 90 lakhs and about a third of this is spent every year on the maintenance and restoration of the minor works. In recent years increased attention has been paid to these works.

In regard to the utilisation of the subsoil water-supply, the matter has largely been left to the initiative of the ryots. Government render liberal help by the grant of loans under the Land Improvement Loans Act for the construction of wells. The extent under well irrigation is very considerable in the Madras Presidency and forms about 20 per cent. of the total area on which irrigated crops are raised. The number of wells in use in 1924-25 was 606,217 and the gross area irrigated was 1,572,187 acres. Since 1914 Government have also undertaken a survey of underground water-supply in some districts. Bore holes were put down by the Department of Industries and their levels connected with mean sea-level and the underground water currents mapped. The mapping of subterranean water currents has been completed in the Chingleput, Tanjore, South Arcot and Kistna districts. Some work has been done in the Guntur and Nellore districts. The magnitude of the work is however very great as is evident from the fact that it would be necessary to have at least one bore hole for every square mile of area before accurate advice could be given regarding the course of underground water. The Government could not therefore inaugurate a systematic survey for the Presidency.

In districts like Anantapur, the ryots depend mainly on well irrigation. The Board of Revenue has suggested that the services of Major Pogson, the Water Diviner employed by the Bombay Government, might be utilised to locate sites for the sinking of wells in these famine affected districts.

(b) The practice in the Madras Presidency is to leave the actual field to field distribution of water in the hands of the ryots themselves. Government regulate supply only up to a certain point, viz., the head of branch channels in the case of canal systems. It is left to the ryots to adopt any method they like for the irrigation of their lands and Government do not exercise any control on the way in which the water is actually used for irrigation or on the crops that are raised. The ryots follow certain recognised turns in the distribution and ordinarily there is no conscious waste of the supply. Judged however by modern scientific standards there is generally a great loss of water due to wasteful and unscientific application of water and there is room for improvement in the matter of getting the most out of the available supply without deterioration of the fertility of the soil. The Agricultural Department has been conducting experiments and carrying on propaganda work in the country but advancement by education of the general body of the ryots is a long process, and the question is whether any direct action can be taken by Government in the matter. Even to a casual observer the contrast which exists between the application of well water and of canal water is apparent. The difference must be due entirely to the fact that in the latter case there is no incentive to the cultivator to economise the supply, as he is assessed not by the amount of supply but by the area irrigated. The loss of water is not the only important consideration. Over-irrigation, it is believed, is slowly lowering the productive power of the land. The first stage of lower outturn has been reached in many parts although fortunately the second stage of alkalinity of soils resulting in the abandonment of land has not made itself manifest in the Presidency. The ultimate solution of the problem of using water to the best advantage will probably be found in the system of charge for water by volume.

The question of volumetric charge is an old one. The Irrigation Commission of 1901-1903 first suggested it. It was investigated in 1921 when a special officer was appointed to examine the possibility of substituting for the charge per acre some sort of quantitative charge. As it was impossible to measure the quantity flowing to each field, the system postulated the form-

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ation of a bigger unit, say the lands under a single branch channel or sluice, and the sale of water in bulk to a co-operative body of the owners of the lands comprised in the unit. It was considered that the circumstances of the country were not yet such that the system could be adopted. It is doubtful whether the system will be introduced within the next two or three decades. For the present Government are confining themselves to the formation of irrigation panchayats for the management of the minor irrigation works or branch channels so as to create sufficient co-operative spirit.

No special steps are being taken here to prevent the wastage of water by evaporation or by absorption in the soil. I have suggested the adoption under the Upper Bhavani project of the "Kiari" system of the Punjab. Under this system every ryot must parcel out his holding into rectangular plots whose dimensions are dependent on the discharge from the pipe or sluice. The object is to reduce the time of irrigation to a minimum and so minimise loss by percolation, evaporation, etc.

QUESTION 26.—The work of arranging and publishing agricultural statistics is done by the Director of Agriculture and that officer will doubtless deal with this question at length. It may be generally observed that the present method of collecting the statistics in regard to the areas under cultivation and crops and estimating the yield of agricultural produce in this Presidency is good and sufficient for the purpose for which these statistics are collected. This was also the opinion of the Economic Enquiry Committee. The statistics of agricultural stock cannot be considered very accurate. This is due to the agency employed for the enumeration and the perfunctory manner in which the work is done and supervised. The accuracy of these statistics cannot be improved unless a large staff is employed the cost of which would not be commensurate with the results obtained. These statistics are now prepared for each quinquennium and they are accurate enough for purposes of comparison.

Oral Evidence.

11785. *The Chairman:* Mr. Macmichael, you are First Member of the Board of Revenue?—Yes.

11786. You have been good enough to prepare for the Royal Commission a note on some of the points as to which you wish to give evidence. Is there any statement of a general character which you would wish to make before I proceed to ask you one or two questions?—No; I do not think so, not just now.

11787. I should like at the outset to ask you a question of a somewhat general nature. Is it your view that substantial improvements in the practice of agriculture in this Presidency are possible?—Yes; speaking from my own personal experience I think there have been considerable improvements during the time I have been in this Presidency.

11788. And from that you would judge that further improvements may be possible?—That is my personal opinion.

11789. To what do you attribute such improvements as have taken place?—During the time of which I have personal knowledge I think they have been the result of the activities of the Agricultural Department chiefly.

11790. Any particular activities of the Agricultural Department?—I cannot go into very great detail in regard to it, but I may mention cotton; I am aware that considerable improvements have been made in cotton; and paddy also, I think, in some parts in the matter of more economical planting.

11791. Have those improvements resulted in a very considerable monetary advantage to the Presidency as a whole?—I could not answer that off-hand at all; my impression is that in the matter of cotton it has added considerably in some districts to the wealth of the ryots. I could not give you figures off-hand.

11792. And those improvements and that bettering of the ryot's financial position have, I suppose, been the direct result of the researches carried out by the Agricultural Department?—I think it is so.

11793. Now, from the ryot's point of view, does that in your mind justify such expenditure as has been directed towards research in the past?—It all depends on how much money Government have had to spend.

11794. From the Governmental point of view, does Government enjoy any share of the increment, the result of agricultural research and progress, in the shape of increased revenue?—I should say indirectly probably they do. Improved cotton crops make for better trade and that means more income-tax revenue for instance. They do not have any direct benefit.

11795. By 'direct' do you mean the land revenue?—That is what I understood you to say. Indirectly it must affect the Government; it improves trade and that is reflected in the income-tax.

11796. Now, in what respect would provincial funds benefit, if at all, from improvement in trade as the result of the agricultural advance?—I believe provincial funds get a small share of the income-tax revenue; I am not quite sure what it is, but I believe they get a small share. They benefit to that extent.

11797. What proportion of the Presidency is permanently settled?—Roughly a third. Speaking without the figures in front of me I think it is about a third.

11798. Now, assuming that the permanent nature of that settlement is respected, any increase in provincial revenue as the result of agricultural progress must obviously flow from the remaining two-thirds, and that is assuming that there will be some enhancement in the rate of revenue as the result of betterment when resettlement comes about?—Do you mean that only the two-thirds get the benefit of these agricultural improvements?

11799. No; I do not mean that; I will put my question in other words. As regards the two-thirds, do provincial funds sooner or later derive any advantage from the increased prosperity of the ryot?—They do to a small

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extent, I believe through income-tax; I cannot think of any other form in which they do; also indirectly at resettlements.

11800. That was what I was waiting for?—The general economic condition of the district for the past 30 years comes up to be considered at the resettlement, when the Government decide whether the rates should be increased or not. It would come in indirectly in that way.

11801. Would you justify, from the angle of practical finance, the borrowing of funds to be spent on research and agricultural improvement on the ground that in due course the provincial revenue would benefit?—I do not think I know enough about finance to give an answer to that question; I have very little to do with finance.

11802. Now I turn to your note of evidence. I would like you to throw a little further light on the figures in the table on page 263. You are showing there a table which gives the increase in the amount of loans advanced year by year under the two statutes, the Land Improvement Loans Act and the Agriculturists' Loans Act. I notice that between *faslis* 1325 and 1332, there are no very special increases, but when you come to between *faslis* 1332 and 1333, there is an increase of form 7 to no less than 17 lakhs?—Yes.

11803. Can you explain that sudden rise?—Yes; very bad seasons up in the Ceded Districts in consequence of which there was a very great demand for loans in Bellary and in Anantapur. There was considerable distress in two districts especially, Bellary and Anantapur, and consequently the demands for these loans increased very greatly, especially for fodder.

11804. Is *fasli* 1334 the same as 1925?—1334 is from July 1924 to June 1925.

11805. And the same increase has taken place, I presume, for the same reason in regard to loans under the Agriculturists' Loans Act?—In that year there were very serious floods in the South of the Presidency in consequence of which large loans were granted.

11806. For what purposes would those loans in the main be taken?—Under the Land Improvements Loans Act, chiefly for digging and deepening wells.

11807. How would you account for this enormous increase as the direct result of failure of the monsoon and distress if money was to be spent on digging wells?—In a season of short rainfall the water level in the wells drops, and consequently they have to deepen wells in order to get water; and a good deal of it was spent in that way, and of course to some extent in digging new wells.

11808. And under the other Act?—Purchase of cattle and purchase of fodder for their cattle are probably the two main items.

11809. Was there a serious fodder famine in that year?—In Anantapur there was a very serious fodder famine.

11810. So that it looks from those two years as though it requires the stimulus of dire necessity to persuade the cultivator to make full use of the loans under these Acts?—I do not think I would put it that way; I think he is always quite ready to borrow provided we have the money to lend. It is because in those years there was much greater necessity for lending money that the grants were greatly increased.

11811. That increase is due rather to your readiness to lend than to the cultivators' increased anxiety to borrow?—Our anxiety to lend was due to the greater necessity of the cultivators in those years.

11812. You make the point of course that it would only be at the expense of the general tax-payer that you could relax the rules as regards Government lending and repayment?—That is so.

11813. As regards repayment the rules are not irksome; are they?—No; they have been relaxed from time to time as far as Government thought it safe.

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11814. What have you done to relax regular repayment?—That is the most irksome fact from the ryot's point of view, having to repay at definite dates.

11815. In a country where the cultivation is so much dependent upon the seasons, and where the rainfall is particularly apt to fail, it may be a very difficult matter for the cultivator to repay?—The district officers have considerable discretion in the matter of granting time to pay in the event of a bad season or for causes beyond the man's control.

11816. When the cultivator goes to the moneylender he may be paying higher interest; but I take it the same punctuality in payment is not insisted upon?—That is my impression.

11817. Do you think that is one of the principal reasons why the cultivator as a rule prefers the moneylender?—I do not think I would go so far as to say that he prefers the moneylender; he cannot always get loans from Government; that is doubtless one reason why he is prepared to pay a much higher rate of interest to the moneylender.

11818. You have not noticed a preference on the part of the ryots for borrowing from the moneylender as against borrowing from Government?—No; I have not.

11819. In the case of a cultivator seeking a small loan under either of these Acts, do you know whether the cultivator actually gets into his hands the whole sum borrowed, or whether there are certain charges of incidental expenses which reduce the total amount that gets into his hands?—It is generally believed that there are such charges and incidental expenses; the general impression is that the whole amount does not reach him.

11820. Do you think that is another reason for the comparative unpopularity of loans under these Acts?—I do not think they are unpopular.

11821. Do you think that full use has been made of these Acts by the cultivators?—I think as full use as is desirable has been made. My own view is that they should be chiefly used in years when there is some exceptional calamity or distress.

11822. The Commission has been unable to obtain, so far, any accurate statement of the long-term debt of cultivators in this Presidency, whether secured or unsecured; can you give us those figures?—The total debt? No, I could not.

11823. Would you agree with me that it is only by comparing the total indebtedness to Government of cultivators under these Acts with the total aggregate indebtedness including debts to moneylenders, co-operative societies and the like, that a true picture of the part which *taccavi* loans are playing can be arrived at? You do not know what proportion of the total debt is due to Government?—I do not.

11824. Do you think it might be helpful to discover that?—I think it would be very difficult to discover it.

11825. Do you know whether a survey of that sort has been made in other Presidencies or Provinces?—That I do not know.

11826. The Commission has read through your memorandum with great interest. What I should like to do, if I am able to achieve it, is to get from you any positive or constructive suggestions that may be in your mind for the betterment of the agriculturists?—If we could instil the spirit of thrift into them, I think that would go to the root of the matter.

11827. Is that likely to come by any agency other than by education?—I should say the co-operative movement was the most likely.

11828. Have you any personal knowledge of the co-operative movement?—Only in a very general way; I have never had anything particular to do with the department.

11829. Have you formed any view as to its soundness or the reverse?—Do you mean of the co-operative principle in general?

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11830. No, of its application in this Presidency?—I do not know enough about the details to give an opinion on that. It seems to me that it is chiefly through the development of the principles of co-operation that the ryot in this country is likely to learn to be less unthrifty than he is.

11831. I should like to ask you a question on your answer to question 7 about Fragmentation. You are talking about the successful endeavours that have been made in the Punjab to achieve consolidation of fragmented holdings by voluntary means. Would that complicate matters for the revenue establishment, if you could achieve it in this Presidency, or would it simplify them?—It would simplify our accounts very considerably.

11832. So that your remarks on page 266, that consolidation under the Act drafted by Mr. Keatinge would involve the Revenue Department in troublesome and often infructuous enquiries on applications for creating economic holdings and on complaints that the rule of impartibility had been broken, would not apply in the case of voluntary consolidation, according to the Punjab scheme?—What I mean when I say that it would simplify our accounts if the Punjab scheme were carried out, is that our revenue accounts would be simpler than at present; instead of having 1,000 entries for a village, we should perhaps have less than 100 entries.

11833. I understand you are satisfied that, under the Bill drafted by Mr. Keatinge, which Bill you comment on, on pages 265 and 266, that would not be the case, and the revenue establishment might be involved in what you call troublesome and infructuous enquiries?—Yes, that is my opinion of that Bill, that it would not have the desired effect, so far as Madras is concerned; or at least I am very doubtful whether it would.

11834. I do not quite understand why it should involve the revenue establishment in these troublesome enquiries?—So far as my recollection goes, according to the Bill, the question whether a holding was an economic holding was left to be enquired into by the revenue officials; I am speaking from memory, of course; it is some time since I saw that Bill.

11835. The principle of inheritance by sub-division, I take it, must go on. Is that your view?—Yes; it would be a very big question to try and alter the law of inheritance out here.

11836. But it is possible to minimise the harmful effects of sub-division by taking all possible measures to see that such sub-division is effected without undue fragmentation; is that the position?—I am not quite sure that I caught your question correctly.

11837. I was wondering whether you differentiate, in your own mind, between sub-division and fragmentation?—Yes; I understand fragmentation would be the case of a man having his holding scattered all over the village in small lots.

11838. In small lots?—Yes, instead of one compact lot.

11839. Take any one unit. If you must have sub-division you may under the best conditions divide that unit into two parts, each a homogeneous whole. On the other hand it too often happens that that unit is divided into, let us say, four or eight allotments, although in fact it is only being sub-divided amongst two heirs?—Yes, that is true.

11840. May I ask you a question on your answer to our question 8, on Irrigation. You divide these schemes under the two headings, productive and unproductive. In the case of productive schemes, I take it that the charges for the water meet the interest and amortisation on the capital involved in making the scheme. Is that the position?—Yes, that is the idea.

11841. Please turn to page 267. I want to get from you which, if any, of the new projects, the Cauvery-Mettur Reservoir project, the Polavaram Island project, the Upper Bhavani project, and the Bellary West Canal project, come under the heading of productive?—The Cauvery-Mettur project is productive. All these schemes, as at present drawn up, are on a pro-

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ductive basis. The Upper Bhavani and the Bellary West Canal projects have not yet been sanctioned; they are under investigation.

11842. I noticed that, and I see an experienced Settlement Officer has been placed on special duty, according to your note, to examine certain aspects of the scheme thoroughly?—Yes; that is the Upper Bhavani project.

11843. Who sent out the instructions which that officer has received?—They are mostly from myself to him.

11844. Would you put in a note on the point?—It would be easier for me to put in a note, because I should have to discuss it in detail; I think it would save you time if I put in a note.

11845. Broadly speaking, is your intention in making this examination to discover whether this Cauvery-Mettur and other schemes are sound financially?—That is part of the idea; as regards the Upper Bhavani project, there is also the question how far we require special legislation, in the way of an irrigation law, before it would be safe to embark on it; at present, we have practically no irrigation law in this Presidency.

11846. You are considering the introduction of an irrigation law?—It has been under consideration for 30 or 40 years; it has certainly been under consideration all the time I have been in this Presidency, and I think it was under consideration for some time before.

11847. That is a very considerable period for contemplation even in this part of the world; is it not?—Yes, it is. The Irrigation Bill has actually been passed through the Council, but it has not yet received assent; the consideration of certain amendments proposed by His Excellency the Governor is to be taken up in the next session of the Council.

11848. Will that particular statute cover the ground that you have referred to?—As regards this scheme, I think it would be simpler to have a special short Act for this particular purpose. There would be less likelihood of opposition to it.

11849. What is the prime purpose of a special Act of that sort?—Principally to give Government power as regards the regulation of the distribution of the supply.

11850. Not the charges?—The charges would possibly come under it. The charges certainly come under the Irrigation Bill which is at present under consideration, but the particular object for which I suggested a special Act in the case of this scheme was to give Government full powers of regulation.

11851. *Sir Henry Lawrence*: Is it the regulation of the distribution of water?—There is a considerable area under this project which is at present served by wells, and we would have to have some special rules in regard to the liability of these people.

11852. Liability to pay money?—To pay water rate. If we had not such rules, they would probably take up the position that they had not taken water, although obviously they had; they are quite willing to take the water.

11853. The main purpose of your Act is to safeguard the finance of the canal?—Yes.

11854. *The Chairman*: Are there one or more hydro-electric schemes associated with this group of four projects?—None so far as I am aware. I know very little about these hydro-electric schemes; I have nothing to do with them. There is a hydro-electric scheme under consideration at Pykara up in the Nilgiri hills, but there is none so far as I am aware connected with any of these.

11855. Not with the Upper Bhavani project?—No. I should explain that the first two, the Cauvery-Mettur reservoir and the Polavaram project, are under execution now.

11856. So that these are more than projects; they are accepted schemes?—Yes.

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11857. I see. As regards these other two, if further investigation shows that they are financially sound, is there any difficulty in starting them?—No special difficulty that I am aware of. It is a question of sufficient staff and funds.

11858. First as regards funds, is there any difficulty in borrowing funds for projects of that nature?—So far as the financial side is concerned my duty is to report whether the project will be productive or not; what rates it is necessary to impose in order to make it productive and whether the ryots are likely to be willing to pay such rates. But in the matter of borrowing, I have nothing to do with that.

11859. But as far as you know, provided your investigation shows that the schemes would be water-tight financially, there is nothing to prevent their being undertaken forthwith?—No.

11860. Is the Cauvery reservoir scheme the only scheme that is at the present moment being developed?—That is the largest one that is under execution.

11861. Now as regards the unproductive schemes, what is the primary purpose of an unproductive scheme?—To protect from famine.

11862. Famine insurance? It is insurance against famines?—Yes.

11863. From the point of view of your own department what are the circumstances which justify the launching or putting into execution of an unproductive scheme?—From my point of view as Famine Commissioner, I am always in favour of that. It is all a question of sufficient funds, whether Government can afford to pay the cost, if the return is not going to cover the interest charges. Naturally as Famine Commissioner I consider that the more of these we have, the less likelihood there is of famine.

11864. Now these schemes are called unproductive; but is the loss in fact the difference between what the scheme returns in revenue and the charges? Is there no element of insurance coming in by which the Presidency is spared important expenditure in other directions?—There is; but it is very difficult to estimate that in definite figures. There is undoubtedly that element.

11865. Can you give us any idea of how substantial a consideration that is in your own mind?—It depends upon the particular district and the amount of liability incurred by the Government by taking up the particular work. I do not think I can generalise on that point.

11866. I see you make one constructive suggestion. Half-way down page 268 you suggest or the Board of Revenue suggests that the 'services of Major Pogson, the Water Diviner employed by the Bombay Government, might be utilised to locate sites for the sinking of wells in these famine affected districts.' Has the Presidency any local talent in that direction?—I am not aware that there is such local talent. I believe the Bombay Government have employed Major Pogson for one or two years, so I presume that they were getting some value for their money.

11867. What do you regard as the most typical dry cultivation tract in this Presidency?—Any dry cultivation without wells?

11868. Without wells?—Typical of what?

11869. Dry cultivation. I was going to ask you, perhaps the next question might help you, whether you had any experience of these dry cultivation areas which would enable you to give us any information as to the comparative use which cultivators of such areas make of Government loans as compared with the use made of the same by cultivators of irrigated or well-irrigated areas. Are you familiar with any dry cultivation area?—I was in the earlier years of my service familiar with parts of the Anantapur district which is mostly a dry district.

11870. So that on the point upon which I am interested you cannot give us any information?—I am not sure I have caught the point properly, was

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it the comparative use that they make of Government loans in dry areas and in irrigated areas?

11871. Yes?—They do make far more use of the Government loans in dry districts like Anantapur for sinking and deepening wells than they do in the ordinary wet districts where the supply of water is practically assured.

11872. Are any improvements possible in a dry tract which would justify long term loans?—What the ryot in a dry tract like Anantapur wants is to be sure of finding water when he digs his well. That is the outstanding question for him.

11873. On your answer to our question about Statistics I would like to ask you whether you think that the statistics of inter-provincial rail-borne trade which are to be revived can be improved upon in any way? They were discontinued, I think, about 1922. Do you know the statistics to which I refer?—I think I do; but I had very little to do with any of these inter-provincial statistics.

11874. Have you ever heard of a suggestion to remit revenue on land used by the cultivators to grow fodder crops with a view to encouraging the growth of these crops and so improving the cattle in the Presidency?—We are giving concessions to them at present in the matter of water charges for growing fodder crops and green manure crops. If water is available we allow them to have it without charge.

11875. *Sir Henry Lawrence*: In regard to your irrigation we had some evidence to show that there is not very much contact between the Irrigation and the Agricultural Departments. Do you think that that is the case?—Does that mean the Public Works Department, for there is a branch of the Irrigation Department on the revenue side and I have got to do with the revenue side?

11876. You collect the revenue and the Public Works Department are to give the water?—That is the position, roughly.

11877. I take it this complaint, as I understood it, referred to the distribution of water?—Yes, in the larger systems for which the Public Works Department are responsible; a good many smaller systems are under the Revenue Department, the District Officers.

11878. And who is the superior officer in charge of the Public Works Irrigation portfolio?—The Head of the department is the Chief Engineer.

11879. What Member or Minister is in charge of Irrigation?—The Law Member, Sir C. P. Ramaswami Ayyar, is in charge of Irrigation.

11880. He is a Member of Council?—Yes.

11881. And Agriculture is in whose portfolio?—That is under a Minister, Sir T. N. Sivagnanam Pillai.

11882. A suggestion was made in other parts that Irrigation and Agriculture should be under the same superior control. That, I suppose, is not possible if one is Transferred and the other Reserved?—That is the difficulty here.

11883. You have reserved your irrigation?—Yes.

11884. Apart from accepting this suggestion that they should both be under the same head, is there any other method by which greater co-operation can be maintained between the officers of the one department and the officers of the other department?—Until a few years ago agriculture was under the Board of Revenue and under the Settlement Commissioner; that possibly afforded a greater amount of co-operation, or rather co-ordination, than there is at present. On the other hand, of course, it is probably undesirable to revert to that arrangement; at least there will probably be serious objection.

11885. Has this lack of co-operation been brought to the notice of the Government at all?—The point was not raised by me so far as I know, or by the Board of Revenue.

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11886. Has it been brought before the Board of Revenue?—Not to my knowledge. I am not aware that it has been.

11887. Questions in which there has been any friction between the irrigation officers and the agricultural officers have not come to the notice of the Board of Revenue?—I can only recollect one case where there was a question of supplying irrigation to some experimental plots in a district when the supply was very low, some two years ago after the floods in Tanjore. The question was as to whether these experimental plots or the needs of the ryots should have the first preference.

11888. To whom did you give the preference?—The ryots.

11889. A smaller issue rather than the greater?—Well, it was the only way of saving the ryot's crops and the experiments could be carried on in the following year, I suppose.

11890. If there was friction between these departments would they come to the Board of Revenue to settle it?—Yes.

11891. You do not think there has been any serious trouble between the two?—I do not think so.

11892. You mentioned just now that you thought instruction in the art of thrift is the greatest need of the hour?—I am not sure I put it that way. What I meant to suggest was that it was very essential for the ryot to imbibe the spirit of thrift. I am not sure how he will get the instruction, or to what extent he will imbibe it.

11893. I thought there should be some manner of leading to the result and that that should be achieved through the co-operative movement?—I think the co-operative movement is the most likely way to bring it about.

11894. You consider that amongst the ryots in this Presidency there is real ambition and desire to work. Do they wish to improve their standard of life?—It is rather difficult to give a general answer to that question. I mean some of them do and some of them do not.

11895. Do you see a general desire for improvement?—Yes, but a considerable number of them in my experience are quite satisfied with things as they are.

11896. You have a larger emigration from this Province than any other Province I believe?—It is considerable; I could not say how far it compares with other Provinces, but there is a considerable amount of emigration from this Presidency.

11897. Those men who emigrate do so to improve their position in life?—In many districts they emigrate in the slack season. In Ganjam they do it at the end of the harvest; they cross to Burma for work there. There is a regular return at the beginning of the cultivation season.

11898. Is that on a sufficiently large scale to be of material assistance to the economic condition of the ryot?—In that district it is.

11899. Is that one district? Which district?—Ganjam.

11900. Is that a dry district or a wet district?—Partly dry, there are some irrigation works there; it is about half and half, wet and dry.

11901. Your dry districts are Bellary and Anantapur?—These are typical dry districts.

11902. Is there much seasonal emigration from these dry districts?—Not on a very large scale. There is a certain amount to surrounding wet areas for harvesting, chiefly to British areas.

11903. Do they go to the wet area?—Sometimes.

11904. Do they go to Hyderabad and Bombay districts?—I am not aware of any large emigration there. But I know they go to some of the surrounding districts.

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11905. For the more regular work?—Yes, chiefly for the harvest.

11906. In these wet areas, is there work all the year round? 12 months' work for the ryot and his labourer?—I doubt whether there is; there is most work at the time of transplantation of paddy and at the harvest.

11907. Are two crops grown?—In some districts under some irrigation works they are; under others there is only one.

11908. To what extent has this wet cultivation been the result of the irrigation projects introduced by the Government?—It seems to me to a very large extent. In the deltas it has been due almost entirely to Sir H. Cotton's work, for instance the anicuts across the Kistna and the Godavari.

11909. You have got ten per cent of the total area protected by canal irrigation?—I am not prepared to say the exact figure; I am not quite certain.

11910. You have 38 lakhs of acres of cultivation under irrigation; that is your own figure?—Yes, that is the area under systems for which capital and revenue accounts are kept.

11911. Of that 38 lakhs under irrigation, what proportion is the result of major irrigation works undertaken by Government?—The whole of that, I think.

11912. As distinguished from old works which existed?—I could not tell you that. My impression is they are mostly works which have been constructed by Government. There are some exceptions like the Tanjore Grand Anicut which has come down from about 300 years ago.

11913. You could not give any figures? Could you find out and let us have the figures?—Yes, I will try and find out all the works constructed by Government as distinguished from those that have come down.*

11914. *Mr. Calvert*: The average area of land under the various works, I think, you have given in the total?—I do not think it distinguishes works constructed by Government from the older works.

11915. *Sir Henry Lawrence*: I understand from your note that irrigation wells irrigate 16 lakhs of acres and you have certain surveys being carried on with a view to increasing the number of wells. I cannot understand from your note what conclusion has been arrived at from this. Has any conclusion been arrived at?—Is that a survey of underground water?

11916. Yes, precisely?—That was done by the Director of Industries in the Department of Industries. I have no personal knowledge of it except from what I have seen from the Government Order on the subject. I think the conclusion was that it was too expensive.

11917. Too expensive to do what?—To continue the survey.

11918. Has the survey been completed in certain districts? What I want to know is about the practical application?—I do not know anything about it. It was all done by the Department of Industries.

11919. Would they not report to the Board of Revenue?—They report to the Government in the Development Department.

11920. Then, whose business will it be to see that some final decision is made as to whether wells can be increased and to pass orders on this survey?—I have got the order of Government here. What Government said was they propose to publish results of the underground survey in the form of maps showing contours of subsoil water. These maps will prove of some assistance to tracts in which subterranean water has been found. That is the whole action that has been taken.

11921. Then the decision as to whether anything further should be done will rest on the Government. The Board of Revenue are not interested?—

* Figures furnished later. Out of 38 lakhs of acres irrigated under systems for which capital and revenue accounts are kept, 16 lakhs represent the extent of old irrigation.

No, it is not the business of the Board of Revenue, to go ahead with digging wells for the ryots.

11922. I am asking for information; I am not imputing any responsibility or blame. You have irrigation under you, have you not?—Yes.

11923. Irrigation from canals?—I have got it from the revenue point of view, not from the professional or irrigation point of view.

11924. As regards suggestions for improvements, do they come from you or any other authority?—They might; suggestions for work would come from ryots and Collectors of districts.

11925. And suggestions in regard to improvement of wells? Where do they come from?—I certainly should make them to Government if I had any.

11926. They would be within your province?—Yes.

11927. The survey which has been made and which may lead to such a policy, that survey is not reported to you?—A copy of the order was communicated to me. But the survey was made under the control of the Director of Industries and reported direct to Government.

11928. Then to carry on in that connection you, the Board of Revenue, had suggested that the Water Diviner employed by the Bombay Government should be borrowed from them?—He wrote offering his services; but I understand that he is still employed by the Government of Bombay.

11929. Have the Government of Madras ever employed a Water Diviner?—Not to my knowledge.

11930. Was there a Water Diviner here 40 years ago?—That was before my time.

11931. The results of his work are not well known in this Presidency?—I am not aware of them.

11932. *Sir Ganga Ram*: One-third of area is permanently settled?—Yes, approximately.

11933. If Government convert any dry areas into wet areas, will the terms of permanent settlement preclude you from charging any water advantage rate?—If Government supply water to dry lands, in a permanently settled estate they are entitled to charge water rate.

11934. Not water rate; I mean water advantages in terms of revenue. Water rate of course they will have to pay for the use of the water; but would the terms of permanent settlement preclude them from charging any increased water rate owing to the advantages of water?—In this Presidency, we combine in what we call our water rate what you call water rate and water advantage rate; we have got a consolidated rate.

11935. There are two kinds of rates, water rate and land revenue for the use of the land. At a resettlement you raise the rates according to the condition of the land. In those tracts where the settlement is not permanent, of course you would enhance the revenue; would you not?—Exactly.

11936. Supposing those tracts were dry tracts at the time of a previous settlement, and you convert them into wet tracts, are you entitled to enhance the land revenue at a resettlement?—Yes, in ryotwari tracts.

11937. Would the terms of the permanent settlement preclude your doing that?—Yes, in permanently settled estates.

11938. *Sir Henry Lawrence*: You make no provision to take such a rate in your new Irrigation Bill apart from water rate?—No; we do not. We combine the two rates they have in the Punjab. The only charge besides the land assessment that we levy is the water rate.

11939. *Sir Ganga Ram*: May I make my question still clearer? Where land is not permanently settled, naturally when the canal comes in, you would enhance the land revenue, would you not?—Not necessarily.

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11940. Is not your settlement periodical?—Yes, once in 30 years.

11941. After 30 years, naturally you revise the rates taking into consideration the condition of the land. The condition of the land improves owing to the canal coming in. Would the terms of permanent settlement preclude your getting any advantage on behalf of Government?—You mean in ryotwari tracts?

11942. No; in tracts which are permanently settled?—We could not touch what we call the *peish-cush*, that is, the permanent assessment the zamindar pays; any increase would have to take the form of water rate.

11943. That is to say the acreage rate in permanently settled places will be more than in periodically settled areas?—Not necessarily.

11944. You are doing it, I know. I have got figures to show that. While you are charging Rs. 5 per acre in ordinary land you are charging more in zamindari areas?—It is quite the other way round. In the Kistna and Godavari deltas is zamindari tracts we charge Rs. 5, and in Government ryotwari tracts we charge up to Rs. 8 or Rs. 9.

11945. *Sir Henry Lawrence*: You know that in Bombay where water has been brought into a dry tract, the price of land has gone up sometimes ten-fold and twenty-fold. It is proposed there to have some legislation to enable the general tax-payer to get back some of the unearned increment. Have you any proposal of that kind in your new Irrigation Bill?—There is a proposal in the Bill to increase the rate when we have got the consent of the holders of two-thirds of the tract within the benefited area to the increased rates.

11946. Increased water rate or land revenue rate?—Water rate.

11947. You levy no rate on account of the improvement in the value of the land per acre which occurs when water is given?—We do not levy any special rate; we consolidate it in the water rate; when fixing the water rate we take into consideration partly the additional value.

11948. Nothing is taken from the people whose land is being improved by reason of water being brought there, apart from the people who actually take the water?—Well, it is the people who take the water who get the unearned increment.

11949. This is the question. Either you attach the rate to the actual use of water, or you attach the rate to the land; in the latter case the rate will be paid whether the opportunity is taken advantage of or not?—So far as we are concerned, we always attach it to the use of the water.

11950. *Sir Ganga Ram*: I suppose your acreage rate is a fluctuating rate measured on the area actually matured?—What do you mean by actually matured?

11951. On the crop actually matured?—We levy a charge on the area cultivated.

11952. It comes to the same thing; you do not levy if cultivation does not mature?—Sometimes we do.

11953. In that case, do you control the quantity of water that a zamindar takes; that is to say, do you specify that for a gross area of say 1,000 acres he must take only so much water, or do you give him the opportunity of using as much water as he likes?—I think the Chief Engineer for Irrigation will be in a better position to answer that. I do not think as a matter of fact we do control them at all.

11954. You say the hydro-electric scheme has not yet been thought of?—I said there is one under consideration.

11955. Which one?—The Pykara one.

11956. How much power is it expected to develop; do you know?—I have no details.

11957. The Irrigation Commission made certain recommendations for the improvement of irrigation; do you know that?—Yes.

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11958. Have they been carried out?—Some of them.

All of them have not been carried out. Could you get a statement prepared showing which have been carried out and which not?

The Chairman: It will be better to ask the irrigation officer.

11959. *Sir Ganga Ram:* On the first page of your note you give figures of loans advanced for the last ten years; how much of that has still to be recovered and how much has been recovered?—I could not tell you off-hand. I can get you the figures.

11960. Supposing you convert dry land into wet land, can you tell us approximately how much enhancement you would get per acre?—It depends very much on the land and the irrigation.

11961. My object is to find out where by converting dry land into wet land, you could get sufficient land revenue which, *plus* the water rate, will make a scheme productive and not merely protective?—Well, in the Mettur scheme, which has just been started, we are proposing a water rate of Rs. 15 an acre for the first crop, paddy crop.

11962. Rs. 15 an acre?—Rs. 15 per acre for the first crop and Rs. 10 for the second crop.

11963. Have the people agreed?—We expect them to pay these rates.

11964. Is that enhancement for land revenue and water rate, or only for water rate?—That is the water rate.

11965. When the resettlement comes, will you enhance the land revenue?—The land revenue on ryotwari areas is liable to enhancement.

11966. Could you not give me any rough idea as to the amount by which you enhance the rate at the resettlement, owing to the conversion of dry into wet land?—You wish to know how much it comes to actually in rupees?

11967. Yes?—Something from Rs. 2 to Rs. 3; it may vary from Rs. 2 to Rs. 3, and it may probably go up to Rs. 10 or Rs. 12.

11968. I mean enhancement of land revenue?—The difference between the assessment when the land is dry and the assessment when the land is wet.

11969. *Sir Henry Lawrence:* Is that in addition to the water rate?—No. That is the amount by which in some cases the consolidated assessment will be increased; that is the difference between the assessment of dry land and the assessment of wet land.

11970. Would the ryot have to pay Rs. 5 as water rate and Rs. 10 as land revenue?—No.

11971. *Sir Ganga Ram:* That is what I wanted to know. The land revenue rate would not be more?—Rs. 2 to Rs. 3 on dry land.

11972. Apart from the water rate the land revenue would go up by Rs. 2 or Rs. 2-8-0 per acre at a resettlement?—At a resettlement the maximum increase we can put under land revenue is three annas per rupee.

11973. That is the ordinary enhancement; not when it is converted from dry to wet?—We would not raise the consolidated assessment more than three annas in the rupee.

11974. *Sir Henry Lawrence:* What would be the average dry crop assessment of land to which the water rate would be added?—You mean the fifteen rupees?

11975. Yes?—Probably between Re. 1 and Rs. 2.

11976. So that it might go up from Rs. 1-8-0 to Rs. 1-14-0?—Yes, at a resettlement.

11977. *Sir Ganga Ram:* Only 5 or 6 annas?—Three annas in the rupee is our maximum.

11978. And your average settlement rate is Rs. 1-10-0?—It varies.

11979. That is, it may amount to Rs. 2?—Yes.

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11980. If land is converted from dry to wet you will get at least Rs. 5 in water rate and 5 or 6 annas in land revenue. With this you can make many schemes productive instead of protective?—I hope so.

11981. *Sir Thomas Middleton*: Do the ryots' forests come under the Board of Revenue?—Yes, the Forest Panchayats are under the Board of Revenue.

11982. Can you give us any indication as to the rate of progress in the last few years?—That is not under my charge; it is under the charge of the Land Revenue Commissioner. I am in charge of Settlement.

11983. But we could obtain the figures showing the rate of progress?—Certainly.

11984. With reference to your note on Statistics, could you indicate whether the statistics that we get from the Madras Presidency are equally reliable from the zamindari and the ryotwari tracts?—They are much more reliable from the ryotwari tracts.

11985. In discussing thrift, I think I heard you use the term “reviving the spirit of thrift.” What I wanted to ask you was whether there was any suggestion that the population was growing less thrifty?—I did not intend to use those words, if I did use them.

11986. You know it is a very common suggestion in all parts of the world now that the population is growing less thrifty; I wondered whether it had reached Madras?—That was not at the back of my mind.

11987. Can you discover any relation between the thrift of the population of areas under dry cultivation and that of the population of areas under wet cultivation, that is to say, are the populations of the irrigated tract usually more thrifty or less thrifty than those in the dry tracts? It has not been noted?—I have not noticed it myself.

11988. There is no suggestion that in those famine tracts which you mention the population is less thrifty than in the regularly settled rice-growing tracts?—No.

11989. With reference to the effects of improvements of agriculture upon your revenue, you have explained to us that, so far as land revenue is concerned, it can only become effective, at the new settlement, and then is subject to certain rules. But is it not the case that the prosperity of the agricultural population must have a very large effect on your revenue under Excise and your revenue under Stamp duties?—Undoubtedly, yes.

11990. These two of course fluctuate with the prosperity or adversity of the population, generally?—Yes, I agree.

11991. So that, quite a short period after a notable agricultural improvement has been made, the tax-payer may derive considerable advantage through the Excise or through the Stamp duty, without having to wait for his 30 years' resettlement?—The converse is certainly the case; in a bad season Excise receipts generally drop.

11992. You have told us that the ryot is a willing borrower; can you describe the Government as a willing lender, or as a willing lender when there is need?—I think so.

11993. Which?—A willing lender when there is need.

11994. That is indicated by your figures; there has been a rapid increase. I was going to ask you, what actually was the process by which these figures doubled in the two years of famine? Was there an announcement by the Government that loans would be much more freely available, or did there come in from the districts an insistent demand for *taccavi*?—The Collectors represented that they had a large number of applications and required more money to deal with them.

11995. It was the insistence of the borrower that was the reason for the large increase?—Yes.

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11996. *Professor Gangulee*: You do not make it known to the average cultivator that such loans would be available?—Yes; we do.

11997. In times of scarcity?—In times of scarcity, undoubtedly; all the district officers undoubtedly make it known.

11998. *Sir Thomas Middleton*: As the amount of money for *taccavi* advances is strictly limited, you have of course definite rules under which *taccavi* advances are granted. To what extent does the officer who actually authorises the advances, the Collector, I assume, regularly use his personal knowledge of the circumstances in discriminating between one advance and another? Is it largely a question of rule, or is it a question of the personal knowledge of the Collector that determines the advance?—If there is money, and if the Collector has a sufficient allotment, and if the security that the borrower offers is sufficient, he would give the loan when it is asked for, provided it is found that the loan is necessary for the purpose for which the borrower says he wishes it.

11999. That means, in practice, advances would be given in order of application to reputable borrowers who can produce sufficient security?—Yes.

12000. Are *taccavi* advances as readily granted in the zamindari tracts as in the ryotwari tract?—Not to the same extent; we do grant them to the zamindari tenants if they have an occupancy right in their land.

12001. But if there were two villages next door to each other, and one was a zamindari and the other a ryotwari, would the Collector, in practice, endeavour to satisfy the ryotwari village before he accepted any applications from the zamindari village? Is there any discrimination?—There is no discrimination, according to the rules.

12002. The difference arises from the condition of the borrower, not from the attitude of the lender?—It is all a matter of the security.

12003. *Dr. Hyder*: How long have you been in this Presidency?—32 years.

12004. You have served as a district officer?—Yes, for the greater part.

12005. In different districts?—Yes.

12006. Even if those cultivators became models of thrift, do you think they would have a large surplus out of which they could save? Given the will to save on their side, do you think they possess the power to put by money against bad years?—I think that if the spirit of thrift became a good deal commoner among them it would probably be followed by various other improvements which would enable them to save money in good years; they would probably not marry so early in life, and their families would not be as large as they are; that would probably be followed by other improvements in their condition, which would enable them to save in good years for the bad years.

12007. *Mr. Kamat*: In good years, the cultivator has a surplus?—That is my belief.

12008. *Dr. Hyder*: That would apply to these delta or rich areas; would it apply to the Ceded Districts, Bellary, Anantapur, Kurnool and Cuddapah? Do you think the cultivator has got enough surplus out of which he could save?—In a good year he could have a surplus, but the trouble is that good years are so rare, up there; that is the trouble about Bellary and Anantapur.

12009. With regard to the question of fragmentation, in criticising the scheme of Mr. Keatinge of Bombay you say that the standard of comfort of the owner varies. I can understand that the standard of comfort would vary, if the people were rich, among different classes. Would it vary very much in the case of the people we have specially in view, that is to say, people whose holdings are not big enough to support them and their families from year to year, the class of people who are not high in the social scale, the ordinary cultivators? Does this standard vary much among the different districts of the Presidency?—I should not like to answer that off-hand; it is very difficult to say.

12010. I was wondering whether there was much in the objection urged by the Government of Madras or the Board of Revenue, whether there was a

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great variation in the standard of comfort of the ordinary run of cultivators?—You are talking of people with holdings who have subsidiary occupations?

12011. Yes?—It would depend on how far they depended on cultivation and on how far they depended on a subsidiary occupation; would it not?

12012. That, of course, would mean that the variation would be less, if they had more land?—Yes, I think so.

12013. There must come a point which determines this question, whether the cultivator can support a family out of the proceeds of a given area, taking all the other circumstances, fertility, irrigation, rainfall, etc., into consideration?—You want to know if there was a wide variation in the standard of comfort of this class of people from one district to another?

12014. Yes?—I do not know.

12015. I understand that the Cauvery-Mettur project is going to improve and secure the water-supply of the existing irrigated area of about a million acres. Here you have got the consolidated wet assessment, have you not?—Yes.

12016. It is going to bring under cultivation an additional area amounting to 221,000 acres of second crop. Can you tell me whether you are going to have a consolidated wet assessment on this additional area as well?—No, we propose to charge water rates; we do not propose to consolidate the water rate with the dry assessment.

12017. What relation is there going to be between the charge on the present area and on the consolidated area? Are you going to equalise, or level up?—We cannot do anything with the existing area; it already has this consolidated wet rate which is not liable to alteration for the next 30 years, until the next resettlement.

12018. You say that the actual field to field distribution of water is in the hands of the cultivators themselves. Is that the practice?—Yes.

12019. You say later on, as a reason against the introduction of the system of distribution of water on a volumetric basis, that it would be impossible to measure the quantity flowing into each field. If the field to field distribution is in the hands of the people themselves, you are in a much better position to introduce the volumetric system in your Presidency?—If they would agree to it; you would have to get agreement between themselves, that they were willing to be served by any particular meter.

12020. But at present, all you do is to deliver a certain quantity of water, and you leave the actual field to field distribution to the people themselves; they manage it amongst themselves?—Yes.

12021. If you had this volumetric system, a module or some other kind of measuring device, your part of the business would be very small; the rest of the distribution, being in the hands of the people themselves, would be very easy?—You would not then be charging the individuals by the meter reading; you distribute the meter reading amongst the individuals according to their acreage, which is not the volumetric system.

12022. Are those panchayats, the Irrigation Panchayats which you have introduced in the Presidency, proving successful?—Several of them have been quite successful so far. Only they have not been working long. It is premature, I think, to express any definite opinion as to their ultimate success. Several of them have been doing good work.

12023. Is not the introduction of volumetric system hampered by the subtleties evolved by the Board of Revenue in Madras?—I am not aware what subtleties the question refers to.

12024. You had in your Presidency from 1880 to 1906 different systems of water rate, a differential system, a fixed rate system, and a consolidated system. At one time or other the Board of Revenue recommended these and two or three years later they objected most strongly to one particular system; I

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was wondering whether these subtleties were not evolved by the Board of Revenue themselves?—I do not know who is responsible.

12025. *Dewan Bahadur Raghavayya*: There is a certain amount of vagueness on the question of the liability of the land revenue being enhanced on water being brought to dry land. Do not the Settlement Rules at present state that during the currency of a settlement if water is made accessible to dry land and the land be converted to wet, the land could be reclassified as wet and the wet classification applied to it, in which case the revenue due to the land as such would be greater than the revenue due to the land as dry, apart from the revenue due to water?—It might be greater or it might be less.

12026. Generally it would be greater, I take it, because you would not take the water to very poor lands, dry land. I am referring to the consolidated wet assessment method?—I should think it would generally be greater. It might be the one or it might be the other.

12027. And that enhancement could be effected even during the currency of a settlement or at the next settlement if an area of dry land is converted into wet by a new irrigation project?—The exact rate that would be chargeable is fixed by a provision in the settlement notification for the district, and of course at the next resettlement it would be liable to an enhancement.

12028. At the next resettlement? Even during the currency of a settlement if a land gets new irrigation then it could be re-classified and the assessment enhanced immediately; and at the time of the next resettlement the assessment could be enhanced more than 18½ per cent which is the maximum prescribed for land in regard to which no improvement had been effected or in regard to which no re-classification of soil takes place?—I am not sure I have caught the point.

12029. If a re-classification of soil takes place on resettlement, this limit of 18½ per cent enhancement does not apply?—No. But re-classifications are unusual.

12030. They are unusual, true. But if an area is brought under an irrigation project you will certainly re-classify if it is considered that the quality of the soil as wet land would be different from its quality or classification as dry land?—It might be necessary, yes.

12031. If lands which are now on the margin of cultivation or lands which are now non-classified and which are not therefore held on *pattah*, could as a result of agricultural research be successfully cultivated, there would be a very considerable accession to the revenue of the Government, is that not so?—Yes.

12032. We have extensive areas of such land in this Presidency?—Roughly 6 million acres, I believe. 12½ million acres of which perhaps half would be capable of being cultivated. 12½ million acres is the cultivable waste according to our accounts.

12033. *Sir Henry Lawrence*: What are the 6 million acres you refer to?—Waste, cultivable land.

12034. In the whole Presidency?—Yes.

12035. What is the distinction between these 6 millions and the 12½ millions?—A lot of it is uncultivable.

12036. *Dewan Bahadur Raghavayya*: According to accounts there are 12½ million acres of land which are cultivable but not held on *pattah*, that is, which are not held by ryots on *pattah*. May I take it that at least half of that area could be cultivated if, as a result of agricultural research, better methods of cultivation are discovered?—Yes, that is so.

12037. *Professor Gangulee*: In your final report the cultivable waste in this Presidency is stated to be over 12 million acres. How is it you say it is 6 millions?—I do not suppose more than 6 millions of it can be used. It is undoubtedly beyond the margin of cultivation.

12038. *The Chairman*: Economically unculturable under the present conditions?—Yes.

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12039. *Professor Gangulee*: There are no data to go on?—It is my opinion.

12040. *Dewan Bahadur Raghavayya*: One question in regard to the concession referred to by the Chairman, that is freedom from assessment in the case of lands in the ryot's holdings which may be set apart for grazing. We now exempt from assessment, from water rate, all fodder crops and green manure crops. You do not, I believe, anticipate much difficulty? I take it that you have no great objection to such areas set apart for pasture being exempted from assessment?—I have not considered that question. I should like to consider it before giving an opinion. There might be practical difficulties about it.

12041. May I suggest that there is one difficulty. One reason against giving that concession is the risk of the concession being abused and large areas of poor lands being reserved for pasture by ryots who do not own a sufficient number of cattle but who would like landless people with cattle to graze on those lands?—Yes.

12042. There is that risk?—Yes.

12043. And you also probably foresee the risk of a substantial diminution in the land revenue from dry lands?—Yes, that is right.

12044. Now in regard to loans under these two Acts, the *Agriculturists' Loans Act* and the *Land Improvements Loans Act*, do you agree with me from your experience that the extent to which these Acts are availed of by the ryots is limited mainly by the amount of money that Government make available, and that if Government could give more money the ryots would be willing to utilise all that money? Is it your experience that Collectors are unable to advance to the full the allotments made by the Board under instruction from the Government?—I do not think there has been any difficulty in disposing of their whole allotments.

12045. I also believe it is your experience that if you want to push loans in any particular area and appoint a special officer you get the work done in a remarkably short time?—Yes. Of course it is done much more quickly.

12046. And it has not been the experience of Government that any substantial portion of these loans advanced are irrecoverable?—It has not been my experience during the time I have been in charge of the work.

12047. Almost the whole of such advances are recoverable?—That has been my experience.

12048. To a question put by the Chairman about the total indebtedness of the ryot population, your answer was that there were no statistics. We have no statistics which show the entire indebtedness of the ryot population; but is it not within your knowledge that special economic enquiries conducted in typical villages by our Settlement Officers during the last two or three re-settlements have disclosed that about 75 per cent of the ryot population is in debt?—I think that is correct, in these villages.

Sir Henry Lawrence: Disclose the percentage which is indebted?

Dewan Bahadur Raghavayya: And the extent also.

The Chairman: And the extent to which the debt is secured and unsecured?

Dewan Bahadur Raghavayya: The debt is mostly secured.

12049. *Sir Henry Lawrence*: Could you produce any figures to show the extent of the indebtedness and the extent to which it is secured? If these enquiries have been made, can you let us have the results?—Yes.

12050. *The Chairman*: Perhaps you might put in a statement?—Yes.

12051. *Dewan Bahadur Raghavayya*: With regard to secured debts, have we not figures in the Registration Department which give us the total annual indebtedness of the people? It may not mean that the total 75 per cent is agricultural population; but we have figures, have we not, showing the total extent to which people in the Presidency borrow on mortgages and the total extent to which they sell lands?—From the Registration documents, yes.

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12052. And the value of the property which is held; the sale value of the property and also the amount which is raised by mortgaging the property?—Yes; but there are possibly transactions which are not registered.

12053. They are not valid according to the Civil Law, is not that so?—I am not a great authority on that particular point.

12054. Am I right in assuming that from what you said some time back you would like agriculture to be brought under the Board of Revenue as it was some time ago?—No. I merely meant to express a pious regret that it had been taken away.

12055. You do not go so far as to say that the department should be brought back under the control of the Board of Revenue?—No, I should not, I have not gone into that question seriously.

12056. What do you think is the amount of touch that exists between the Revenue staff of the district and the staff of the Agricultural Department working in that district?—It is some years since I was a Collector and I am not in a position to say.

12057. Well, I will not pursue that. In regard to this question of the survey of subterranean sources of water you are aware that the district of Bellary is the driest district in the Presidency with the smallest number of wells correspondingly or proportionately?—I think Anantapur is slightly drier. There is not much difference between the two.

12058. The number of wells in Anantapur is much larger?—Yes.

12059. Bellary is as much a dry district as Anantapur?—Yes.

12060. You would agree to a survey being made at least in the districts of Bellary, Anantapur, Kurnool, Cuddapah and Ganjam. I do not know about the physical condition of the Ganjam soil. If in Ganjam also it is difficult to find water then in all these districts you would advocate a survey to be made?—I am not sure I would advocate the survey to be made on the lines already made which do not seem to be very practical. I think the matter should be examined as to whether we could get some more definite information about our underground supply of water; on what lines I am not in a position to suggest.

12061. *The Raja of Parlakimedi*: In ryotwari areas when a dry field is converted from its *manawari* conditions, that is entirely dependent on the rains, to wet, is it not assessed differently?—No, not unless water is taken from a Government source of irrigation.

12062. The ryot actually pays dry assessment though he cultivates paddy entirely upon rain irrigation or some other non-Government sources?—Yes.

12063. Irrespective of zamindari or ryotwari areas, is it the duty of the village accountant or village headman to furnish Government with information regarding crops?—Yes.

12064. For such things as births and deaths it is the village headman. For the first report about famine and other things, I think the village *Nayudu* has to report?—About famine?

12065. Yes?—We do not depend upon the village headman for information about distress.

12066. Are not his views taken at all in the matter in the very early stages?—The lowest official, I think, whose views are reported is the Revenue Inspector in his weekly season and crop report.

12067. He gets of course the signatures of these group *Nayudus*?—The Revenue Inspector?

12068. Yes?—No.

12069. For epidemics, the village *munsifs* are relied upon for report?—It is their business.

12070. On page 264, paragraph 3 of question 7 you say the status of a person in a village depends to a great extent on whether he possesses land.

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Now, in the case of the village staff, would you suggest that, in place of remuneration in cash, land may be provided?—I think it is too late in the day for that.

12071. You would not like to say anything on that point?—Not without some consideration.

12072. Then on page 268, with reference to question 8, it would not be better to hold the *munsif* responsible for water distribution? I mean to say for the proper consumption of water for the second crop. Of course, you know in certain parts they entirely depend upon water from tanks and canals, for second crop especially. Would you not hold the village *munsif* responsible to see that the water is not wasted?—Instead of leaving it to the ryots themselves?

12073. Exactly?—I am not sure whether it would make any difference.

12074. Then just a general question on the encouragement of private bodies to take up irrigation works. In the present law as it stands the parties concerned cannot effect a contract between themselves and it should be confirmed by a court of law. Would it not be better, if the contract was effected on *bona fide* grounds by the parties concerned, that the mere registration of the document should make it valid?—I am not sure that it would make very much difference.

12075. Of course at present they have to go to court unnecessarily whether they wish to or not?—If they both agree the proceedings in court are purely formal I think.

12076. *The Chairman*: Entirely inexpensive?—I do not think very expensive.

12077. They cost something?—Some stamp duties.

12078. *The Raja of Parlakimedi*: What do you think of this? Would you stick to the present system or would you alter it?—It has never been suggested to me that the present provisions cause inconvenience. I never found that, throughout my district experience. It was never suggested to me that they hampered the carrying out of improvements.

12079. For instance, if it is agreed by both the parties that they go to court simply for registration, that is, without going into actual consideration of the area and the circumstances of the works, the courts may nevertheless substantially reduce the rates agreed upon by the ryots?—I have not come across any such case.

12080. There is no harm in having such laxity?—I would not, until the necessity for altering the present position was proved to me.

12081. There would be no harm in altering the regulation and cutting out the courts altogether?—It could not be done without legislation.

12082. Should this pressure come from the Collector or be brought to bear by the Provincial Legislature?—I think pressure should come from the Legislature.

12083. *Sir James MacKenna*: You have told us that the Board of Revenue have nothing to do with the Agricultural Department. Can you tell me whether Co-operative Credit and Agriculture are all under one Minister?—They are all under the Development Minister at present.

12084. And the orders of that Minister issue as orders of the Government of Madras in the Development Department?—Yes.

12085. In the course of your long experience as a district officer have you come across large zamindars and large landholders who take particular interest in the operation of the Agricultural Department?—Yes.

12086. How far does that interest extend to anything like operations in their own lands?—The case I was thinking of was the Parlakimedi estate which has an agricultural farm.

12087. Can you think of any other?—Several estates that pass through the hands of the Court of Wards have agricultural farms.

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12088. Apart from that have you seen any particular interest on the part of the zamindars; we have got to look to them for help in the dissemination of the results?—It has not come to my notice.

12089. It is only in cases where the estates have been under the Court of Wards?—Yes, I think so.

12090. *Professor Gangulee*: I desire to ask you one or two questions of a preliminary nature. In reply to the Chairman you have stated that there has been considerable agricultural improvement in this Presidency. Is that improvement in respect of the unit of cultivation or do you mean the improvement obtained by the extension of cultivation?—I mean the ryots are getting more and better crops than before.

12091. Has the yield per acre of food crops increased?—I think the value of the cotton crop has considerably improved since they adopted the seed provided by the Agricultural Department.

12092. That is, you base your remarks chiefly on the extension of cultivation and the introduction of commercial crops?—I am not basing them so much on the extension of cultivation as on the improvement of the crops.

12093. Per unit per acre?—Yes.

12094. For instance, take the case of transplantation of paddy. In what percentage of the total area under paddy has the single seedling method of transplantation been adopted?—I could not tell you.

I find from the *Statistical Atlas of the Madras Presidency*, that 2 per cent. of the total area under paddy is under this economical transplantation.

12095. In determining assessment do you depend on the soil?—At the original settlements we did.

12096. And at further settlements?—We usually take into consideration the question of prices, the increase or decrease in the price of the land, and the general economic condition of the tract, as compared with the last settlement.

12097. I am referring to soil classification, showing various types of soil; do you depend upon that?—At the original settlements in the Presidency there was a soil classification; at resettlements it is usually a percentage enhancement.

12098. At resettlements you do not take into consideration classification of the soil; do I understand you right?—We do not as a rule re-classify the soil.

12099. You also depend upon the kind of crops grown; do you not?—At the original settlements we took the staple foodgrains of the district and based our rates on that. We took the average outturn in the field and made deductions for cultivation expenses and other expenses, and we arrived at the net total; something less than half of that was taken as a reasonable assessment.

12100. Do you know whether any soil survey has been undertaken in this Presidency?—I am not certain.

12101. Not by the Department of Agriculture?—I do not know.

12102. Judging from the statement that you have given us (the memorandum on land settlement), I have the impression that the Board of Revenue depends largely on its revenue officers for agricultural information, that is information with regard to soil and the kind of crop, etc. Do you think capacity for getting reliable information regarding agricultural conditions and some knowledge in scientific agriculture will be helpful to the revenue officers?—It would not do them any harm; I do not know whether it would do much good.

12103. Knowledge never does harm to any one; but do you think such information would help them in discharging their duties efficiently, make them more efficient officers?—I should like to know what details you are referring to.

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12104. I am referring to this fact; in fixing the assessment of a certain area you depend upon the class of soil, whether it is clay, sand and so on; also you depend on the kind of crops grown, and also on the outturn. These are essentially agricultural and economic data?—Yes.

12105. So, in order to understand these data properly I feel some sort of education in scientific agriculture might be useful and perhaps essential to revenue officers?—We very seldom have any re-classification of soils now. The classification, as I said, has already been done at the original settlement. At a resettlement the factors that are taken into consideration are increase in prices, increase in the monetary value of land, and generally the economic condition of the tract. From that point of view a technical knowledge of agricultural science is hardly necessary.

12106. When was settlement first carried out in this Presidency?—The original settlements were carried out in the sixties.

12107. With regard to *taccavi* loans, can you give us an idea of the formalities through which a ryot has to go before he obtains the loan?—He puts in an application to the Tahsildar, which is usually sent to the Revenue Inspector who enquires. His enquiry is chiefly directed to, seeing whether the security offered is sufficient; he has got to make enquiries as to the market value of the land, and this he does by local inspection and examination of sale deeds, he has got to see whether the application is *bonâ fide*, for instance, especially in the case of loans for buying cattle, whether the man who wants the cattle really has land to cultivate, or whether he wants the loan for other purposes. The Revenue Inspector sends his report to the Tahsildar, who passes orders on it himself if it is a small loan, or sends it to the divisional officer, the Deputy Collector, if it is a large amount.

12108. What time is involved in all that process?—That depends very much on the staff and on the nature of the case. If you get a special staff and a perfectly simple case the loan might be granted in a week or ten days; on the other hand, if the ordinary establishment deals with it, and if there is a lot of other work to be done by them, there might be considerably greater delay.

12109. *Mr. Calvert*: Is land the security under both Acts?—Land is the usual security; under the Agriculturists' Loans Act personal security is also accepted.

12110. For loans under the Land Improvement Loans Act?—Land is the usual security.

12111. *Professor Gangulee*: Are you of opinion that these *taccavi* loans have really reached the average small holder?—In a good many cases they have, I think.

12112. Could you tell the Commission what percentage of the total applications has been refused during the last five years?—I can supply you with those figures, but I cannot give them off-hand.

12113. You can submit an account of the percentage of the total applications refused during the last five years?—Yes; we have got these figures.

12114. Do you grant these loans on the security of crops?—No; we would not grant them unless the man had occupancy right in the land.

12115. We have been told that in other Provinces they are trying to make these *taccavi* loans popular through co-operative societies. Would you approve of the suggestion of making the Department of Agriculture or the co-operative societies, where they exist, agencies for granting these *taccavi* loans?—No; I do not think I should.

12116. You do not approve of that suggestion?—I should prefer the ryot to look to the co-operative societies rather than to Government for his loans.

12117. You would not utilise the co-operative societies for popularising *taccavi* loans?—No; I should prefer the ryot to go to the co-operative society, but the co-operative society should get the money from the central banks or urban banks.

12118. With regard to your answer to question 7, you tell us that Government "actively assist" the cultivator in sub-dividing his land. I do not understand the words "actively assist." Would you explain?—When a man sells part of his field and wishes the other part to be separately registered in his name, we have the measurements taken and the two plots separately registered in our records and plotted in our field maps.

12119. That is "actively assisting" him?—Yes; perhaps it is not a very good expression.

12120. You say on page 264 "Most of the smaller ryots have also subsidiary occupations." On what facts and figures do you base that statement?—I say that from my general administrative and executive experience.

12121. It is your impression that most of the ryots in the Presidency have subsidiary occupations?—The smaller ryots.

12122. What particular occupations have you in mind; spinning or weaving or basket making?—Yes. In some cases they do a good deal of agricultural work for the larger landholders as well; if the man has a cart and bullocks, he will do carting work and so on.

12123. You think that most of the ryot's time is fully occupied?—No; I do not know.

12124. One or two questions about irrigation. How many acres have you under tank irrigation? Can you give us an idea?—Tanks as distinguished from canals?

12125. Yes?—I cannot give the figures off-hand.

12126. *The Chairman*: Probably the irrigation officer will be able to put them before us?—In the figures I gave both are included.

12127. *Professor Gangulee*: Yes, I notice that. One word about Irrigation Panchayats. Are these Irrigation Panchayats already in existence or have you only just started to form them?—A few have been in existence for some years.

12128. What purpose have you in view in suggesting the formation of Irrigation Panchayats?—Most of them have been formed to arrange for the distribution of water; in some cases also to clear the channels of silt.

12129. Do you think such a system would lead to better administration also?—In some cases they are quite promising.

12130. Do you think such a system will also help to develop a sense of responsibility amongst the villagers?—Yes; I should think so.

12131. Just as in the case of Forest Panchayats which they say have been successful, you want Irrigation Panchayats on the same principle. Is there any scheme before you for restoring these tanks that are silted up and cannot be used for irrigation?—We have what are called Tank Restoration Parties which work in various districts preparing estimates, and bringing up the tanks in the districts to a certain level of efficiency. In some cases that involves the repair of tanks that had been abandoned for some time.

12132. *Mr. Calvert*: Do you think there will be any difficulty in the Board of Revenue giving us an introductory note, something on the lines of the Introduction to the *Statistical Atlas* on the general economic position of Madras rural areas?—That could be done.

12133. Madras has given us no introductory summary at all. For instance, we do not even know the cultivable area in Madras?—That can easily be given.

12134. It would be useful if we could have this introductory chapter reprinted in a shorter form?—Yes. That could easily be done.

12135. Could you give us figures showing the classification of holdings by size of holdings?—We can give you figures according to the assessment paid, that is probably a more accurate criterion in this Presidency of the value

of the man's holding than the acreage is. I mean we have got figures to show how many ryots pay under Re. 1 as assessment, how many under Rs. 10, how many under Rs. 30, and so on.

12136. Can we have a statement giving the totals with the acreage in each class?—Yes; I can give the total acreage.

12137. That will give us the ryots' holdings, but you have no figures, I understand, showing the cultivators' holdings, including the tenants?—We have no record of the sub-leases.

12138. According to the figures here given, about 19 per cent. of the total population are tenants; that comes to about 8 million people; have you any information as to the economic position of these 8 million people?—These tenants, did you say?

12139. They are shown as tenants; 31·5 per cent. landowners and 19·2 per cent. tenants; that is about 8 million people?—There is a good deal which is scattered about in Settlement Reports and such other documents; I am not aware that it has all been gathered together.

The Chairman: Probably, the best way would be to put in a complete statement of the information that we required, and to ask the Government of Madras to provide us with as much as possible.

12140. *Mr. Calvert:* Would it be possible to say how many of these 8 million people have any fixity of tenure, and how many are merely tenants at will?—Does the question refer to ryotwari land?

12141. This is the total population?—Then that will include the zamindaries; we have no accurate figures with regard to the zamindari areas.

12142. In ryotwari areas, can these tenants obtain loans under the two Acts?—No; they have no occupancy right; only the man with occupancy right can get it; it is the *pattadar*, the ryot who has the occupancy right.

12143. Generally, are Government doing anything special for the economic uplift of these 8 million tenants?—Not that I am aware of.

12144. Apparently, nothing?—We have no legislation protecting them; there is nothing in the way of restricting the rents that the owner takes from them.

12145. *Dewan Bahadur Raghavayya:* Cannot the tenants get advances under the Agriculturists' Loans Act? Under the Land Improvements Loans Act property security is required, but under the Agriculturists' Loan Act cannot they get loans in times of scarcity for seed and purchase of cattle?—They can, if they give proper security.

12146. Tenants-at-will?—Yes; if they give proper security they can get it.

12147. *Mr. Calvert:* On the question of State loans, I have not yet quite understood the position. I understood you said in reply to some other Member that you are satisfied with the total sum of the loans advanced?—Yes, that is correct.

12148. Of the total cost of cultivation, the greater part is met either by the labour of the cultivator and his family, or his cattle, or by labour paid in kind at the end of the harvesting. Could you give any kind of the figure showing the cash expenditure required per acre; would it be Rs. 2, Rs. 3, or Rs. 4, per acre?—It would be very much according to the size of the man's family and so on.

12149. Would it be Rs. 5?—It would vary a great deal in different circumstances.

12150. Very small in any case?—Yes.

12151. I see your average of loans advanced for 10 years is Rs. 17 lakhs, which is less than 1 anna per cultivated acre?—Yes.

12152. And in normal years your advance is merely a few pies per cultivated acre. Do you think that is a satisfactory position?—I do not think the ryot should look to Government in normal years to finance him.

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12153. I see from the figures here that the Punjab Government gave double the sum that Madras Government gave for the same year, and still they are dissatisfied with the amount they are distributing?—As being too small?

12154. As being too small?—My view is that in normal years the ryot should not look to Government to finance him.

12155. It is a question of Government *versus* the moneylender?—I should prefer the co-operative societies to take the place of the moneylenders.

12156. But your co-operative societies only touch about 8 per cent. of the rural population; there are still 92 per cent. that have to go to Government or the moneylender?—Yes.

12157. Has any estimate been prepared of the sum borrowed annually from the moneylender?—For the whole Presidency?

12158. Yes?—Not that I know of.

12159. I gather that of these loans advanced, very little indeed has to be written off as irrecoverable?—That has been my experience.

12160. I do not quite understand why you say that relaxation of the rules would be possible only at the expense of the general tax-payer?—We now only insist on security to the value of the loan that we grant; formerly, we insisted on security of the value of 25 per cent. in excess of the loan granted. It is very difficult to fix the market value of land. We fix it with reference to the market value of similar lands. When there is a forced sale by Government, which is the most unpopular of sales, it is very seldom that that figure is obtained. If we relaxed these rules, we should probably have more forced sales, so that we could not recover anything like the amount advanced.

12161. But are forced sales any considerable proportion of the total?—They have not been so, so far, in my experience; but I think they are likely to be greater, in consequence of the increased advances we have made in recent years; especially as the greater part of these loans was granted in the districts of Anantapur and Bellary, very poor districts, and when the loans come in for repayment, I think that the proportion of the irrecoverable items is likely to increase.

12162. Of the total number of ryotwari *pattas*, say 4½ millions, a very small proportion, indeed, of these are actually receiving loans under these two Acts?—A very small number.

12163. That is 1 anna per acre?—Yes.

12164. We have some other evidence of schemes for land improvement, which are being held up for want of funds under the Land Improvements Loans Act. Is there any difficulty in getting funds for these loans?—Once or twice I have had to worry Government a bit to get as much as I wanted, but, as a rule, I have ultimately got it.

12165. I do not understand what difficulty there can be, under the present Reforms scheme, in providing money required for loans?—It may happen that in the middle of the year there may be a demand as there was two years ago, after the floods, and there may be no budget provision; that makes it difficult.

12166. But the Loans Fund does not go into the regular budget, it is separate?—It is a separate budget, but we budget to get so many lakhs of rupees for loans in the year. If the demand for loans is suddenly greatly increased, it may not be possible for Government to supply all the money even out of the loans budget.

12167. Has your Board of Revenue ever considered the suggestion that, instead of advancing the loans under the Land Improvements Loans Act, they should themselves carry out the improvement, and recover the cost over a period of years by a special acreage cess?—I do not think so.

12168. The net result would be almost the same, of course?—It would involve a good deal more of Government interference, I think.

Mr. N. Macmichael.

12169. And better insurance that the money was being spent for the object intended?—It would make Government even more paternal than it is. I think.

12170. The question is one of dealing with these petty cultivators; it would be difficult to leave these petty cultivators entirely to themselves, would it not?—I do not think the suggestion would ever be made.

12171. I am sorry to get back to this question of water rate; I still cannot understand it. If you open a new canal to-day on a formerly dry area, what happens in the way of recovering your water dues?—We fix a water rate, which will bring in a sufficient return, and charge that in addition to the assessment which the land has already been paying.

12172. You charge an acreage rate?—Yes, an acreage rate.

12173. Varying slightly with crops?—Well, we have got roughly two rates, for wet crops and for dry crops; the rate for wet crops is usually about twice the rate for dry crops.

12174. Would sugarcane, cotton and millets pay the same rate?—Sugarcane would be treated as a double wet crop; it would pay, as a rule, one and a half times the rate for a paddy crop; the actual rates vary under different projects.

12175. Who would pay that rate?—The *pattadar*, the man who is registered in our accounts.

12176. That is to say, if he has given his land out to a tenant-at-will, the tenant will pay nothing to you?—That is an arrangement purely between the *pattadar* and the tenant-at-will.

12177. So that your water rate is paid out of the rent and is not treated as part of the cost of cultivation?—As between the owner and the tenant?

12178. As between Government and the cultivator?—We have nothing to do with the cultivator.

12179. But he has taken your water?—We only deal with the man who is registered in our accounts as the owner of the land.

12180. How can that cultivator then get your water without the consent of his landlord?—That is an arrangement between him and his landlord.

12181. You are not getting past the landlord direct to the cultivator?—No; we do not go to the cultivator, so far as the collection of the water rate is concerned; I am talking of Government lands.

12182. Surely, you admit that the giving of water from canals has increased the profits of cultivation?—Of course.

12183. Should you make no claim at all on those increased profits?—We are getting that in our water rate.

12184. You have taken that in increased rent; you take nothing at all from increased profits?—It comes to much the same thing; as I understand the problem, it is much the same thing.

12185. It would make a big difference whether your schemes are productive or not?—We fix the water rate so as to make the schemes productive, provided it is a water rate that the *pattadar* will be prepared to pay.

12186. Is there any difficulty here in the landlord enhancing the rents so as to cover your increased demand?—Is the question about ryotwari lands?

12187. Ryotwari *patta* tenants?—There is no legislation regulating the rents that a ryotwari *pattadar* can collect from his tenant. It is entirely a matter of contract between them. Our Tenancy Act only applies to permanently settled estates, zamindaris.

12188. I see; in ryotwari tracts then the tenant is not protected against any enhancement of his rent?—He is not protected.

12189. Is there in this Presidency any one or anybody charged with thinking out schemes for rural development,—a Rural Development Board or anything like that or Development Commissioner?—If I can have an example of the sort of scheme the question refers to, I will probably be able to answer the question.

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12190. You had many examples of these land improvement schemes awaiting funds?—There is not any, so far as I am aware.

12191. I think Madras is trying a new land mortgage scheme? That is not under you at all, is it?—No.

12192. You have the water rate charged before your 30 years' settlement comes to an end. Do you fix your wet assessment for the same period as dry assessment?—Yes.

12193. I mean if you introduce irrigation now to dry areas, a water rate which would be heavy in the first year would become very light in five years, say when the ryots have got used to the utilisation of the water?—As things stand at present we might introduce a sliding scale of water rates starting low and gradually rising as the benefits become greater.

12194. You can fix a rate for five years and then revise at the end of five years?—The water rate, yes.

12195. Is fragmentation admitted here to be an evil?—Certainly, if I were a ryot I would much prefer to have my land all together than scattered in small patches.

12196. But there is no actual enquiry into the extent of the fragmentation?—I do not think it has become a burning question yet.

12197. But surely in India things do not become burning questions; they simply lie for hundreds of years?—Perhaps.

12198. Is any attempt being made in this Presidency towards educational propaganda in favour of consolidation?—I do not know what the Co-operative Department have been doing. I believe they made some enquiries into the matter, but what exactly they are doing I cannot tell you.

12199. Your land revenue assessment is based largely on the net produce, is it not?—Yes; it is based upon net produce.

12200. But when a ryot sinks a well at his own expense you do not increase his assessment at the termination of the present settlement?—No.

12201. But why not, if you are assessing on net produce? Why do you not assess him for water?—Because one of our principles is that a ryot's improvements should not be taxed.

12202. Not even after 30 or 40 years?—Sometimes it may be in practice difficult to avoid it; but so far as it is possible to avoid it, we do. In this case we simply charge him the percentage increase.

12203. But are you not thereby losing a large source of revenue which might be devoted to the improvement of the lot of the rural population?—We should probably discourage well sinking; if the ryot knew his liability to enhanced assessment at the end of the settlement period, it would discourage him.

12204. Have you any figures to show that well sinking in Madras under your system is any more progressive than, say, in the Punjab where after 20 years we assess it?—No; I have no information at all.

12205. It is an idea not based on actual data?—The Madras ryot is very sensitive to the possibilities of an enhancement of his assessment otherwise than by the well-known principles on which we do enhance it.

12206. We give him a remission calculated to bring him double his expenditure; and after he has recouped double his expense, we then assess his improvement thereby gaining some money which is available for the improvement of the lot of the agricultural population. Is there any special reason why you should not do that?—Yes. This principle has been in force for such a long time that it would create great discontent to abandon now. It has been in force for about 60 years and it would cause great discontent to revise it.

12207. But you would like to have the money, would you not?—I should like to see the ryots digging more wells.

12208. It has been suggested to us that to encourage the taking of Government loans, a separate department or a separate agency, an *ad hoc*

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agency, should be introduced. Would you approve of that at all?—We actually do that. In a bad season when there is a large number of applications we at once put in a special establishment to deal with it. That I think is sufficient.

12209. The real trouble is not in the distribution but in the recovery?—Yes; there is always more trouble when you try to recover the money.

12210. You cannot simplify the recovery procedure?—No; I think it is quite reasonably simple as it is.

12211. I gather your wells irrigate on the average about 2½ acres. Could you give us just a rough idea of the cost of that kind of well?—It varies according to the depth to which the ryot has to go for water. Sometimes he has to go to 15 feet and sometimes he has got to go 40 or 50 feet.

12212. Would a 2½-acre well cost Rs. 500?—Rs. 500.

12213. I am talking of the cost of improvement per acre. Now, judging from the figures we have got here the average cultivated area per cultivator is round about 6 acres in Madras?—Yes.

12214. That means you must have a very large number of people below, say, 5 acres.—Yes.

12215. From your experience of this Presidency do you think there is any hope of promoting the welfare and prosperity of those under five-acres men, by agricultural loans?—By agricultural improvements?

12216. Yes?—It all helps a bit.

12217. Not much?—Of course, not.

12218. I mean if you double the outturn of the 2½ acres limit he is on the five acres limit; if you double the outturn of the five acres man he is on the ten acres limit. But you still have got the poor?—Yes; if you double the outturn the population does not double itself, but it increases considerably.

12219. Would you go so far as to say that the problem of promoting the welfare and prosperity of the agricultural classes is not an agricultural problem exclusively?—I do not think it is exclusively an agricultural problem.

12220. In this Presidency one gathers that no attempt has been made to make a detailed examination of the economic position of the ryot?—Many economic enquiries have been made in regard to definite villages.

12221. By Dr. Slater?—Every Settlement Officer makes economic enquiries in selected villages in the districts that he is reporting on.

12222. Do you find those valuable from the economic point of view; he has to be so cautious in all his estimates?—They are the most valuable reports we have got in Madras, so far as I know.

12223. But even those reports would not throw much light on this class of 8 million tenants?—I do not think they would.

12224. There is no information readily available as to their condition?—Not that I am aware of.

12225. *Mr. Kamat*: What is the composition of your Board of Revenue?—There are three Members; one Member is in charge of Excise; another is in charge of Land Revenue which includes Court of Wards; the third is the Commissioner of Revenue Settlement which includes the duties of Famine and Flood Commissioner. Generally we look after the revenues of the Presidency.

12226. Is there any correlation or co-operation between this Board of Revenue and the Department of Agriculture, I mean the Minister of Agriculture, and, if so, in what manner do you achieve it?—We are occasionally consulted by the Development Department, on various questions.

12227. But in a question like the prosperity of the ryot, is there any method of active co-operation beyond mere casual consultation?—I do not think I can answer that off-hand.

12228. May I take it then that both the departments go their own way without a definite correlation or concerned action for the welfare of the

ryot?—I am not sure that I would like to agree to that without a little more consideration.

12229. May I know what is the total land revenue of this Presidency?—It is about $7\frac{1}{2}$ crores, I think; that includes water rates.

12230. Including irrigation water rates?—Yes.

12231. And out of this total revenue you expend on land improvements under the Land Improvements Loans Act, about 2 lakhs or a little over 2 lakhs per annum. Is that right?—The figures are, I think, 37 lakhs for the year ending June 1925.

12232. Roughly, during the last five years, can you tell me what the average was?—The average for the last ten years was 17 lakhs odd.

12233. This is the total under both Acts?—Yes.

12234. I am asking you with regard to the Land Improvement Act. I do not mean the loans which you recover. I mean the money which you give for the improvement of lands such as for wells, funds and so on?—That would include repairs to irrigation works.

12235. Do you include repairs to tanks?—I think I have given the answers in my paper on Irrigation.

12236. Does it come to roughly 30 lakhs?—We spend 30 lakhs on irrigation works for which we keep no separate accounts; the revenue we get is about 90 lakhs and we spend about 30 lakhs.

12237. I have those figures. I am referring to the improvement of the lands of the ryots. I want to know out of your total revenue of $7\frac{1}{2}$ crores how much do you use in helping the ryot to improve his land?—Do you mean apart from the loans that we grant him?

12238. Yes?—In what kind of improvements?

12239. By means of wells or ponds?—Wells are dug by the ryots themselves. Government help by giving them loans. Government do not dig wells themselves.

12240. No, but even in respect of advances for loans how much do you set apart from your revenue?—I do not think the figure is taken as any definite share of the revenue; it is fixed in accordance with the probable demands for loans.

12241. As regards your *taccavi* loans, what is the general rate of interest that you charge the ryot?—At present it is $7\frac{1}{2}$ per cent.

12242. What is the prevailing rate of the ordinary moneylender?—It varies a great deal.

12243. Have you got an idea of the minimum and maximum?—Roughly perhaps 12 to 20 per cent would be a fair figure; it would also go beyond 20; say from 12 to 30 perhaps. That is a very rough figure.

12244. Have the Board ever enquired into the ways of the moneylender, in view of the fact that after all the moneylender partly represents the indigenous banking system with which the Government will have to deal either in competition or as a factor in the rural economics of the country; I mean why the moneylender charges such a high rate, what difficulties he has in recovering his loans such as delays of law and other things?—Of course we know to some extent why he charges such a high rate.

12245. But you have conducted no detailed enquiry by calling moneylenders or looking into their books?—Not to my knowledge.

12246. Therefore the Board of Revenue know only as a matter of hearsay about the ways of the moneylender in the country?—As for the Board of Revenue, it is not their business. I am not sure they take it on hearsay. If they are to act upon such facts they would not depend upon hearsay.

12247. In answer to the Chairman when he asked you whether you had any concrete proposals to make for the welfare and prosperity of the ryot you said "the solution lies in encouraging the spirit of thrift." Your answer implies, I suppose, that there seems to be extravagance on the part

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of the ryot?—I mean that in my opinion there is a want of this spirit of thrift.

12248. Which is as good as saying that there is some extravagance somewhere?—Yes, I think you may put it like that.

12249. As an experienced officer you are convinced that the ryots are extravagant?—Yes; from my point of view the ryots are in many respects extravagant.

I want to ask you a few questions in order to go more closely into this theory of extravagance for the simple reason that we ought to know and probe to the bottom a matter in which the Board of Revenue are presumably basing their solution of many difficulties of the agriculturists. I hope you will give me well-considered answers.

12250. Extravagance is a relative term, is it not?—Yes.

12251. I mean in relation to the income of a man and other factors?—Yes.

12252. When you say there must be extravagance in the country it presupposes that there is some earning power somewhere and that that earning is misspent in some wrong directions. It is a question of bad spending, I think?—I give an example of what is in my mind. For instance, some of the people spend a great deal of money on arrack and toddy; some on marriages; so some of them are extravagant, looking at it from my point of view.

12253. I presume you are fairly conversant and familiar with the domestic ways of the villagers in this Presidency?—Well, I have seen a certain amount of it.

12254. It is usual always to test general principles by concrete cases. Take a hypothetical case. If a man has got, say, six acres of fairly good land and has to marry his daughter, supposing he spends Rs. 150 on that wedding to buy new clothes and some new silver trinkets or to feed a few guests; would you consider that an extravagant item?—It would entirely depend upon his income.

12255. That is exactly what I said at the beginning. Are you quite sure that there is large amount of extravagance in this country on marriages?—I am not sure if I said that; if I did, I merely intended to suggest that there was probably a good deal; but I should not like to be dogmatic on this question at all.

12256. When you said there was some kind of extravagance, were you quite sure that the man had the surplus which he spent on something else than proper lines and he had to borrow, say, for the wedding because he had no savings? Have you investigated this problem?—I have never made any detailed economic investigation. I certainly do not profess any expert knowledge on the subject.

12257. Then this remedy which you suggested of encouraging the spirit of thrift is purely an impression?—Yes, it is based on my general experience in this country.

I want to know what the presumption is.

12258. In your Presidency the irrigated portion of the area is about 10 per cent under canal irrigation, and 20 per cent under well irrigation. Am I right?—I do not think there is as much as that under well irrigation.

12259. I think it is somewhere in print in the papers supplied to us. I am taking these papers at their worth?—The extent under well irrigation may be about a million and a half acres.

12260. You can take it from me that it is from your published papers. Taking 10 per cent as under canal irrigation and 20 per cent under well irrigation, that means 30 per cent of your land is irrigated and 70 per cent. is practically dry farming. In your experience out of those 70 per cent. who do dry farming, is there any *prima facie* presumption, that they have a surplus or saving which they can carry over, taking good and bad years together? Is it possible, I ask, under the present uneconomic condi-

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tions of agriculture to have a surplus?—Our settlement rates are based upon leaving a considerable margin to the ryot after allowing for all his expenses.

12261. Theoretically it is true; but in practice 70 per cent. of your cultivators are living on dry farming. The natural presumption seems to be that there may be no saving out of which they can meet their marriage and other expenses. What I am driving at is this, that this theory of thrift for improving the lot of cultivators based only on an assumption of extravagance amongst the people should not be adopted as the basis upon which to deal with the whole problem?—I think I gave that simply as my own impression, not as representing the view of the Board of Revenue.

12262. You agree, however, that until further investigations are made to ascertain whether there is a saving in dry farming and until this is proved, the Board of Revenue should not proceed on this hypothesis that the cultivator is extravagant and requires only the inculcation of a spirit of thrift?—I should still be prepared to say that in my opinion the development of thrift in this country would be a great advantage.

12263. But do you not agree with me that further investigation is necessary before we can pin our faith to such impressions; otherwise we may proceed on an entirely wrong theory?—Of course the more facts we know the better.

12264. With regard to fragmentation, as Mr. Calvert put it to you, no attempt has been made to resuscitate this question in this Presidency ever since the Reforms? No investigation was done since Mr. Keatinge's time; his work in 1917 is the last word on the subject?—No, the Settlement Officer recently in Trichinopoly made enquiries; we had a short enquiry in a district that was recently resettled by a Settlement Officer.

12265. Was that before the introduction of the Reforms?—No, that was subsequent to the Reforms; that was about three or four years ago.

12266. I want to know whether your Minister of Agriculture or Development Officer has pursued this subject to find out the latest opinion?—The last enquiries that were made to my knowledge were made about 1922, by a Settlement Officer.

12267. Was it confined only to one district?—It was confined to only one district, to a few villages in that district.

12268. So that even there, the enquiry was more or less partial. Have your Co-operative Department done anything actively and vigorously in this direction? I merely ask for information; I know you are not in charge of the department. Can you tell me whether the Co-operative Department have made any serious effort towards co-operative consolidation?—Not to my knowledge.

12269. So that the problem is more or less lying dormant?—Yes.

12270. With regard to irrigation matters, you say that in this Presidency there is the system to a certain extent of allowing the ryots to distribute their own water when it comes to their fields from the head channels. Is that right?—Yes.

12271. Has it caused any friction between the Irrigation Department and the Agricultural Department?—Not to my knowledge.

12272. Your Irrigation Department are quite satisfied with this system although it leads to waste of water?—I could not say whether they are satisfied with it or not. That is a direction in which I think there is considerable room for further investigation, investigation into the more economical use of water. So far as I know there has not been very much investigation in that line.

12273. You say the volumetric system will take about two decades to be introduced successfully, if at all. May I take it that till then you propose to fall back upon the present system of distribution of water, although it is wasteful?—I think it would be a very excellent thing to examine the question as to what can be done in that direction.

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12274. I want to know something about the emigration problem, again simply as a matter of informaton; I know you are not responsible for it. We are told that these emigrants go out to improve their financial position. Do they come back again to their holdings? Are they a fluctuating agricultural population?—Yes; in the district I refer to, Ganjam, it was a regular thing at the end of the harvesting season for a large number of labourers to go across to Burma.

12275. But they do not give up their interest in their land?—Most of them come back after six months when the cultivation season begins.

12276. So that they are a disturbing factor so far as the pressure of population on agriculture is concerned?—I would put it that it is very convenient for them to have work on hand in the slack season of the year; when there is very little agricultural work to be done, they cross over to Burma and get regular work there.

12277. *Rao Bahadur Muniswami Nayudu*: You told the Commission that the zamindari area in the Presidency is one-third of the total extent?—Yes.

12278. There are a number of tanks maintained by the zamindars; will you give us your opinion generally as to whether these tanks are being properly maintained and repaired from time to time?—My experience is that they are not so well maintained as in Government areas except when the estate has been in the hands of the Court of Wards. When the estate is under the Court of Wards they put the tanks and irrigation sources into order.

12279. So that in cases where the zamindar is not in the hands of the Court of Wards, the tanks are not properly attended to?—With a few exceptions that has been my experience.

12280. Is there any law which will enable the Government or the ryots to compel the zamindar to put the tanks into proper repair?—There is a provision in the Estates Land Act, but in my experience that provision has been practically a dead letter.

12281. That provision empowers the Collectors to call upon the zamindar to carry out the improvements, but it does not give the Collector power to carry out the improvement at the cost of the zamindar?—I think that is the case.

12282. Therefore, this provision is practically a dead letter now?—It also requires, I think, some proportion of the tenants to apply; I do not know exactly the causes, but I know it has been practically a dead letter.

12283. The provision was inserted in the Estates Land Act in 1908?—Yes.

12284. Do you think that some provision must be made to see that these tanks are kept in good order?—Yes; I think it would be a good thing if that could be done.

12285. Has there been any economic survey of the position of the ryots in zamindari villages?—Not to my knowledge, apart from possible special reports in times of famine.

12286. The Agricultural Department were under the control of the Board of Revenue until the Reforms?—I think the control was taken away before the Reforms, some six years ago, perhaps.

12287. As Collector you have been in touch with the people. Do you consider that the Agricultural Department have been responsible for some improvement in the matter of the agricultural operations carried on by the ryots?—Yes; they have done a lot.

12288. Do you think that those improvements have been sufficiently brought home to the ryots in the villages?—I think it would be a very good thing to increase the number of agricultural demonstrators.

12289. Do you consider that there should be more propaganda in the matter?—It is my general impression that an increase in the number of demonstrators, one perhaps for almost every taluk, would be a great help to the spread of these improvements.

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12290. Your Revenue Inspectors are very much in touch with the villagers?—Yes.

12291. Would you consider the desirability of appointing graduates of agriculture as Revenue Inspectors so that they may carry on the propaganda work?—The Revenue Inspectors have quite enough work to do as it is, I think. I am not at all sure that an agricultural degree would be so useful because the Revenue Inspector expects to become Deputy Tahsildar and Tahsildar subsequently, and for that purpose a general education is more important than a specialised education.

12292. Supposing a graduate is taken up for training in the Agricultural College and takes a Degree in Agriculture also, would you consider that sufficient equipment for a Revenue Inspector?—Excellent.

12293. As Collector you were President of the District Board, about six or seven years ago?—Yes.

12294. So far as the maintenance of roads is concerned, it is only a few of the roads that are maintained by the Local Boards and not all village roads?—Quite a number of other roads too are very little maintained, I think.

12295. I mean to say with regard to roads connecting villages, not the main roads; it is only a very few of them that are being maintained?—I think so.

12296. The other roads are not maintained by any authority at all?—You mean the cart tracks across country?

12297. Yes?—No; they hardly require any maintenance; they are dry weather tracks.

12298. Are not many of them in a very bad state; do they not require to be restored to good order?—Which tracks?

12299. Cart tracks?—Well, on the red soils, they are good, but any work on them; in Anantapur and Bellary you do not want any repairs to these tracks.

12300. In the black cotton soils?—In the black cotton soils, they are impossible to maintain in the wet weather; in the dry weather they are quite good.

12301. But in other places? I am referring to the generality of the roads in districts like Coimbatore, Tanjore and other places. Do you or do you not think that the village cart tracks require to be put in order, and if they are put in order the villagers will, by reason of the better communications given to them, be better off with regard to the prices they obtain for the crops they cultivate?—My impression of Coimbatore is that the village roads there are rather good, much better than in most other districts.

12302. Do you know that many of those roads are now being restored within the last two or three years?—They were starting that, when I was Collector in Coimbatore, in one or two places.

12303. *Sir Ganga Ram*: Who scrutinises your projects costing crores, I mean professionally? Is the Chief Engineer the final authority?—No; the Government are. Some of the larger projects require the sanction of the Government of India and of the Secretary of State.

12304. Do you submit the project in full detail to the Secretary of State, or do you simply take formal administrative sanction?—All I have to do with a large project is this: it is sent to me and the P. W. D. tell me how much they can irrigate; they tell me the approximate cost and I am asked to report if the ryots will take this water and if they are likely to pay a water rate that will make it productive.

12305. That is all right. I am talking about the professional scrutiny of the designs?—I know very little about that.

12306. Who is the final referee?—You mean professionally?

12307. I ask you, is the Chief Engineer the final referee as representing Government?—I do not know; I have nothing to do with it.

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12308. Could you kindly give me a map of this Presidency showing the Government waste lands marked in distinctive colours?—Yes.

12309. *The Chairman*: I think you estimated the zamindari area at one-third of the total; did you not?—Yes.

12310. I find from the *Statistical Atlas* of 1924 that the total square mileage of the Presidency is 142,255, that of the Agency districts 19,287, giving 122,968, while that of the zamindari districts is estimated at 21,962, or about one-sixth of the total area less the Agency districts. Would you be prepared to correct that on those figures?—Yes, but part of the Agency is zamindari.

12311. That could not have the effect of making your original answer correct, could it?—Probably not. Including the Agency tracts the permanently settled area is a little less than one-third of the total: excluding the Agency tracts it is about one-fifth.

12312. Are the productive irrigation schemes yielding a net revenue?—Yes; a scheme is classed as productive only if it yields a net revenue.

12313. I understood from you that it was productive, if it yielded the charges on the debt by which it was constructed; must it yield a net revenue as well?—No; if it does not involve Government in any recurring expenditure, it is productive.

12314. I am asking you now whether any or all of your productive schemes do yield a margin over and above the service of the debt?—Some of them yield a large margin over and above the service of the debt.

12315. So that, if you regarded irrigation schemes, productive and non-productive, as a whole you might be able to finance certain so-called non-productive schemes from the margin of the net revenue yielded by the productive schemes?—If we had a separate budget for irrigation, if irrigation were kept separate, as Railways are now, then we should.

12316. Have you ever considered the advisability of that course?—I doubt if it is practicable.

12317. On what ground?—The balance is already earmarked for other services.

12318. Do you earmark particular funds for particular services?—No, but it goes into the general balance from which other services are met.

12319. I see the difficulty from the Treasury angle well enough?—That is the difficulty.

12320. But I am asking you whether you have ever considered the advisability on the ground of public advantage of making a change in that respect, and you tell me that you have not so considered it?—I have not.

12321. Do not answer this if it is too technical a question, but do you happen to know whether in non-productive schemes the water available is taken up each year by the cultivators in the area under command regardless of the season, or is the demand fluctuating according to the season?—There is one large canal, the Kurnool-Caddapah canal, where the demand is much greater in seasons of short rainfall; in normal seasons the demand is not great.

12322. So that the demand there fluctuates?—Yes, very greatly.

12323. And to the extent by which that demand fluctuates, the scheme financially is more or less unproductive?—Yes, in some years.

12324. In some years it is less non-productive than in others?—Yes.

12325. Have you ever considered the possibility of encouraging the reclamation of so-called non-culturable areas by offering these areas out to speculators on favourable terms?—They can get them free at present.

12326. They can get them free?—Practically; most of that waste land is granted free, only subject to payment of assessment.

12327. Would it be open to ventures in that direction to irrigate the land?—Yes, if they could find the water.

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12328. Would it be possible for Government to provide the water under existing circumstances, without prejudice to existing cultivation? Could that be done?—If that were so, there would be plenty of demand for the land.

12329. In other words, you do not think that there is any land under command of irrigation which is unculturable?—If you mean uncultivated land, there would be a very great demand for any land which is commanded by irrigation, if it were waste.

12330. On quite a different question, I observe (from the note on “Taccavi Loans” provided some time ago for the Commission by your department) that an allocation of, I think, Rs. 1,000 is set aside for loans on account of seeds. “The maximum amount which may be granted for the purchase of seed grains is Rs. 1,000.” That is to each borrower?—Yes.

12331. When loans for the purchase of seed are advanced, is any attempt made to persuade the borrower and the buyer of the seed to buy the improved varieties recommended by the Agricultural Department?—I do not know.

12332. Do you think it might be an opportunity to put the cultivators into touch with the department?—I think so.

12333. *Sir Henry Lawrence*: I understood you to hold the view that emigration does assist the emigrant to improve his condition in life?—Yes, he gets good wages in Burma, I believe.

12334. Is there any organisation to assist an emigrant to find a place where his labour will be appreciated?—There are a lot of private organisations; there are a good number of so called contractors, at least there were in Ganjam when I was Collector there, who arranged passages for the emigrants, to Rangoon chiefly.

12335. There is no Government organisation?—I do not think there is any for that particular emigration; of course it refers to emigration to a part of British India.

12336. Would expenditure for that purpose meet with the approval of the Legislative Council?—It does not seem to be necessary.

12337. There is no desire on the part of landlords to keep their labour immobile, rather than to assist emigration?—I do not think the landlords object at all to that emigration, because it is seasonal. It is emigration in the slack season when there is little doing.

12338. To what emigration do they object?—I fancy they object more to emigration to the tea gardens in Ceylon, which is more or less permanent, so far as I know.

12339. Is that objection based on the fact that they lose their opportunity for cheap labour?—It tends to make labour more expensive, owing to the competition.

12340. Is that the basis of the objections to other emigration overseas?—I imagine that that is at the back of a good deal of the objection to the emigration that I have come in contact with.

12341. Is there any emigration to the West Indies, or British Guiana?—I have not had any experience of that; I have never served in a district where there was much emigration to the West Indies or British Guiana.

12342. From what part of the Presidency does that emigration to the West Indies, British Guiana and Fiji take place?—I am not quite certain of that; I think it is from the South of the Presidency.

12343. Your experience is in the North?—Yes.

12344. Ganjam?—Yes.

12345. No emigration takes place from there to the overseas settlements?—Practically, all the emigration in Ganjam was either to Burma or to Assam.

12346. So that you speak only from a very general knowledge when you say the objection is based on the desire to retain labour at cheap wages?—That is what I generally gathered.

(The witness withdrew.)

APPENDIX I.

(1) Statement showing the number of pattas of various values held in the Madras Presidency for Fasli 1330 (1920-21).

Description.	SINGLE PATTA.				JOINT PATTA.				
	Number of pattas.	Extent of holdings		Assessment.	Number of pattas.	Number of share-holders.	Extent of holdings.		Assessment.
		Dry.	Wet.				Dry.	Wet.	
1	2	3	4	5	6	7	8	9	10
		Acres.	Acres.	Rs.			Acres.	Acres.	Rs.
Pattas on which the payment is Re. 1 and less	508,620	290,719	19,423	3,12,815	377,491	1,246,576	176,582	11,836	2,00,277
Rs. 10 and less but over Re. 1.	1,679,176	4,553,830	511,348	70,56,929	926,440	2,925,695	3,085,823	210,530	40,15,228
„ 30 „ „ „ „ Rs. 10	574,975	3,519,929	841,533	89,16,101	376,492	1,317,197	2,857,253	387,678	55,16,161
„ 50 „ „ „ „ „ 30	140,892	1,323,786	481,494	45,90,551	84,944	314,596	976,507	229,080	26,93,245
„ 100 „ „ „ „ „ 50	83,940	1,126,599	573,167	49,13,746	45,718	168,439	740,411	261,949	27,16,976
„ 250 „ „ „ „ „ 100	33,293	757,043	563,210	45,11,975	16,455	72,772	482,565	215,135	20,70,659
„ 500 „ „ „ „ „ 250	6,761	300,263	292,188	21,83,249	2,715	12,947	141,837	84,226	7,93,170
„ 1,000 „ „ „ „ „ 500	2,143	244,415	197,296	13,74,866	738	4,073	76,196	48,969	4,31,285
Over Rs. 1,000	782	223,375	195,293	12,59,372	170	2,591	78,182	35,724	2,87,931
Total	3,030,582	12,345,979	36,74,952	3,51,19,604	1,831,163	6,084,886	8,615,356	1,485,127	1,87,24,932

Total number of single and joint pattas
 Total assessment

4,861,745
 Rs. 5,33,44,536

(2) Statement showing the number of pattas of various values held in the Madras Presidency for Faslî 1335 (1925-26).

Classification of Holdings.	SINGLE PATTÀ.				JOINT PATTÀ.				
	Number of pattas.	Extent of holdings.		Assessment.	Number of pattas.	Number of share-holders.	Extent of holdings.		Assessment.
		Dry.	Wet.				Dry.	Wet.	
		Acres.	Acres.	Rs.			Acres.	Acres.	Rs.
Pattas paying—									
Re. 1 and less	615,262	338,607	26,051	3,71,630	471,096	1,780,692	220,799	17,162	2,65,067
Rs. 10 and less but over Re. 1 .	1,890,396	4,861,046	553,049	77,68,341	1,046,605	3,382,964	3,815,074	268,960	44,77,139
„ 30 „ „ Rs. 10 .	617,093	3,533,563	860,852	94,66,741	370,458	1,308,109	2,703,033	433,323	57,37,531
„ 50 „ „ „ 30 .	144,721	1,346,680	480,830	49,52,134	77,533	299,910	919,119	247,539	26,21,425
„ 100 „ „ „ 50 .	83,230	1,152,873	574,439	52,11,883	39,339	154,472	658,289	238,268	24,49,674
„ 250 „ „ „ 100 .	32,835	769,963	561,147	46,28,286	13,460	63,818	426,192	205,295	18,58,620
„ 500 „ „ „ 250 .	7,042	333,989	292,702	22,56,905	2,402	12,049	133,338	83,512	7,24,413
„ 1,000 „ „ „ 500 .	2,404	214,760	203,413	14,92,572	588	3,966	63,797	43,900	3,75,597
Over Rs. 1,000	862	256,717	203,033	14,89,496	189	2,438	62,908	36,960	3,14,228
TOTAL .	3,393,845	12,838,198	3,764,516	3,76,37,988	2,021,670	7,012,418	8,502,549	1,574,919	1,88,23,694

Total number of single and joint pattas 5,415,515

Total assessment Rs. 5,64,61,682

APPENDIX II.

Instructions issued by the Board of Revenue on some of the more important points for investigation by the Special Officer, Upper Bhavani Dry Project.

The first point to be considered in connection with the Upper Bhavani Dry Scheme is the question of localising the irrigable area under the project. In order to avoid waste in the use of the water the Board considers that the irrigable area should be localised. This work will require a Special Officer whose main object will be to select for irrigation compact blocks of land close to the distributaries. The total commanded area in round figures is 1,200,000 acres, and the irrigable area which represents the portion of the commanded area for the irrigation of which there is water is 160,000 acres—first crop (April to July) and 260,000 acres—second crop (August to November). It would probably be more economical to supply water in the second crop season also to most of the land that receives water for the first crop. On the other hand, from the point of view of benefiting a larger area it may be desirable to give water to different areas in the two seasons. Even if the latter of the two courses is preferred the irrigable area will be roughly only a little more than a third of the commanded area. At Coimbatore Mr. Ramalinga Chettiar, M.L.C., suggested that if the irrigable area were to be localised the taluks of Pollachi and Udumalpet should be omitted as they are better off in the matter of rainfall and irrigation than the rest of the commanded area. The present irrigable area in the Pollachi taluk is negligible and the northern half of Udumalpet taluk is almost as dry as any other part of the district. The least objectionable course seems to be to localise areas in each taluk proportionate to the commanded area, subject of course to the principle of making the most economical use possible of the water. All these questions will have to be investigated by the Special Officer. It may also be advisable to consult the Agricultural Department on the point whether it would be better to give water to the same lands for both crops or not.

2. The next point is whether an inclusive fee should be levied on the localised irrigable area. From the Settlement Commissioner's discussion with the ryots it appeared that the majority of them were not in favour of such a fee and that they would prefer a higher water rate and the Board considers that this would on the whole be more desirable. There would probably be difficulties in collecting the fee from all the ryots owning lands in the blocks which will be localised for irrigation. Even if the substantial sum of a crore of rupees (at Rs. 25 per acre, it would have to be more if first and second crop lands were not localised separately) were realised from the fee it would, on the basis of a seven per cent. return, reduce the water rate only to something over Rs. 9 an acre. It is however most unlikely that the fee would realise a crore, and the Board is satisfied that with a water rate of Rs. 11-4-0 or even more the demand for water will greatly exceed the supply. Another serious objection to the levy of the fee is that it would tie the hands of Government by conferring a permanent right on the ryots who paid the fee, whereas it is most desirable that Government should have a free hand in the matter of distribution of water.

3. The Board's proposal is that the irrigable area should be localised on the lines suggested in paragraph 1 above and registered as "irrigated dry." So long as a field is registered as "irrigated dry" it will pay the prescribed water rate whether it uses project water or not but in case of failure of supply remission of water rate would be given on much the same principles as remission on wet lands. Both the ryot and Government should have the option, at least for some years, of transferring "irrigated dry" to "dry" when the liability to pay water rate would cease. Government will of course not exercise the right unless when absolutely necessary, so that ryots will not ordinarily suffer from uncertainty as to the real value of the land.

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Legislation will be required to give effect to these proposals as at present Government have no power to charge water rate unless water is used. The ryots to whom the proposal was explained, were unanimous in accepting it. The fact is that the ryots are quite well aware that if Government find serious difficulties in the way of the Upper Bhavani project the Lower Bhavani project offers a safe and simple alternative, and they are willing to accept practically any conditions which the Government may think necessary to safeguard the interests of the general tax-payer.

There are certain obvious advantages both to Government and to the ryots in the above proposals. Power is left to Government to make changes which are found advisable in the localisation of the irrigable area. Inspection for revenue purposes is also reduced to a minimum as only the lands outside the blocks of "irrigated dry" will have to be inspected for purposes of water rate. The advantage to the ryot is that they get water in preference to other ryots who hold some 65 per cent. of the commanded area.

4. There is another matter in regard to which legislation will be necessary to safeguard the interests of Government. In 1906 the area protected by wells was some 150,000 acres; it is probably nearer 200,000 acres now. It will obviously be necessary to take precautions against the use of project water for these lands without payment. A possible remedy is legislation on the lines of the Irrigation Act in force in the Punjab (Northern India Canal and Drainage Act No. VIII of 1873). Rules under this Act provide that where part of a field is irrigated with canal water and part with water from a well the whole field will be treated as irrigated with canal water "unless a clearly distinguishable boundary demarcated by a ridge not less than half a foot high exists between the two portions." For the Upper Bhavani project the rule would have to be to the effect that in the case of a field protected by a well which lies within the limits of a block of irrigated dry all the crops cultivated will be treated as irrigated with canal water unless it is demarcated by a ridge in such a way as to prevent project water from irrigating it. It seems however to the Board that in practice the rule would be of no avail. It would not be difficult to pierce such a ridge; at any rate water will percolate through it. In view of the fact that the area is honeycombed with wells such a rule would paralyse the administration of the project and seriously affect the revenue under it. The best course seems to be to provide that lands classed as "irrigated dry" should pay the full water rate whether they are protected by wells or not. The ryot would not be unwilling to pay water rate on the whole of his holding even though a portion of it might be protected by a well or wells. A point to be considered in this connection is whether such lands should be charged a lower rate of water cess. The Board does not think that there is sufficient reason for giving them any concession for it is certain that the ryots will take project water by flow whenever it is available in preference to baling water from their wells. They will use their wells to supplement the project irrigation if they do not get it at the exact time when they want it. It seems to the Board that demarcation by ridges will be necessary for ordinary dry fields unprotected by wells which lie within the limits of a block of irrigated dry lands. The Board has not the slightest doubt that in this case and in the case of lands protected by wells the ryot will be only too glad to get water but the rule will prevent a litigious ryot from making himself a nuisance.

5. Another matter in which it will be necessary for Government to take power by legislation relates to what is called in the Punjab the division of fields into "kiaris." The object is to economise water by preventing wasteful application by ryots which may ordinarily amount to 25 per cent. of the supply. The effect of "kiaris" is to reduce to a minimum the time occupied in filling the fields to the required depth. The size of "kiaris" will depend on the discharge from the pipe or sluice. A copy of the Punjab Irrigation Circular which explains the procedure clearly is enclosed*. There is no reason why a similar rule should not be adopted in Coimbatore. It is in accordance

* Not printed.

with the existing practice in irrigation from wells. The penalty in the Punjab for irrigation without preparing the land for irrigation by division into *kiaris* or compartments is a charge not exceeding half the water rate. Though the fields in Coimbatore are far more irregular in shape than in the Canal Colonies of the Punjab (where the survey is simplicity itself and the fields are square blocks of 10 acres) there will be no difficulty in enforcing such rules and they will undoubtedly make for economy in the use of the water.

6. Government desired to have an assurance that the revenue would be easily realisable without specially penalising wet cultivation. The Board is very doubtful if this is possible. Paddy cultivation is much more profitable to the ryot than dry crops, and the temptation to grow paddy will be irresistible unless a specially high rate—say Rs. 50 or Rs. 60 an acre—is charged for its cultivation. It is possible of course that with the development of irrigation in the country it may be found practicable in the not distant future to sell water by volume to the ryots. If that day comes all restrictions as to crops will automatically disappear. There are however, certain practical difficulties which must be faced. Mr. (now Sir Charles) Innes in paragraph 29 of his report printed in B. P. No. 140, dated the 6th May 1907 suggests that there will be a considerable area of lands on which it will be impossible to grow dry crops. The Board thinks he has possibly overestimated the extent of these lands, but it is obvious that paddy cultivation must be allowed on such lands and special provision can be made for this. The case of lands protected by wells on which it is now the practice to grow paddy is more difficult. There are apparently no statistics of the extent of paddy cultivation under wells, but there are wells in Coimbatore where at the end of the monsoon there is gravitation flow, and the Board would not be surprised if the extent of such paddy cultivation turned out to be considerable. It is a question which requires detailed investigation by the Special Officer.

7. The Board has made no attempt to prepare any draft of the legislation required to give effect to the suggestions above, as it would be waste of time to do so unless and until Government approve of the general lines proposed. The best method of overcoming the legal difficulties would be to enact a small Special Act for this project to confer on Government the necessary powers. It would be difficult to include in a general Irrigation Act the provisions necessary for the administration of large individual projects as such provisions might often conflict with the principles enunciated in the General Act. Further a Special Act would probably encounter less opposition in the Legislative Council.

8. There are certain other minor points in connection with the scheme to which the Board will briefly refer.

At Lyallpur Canal Colony the Executive Engineer (Major Hammond) showed the Commissioner of Land Revenue and Settlement an arrangement by which the distribution of water at the tail of the Rakh branch of the Lower Chenab Canal was automatically controlled, so that when the canal was running full each distributary received full supply; if the canal had a $\frac{2}{3}$ supply each distributary also had a $\frac{2}{3}$ supply, and so on. Thus the human equation (*alias* the P. W. D. lascar) was totally eliminated. Similar arrangements under the Bhavani Project would be of great advantage both to Government and to the ryot.

According to paragraph 7 of the Chief Engineer's report there is an extent of nearly 48,000 acres of waste land (columns 3+6 of the statement) commanded by the project. Assuming that 35 per cent. of this will fall within the localised irrigable area it will be available for sale and might fetch about Rs. 16'8 lakhs at Rs. 100 an acre. This however will have no material effect on the water rate. In this respect the project is a great contrast to most of the Punjab large projects. The Sutlej valley project, for example, is likely to cost about 20 crores, but there is such a large extent of waste land under it to be sold that with a total charge of about Rs. 6 per acre for land revenue and water rate a return of between 15 and 20 per cent. is anticipated.

N.B.—The Special Officer has also general instructions to report on all other relevant points which come to his notice.

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APPENDIX III.

Statement showing progress of Forest Panchayats.

	Sq. Miles.
Extent of ryots' forests according to Mr. Whitehead's classification	2,803
Extent that is likely to be classed eventually as ryots' forests and brought under panchayat management	3,800
Area under panchayats prior to the advent of the panchayat staff	444.7
Area for which panchayats were organised by the Forest Panchayat staff in 1923	152.2
1924	318.1
1925	73.6
1926*	1,164.2 (up to end of September 1926.)
	2,153

* Staff strengthened.

Lease amount payable by panchayats formed up to the end of September 1926 Rs. 95,264

N.B.—The question of strengthening the staff further so as to complete the formation of panchayats by the end of next year is under consideration.

APPENDIX IV.

Indebtedness of the ryots in typical villages as disclosed in some recent Resettlement Scheme Reports.

District.	Number of villages examined.	Amount borrowed on mortgages.	Amount of unsecured debt.	Number of ryots examined.	Number not in debt.	Percentage of ryots not in debt.	ORIGIN OF DEBT.											REMARKS.	
							Per centage.												
							Purchase of land.	Improvement of land.	Purchase of livestock and agricultural implements.	Construction of houses.	Marriage ceremonies.	Litigation.	Ordinary family expenses.	Trade and speculation.	Discharge of debts of relations and friends.	Discharge of old debts.	Other causes.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Tanjore {	Delta .	42	Rs. 4,04,095	Rs. 6,20,970	1,602	897	56	18½	...	*	1	20	8	42*	3	...	7	½	*Apparently includes (9) & (10).
	Upland	4	62,735	27,519	208	74	36	27	...	*	...	10½	1½	29*	13	...	19	...	
Bellary and Anantapur (black soil taluks)		100	10,06,038*	7,73,581	...	...	...	27	3	8	11	24	4	6	11	1	2	3	Blanks show that information is not available.
Bellary (red soil taluks) . .		104	7,71,558	8,62,205	...	...	...	23	7	22	3	21	3	6	10	...	3	2	
Anantapur (red soil taluks) . .		37	4,36,581	4,96,201	...	...	...	16	13	17	2	17	2	17	10	...	6	...	
Kistna and Godavari—									{										
Delta . .		71	4,40,982	11,36,780	1,799	674	37	28	24	8	14	1	10	3	...	8	4		
Upland . .		8	39,060	46,648	131	52	40	18	29	6	7	2	9	1	...	24	4		

APPENDIX V.

Statement showing the amount of Tacoavi Loans advanced and recovered.

Fasli year.	Amount of loans advanced during the year.	Amount payable during the year and the balance remaining unpaid out of sums which became due in previous years.	Amount recovered during the year.	Balance repayable during the year.
	Rs.	Rs.	Rs.	Rs.
1325	7,51,251	7,99,575	7,14,131	85,444
1326	7,44,282	8,05,761	7,16,983	88,778
1327	8,24,572	8,25,999	7,09,001	1,16,998
1328	10,39,362	9,29,289	7,50,343	1,78,946
1329	14,56,251	10,81,154	7,70,027	3,11,127
1330	16,27,589	13,43,367	8,89,607	4,53,760
1331	21,38,211	14,85,716	9,57,141	5,28,575
1332	14,81,127	17,81,782	12,76,227	5,05,555
1333	35,62,461	16,85,441	11,20,513	5,64,928
1334	37,19,663	25,25,943	18,93,852	6,32,091

APPENDIX VI.

Statement of Applications for Taccavi Loans received and rejected.

Year.	Number of applications received.	Number of applications rejected.	Percentage of column (3) to column (2).
1)	(2)	(3)	(4)
1921-22	71,296	21,662	30·3
1922-23	30,603	9,746	31·8
1923-24	44,004	9,201	20·9
1924-25	91,016	30,038	33·0
1925-26	49,691	17,521	35·1

APPENDIX VII.

	Percentage to area sown.
1. Total Area irrigated	27
2. Area irrigated under Government canals $\frac{(38.7 \times 27)}{100}$.	10.5
3. Area irrigated under other Government sources (tanks, springs, etc.), $\frac{(41.3 \times 27)}{100}$	11.1
4. Area irrigated under wells $\frac{(17.3 \times 27)}{100}$	4.7
5. Area irrigated under private canals $\frac{(2.7 \times 27)}{100}$.	0.7
	27.6

**Sir GEORGE PADDISON, I.C.S., C.S.I., K.B.E., Commissioner of
Labour, Madras.**

Written Memorandum.

LABOUR AND ITS MOVEMENT.

Strength.—Cultivation in this Presidency supports as workers and dependants, 30,000,000 out of 43,000,000 inhabitants as enumerated in the census of 1921, or 7 out of every 10 persons. Of these, farm servants and field labourers number 3 out of every 10 as is shown in the following table:—

Class.	Total.	Men.	Women.	Dependants.
Farm servants . . .	2,927,459	961,911	630,055	1,335,493
Field labourers . . .	5,323,686	1,354,260	1,676,339	2,293,087
Total . . .	8,251,145	2,316,171	2,306,394	3,628,580

This gives only one labourer for every 4 acres of cultivated land including irrigated land in the Presidency. A very large number of persons, however, classed as cultivating owners and tenants are also labourers, but the exact number cannot be calculated. In a number of typical villages at the recent resettlement in Bellary and Anantapur districts, 28 per cent. of the farmers combined with their own job that of agricultural labourer. In Tanjore district, a typical delta district, there is a regular system of tenancy which is practically a wage contract, the landowner giving his tenants a share of the crop in lieu of the wages but advancing a considerable proportion of the cost of cultivation and often employing other labourers to help them in reaping and transplanting the crop. Often too, the smaller owners or tenants assist each other without any payment in times of urgency such as transplantation and harvest seasons.

The village workmen who chiefly affect the agriculturists are the blacksmith and the carpenter and the farm-labourer proper. The *panchangamdar* who predicts the weather and is paid by the farmers, can hardly be considered a labourer. The blacksmith and the carpenter belong to particular castes and their job is generally hereditary. Their pay is sometimes in the shape of a plot of land held free of assessment on condition of service and in addition (if the land is not enough to support him) a percentage of the crop given at harvest time calculated on the basis of so much for each plough. Sometimes a cash wage is given. These workers are generally well off.

The farm labourers proper are divided for the purposes of the wages census into ploughmen, sowers and transplanters, weeders, reapers and harvesters, and others. As a matter of fact, in this Presidency, except ploughmen whose special duty is to look after the cattle, these workmen are all the same persons. It is true that at the time of transplantation or harvesting, extra labour may be secured if possible. The sowing is frequently done by the farmer himself as it is a difficult task. If seed is broad-casted and even if a drill is used as each seed is dropped in by hand into the hopper, it requires care to see that the right amount of seed is used. The herdsman who looks after the cattle or goats is generally a small boy or an aged man. Transplantation of rice is generally done by women, reaping sometimes by both men and women, but often women are engaged in carrying the crop

Sir George Paddison.

to the stack or threshing-floor on their heads. Cotton-picking, tea and coffee plucking, and ground-nut picking are also done by both women and men.

Wages given in different districts vary a great deal. In the Agency tracts of Ganjam and Vizagapatam, the average for an ordinary unskilled labourer is only about As. 2 a day; similarly in the northern part of South Kanara, in Vizagapatam and on the Deccan plateaux which is mostly unirrigated land, wages are low. The higher wages are to be found in the delta tracts near large towns and large centres of industry, or near the hill stations. For example, in Tanjore, Trichinopoly and Madura (in the tracts irrigated by the Cauvery and the Periyar) As. 6 or over is generally paid; near Kodaikanal, Coonoor and Ootacamund, similar labourers get 8 annas; the wages in Saidapet taluk, close to Madras, are over 8 annas a day while in Conjeevaram and Madurantakam taluks in the same district but farther from Madras, it is just over 4 annas. Ploughmen get rather more than ordinary agricultural labourers except at such times of urgency as transplanting or reaping seasons when the occasional labourer also gets more than at other seasons. But it must be remembered that ploughmen, as a rule, take part in harvesting and reaping. All these figures must be taken with a certain amount of salt as very frequently wages are paid in grain and the exact rate at which it should be commuted it is not easy to estimate. Moreover, an agricultural labourer frequently gets a number of perquisites such as cloth, a pair of shoes, money for betel or tobacco and an annual sum in cash. The same persons will be paid at different times in cash and in grain. Without vouching for the absolute accuracy for the figures, it may be said that an ordinary labourer gets between 5 and 6 annas, ploughmen between 6 and 7 annas and those engaged in reaping and harvesting about 7 annas. As a rule, but not universally, women get less than men, in most cases about two-thirds of what the men get. In the last census the number of women employed in proportion to the men showed a reduction from 1,187 to 996 to every thousand men. This is a sign of increasing prosperity. Another distinction between classes of labourers is that between farm servants and occasional labourers. On the face of it, the farm servant has a better time of the two as he frequently gets one or two daily meals, and in bad seasons, is kept on at the expense of the farmer, whereas the daily labourer has to go to some other district in search of work or to migrate generally to Burma or Assam from the north of the Presidency, to Ceylon or Malaya States from the south, and from the West Coast to the plantations of tea and coffee on the Anaimalais, on the Nilgiris, in Mysore or in Coorg.

The most fortunate type of the farm servant is one whose caste approximates to that of his master and who 'lives in'. Such a man is often treated as one of the family and shares their fortunes in good and bad times. On the other hand, a large number of these farm servants, especially of the low castes, who have no access to their masters' houses, are frequently very badly off. They are given an advance on some special occasions such as a wedding, and nominally the loan is to be repaid by service. If the workman is invaluable the master takes care that this loan shall not be worked off, and this man is attached compulsorily to this master for life and sometimes also his sons inherit the debt after their father's death. If the farm is sold the farm servants and the debt are taken over. The only way of their keeping from this form of servitude is emigration.

After an enquiry by Mr. J. Gray, O.B.E., I.C.S., the present Registrar of Co-operative Societies, great efforts are being made by Government to change this state of affairs: co-operative credit societies are being formed specially for the low caste labourers, house-sites are being acquired for them, schools are being started, water-supply improved, in many cases a well is being dug for the first time where before they were dependent on water from irrigation channels or were waiting at the well open to higher castes for some one to come and draw water for them. Land is being assigned to them wherever available either in the form of allotments which is the usual method adopted

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or in larger blocks where colonies are being started worked generally on a co-operative basis. The position of these labourers is worse in the *mirasi* districts of Chingleput, South Arcot, Tanjore and Trichinopoly. In these districts a few high-caste persons called *mirasidars* claim, rightly or wrongly, to have a prior right over all the land in the village including unoccupied areas and including the house-sites of the labourers. It is in villages of this type that emigration is most frequent as the low-caste labourer has no chance of acquiring any land and is at the mercy of his master, being liable to be expelled from the only land available for the house-sites if he should offend him. Great efforts are being made to improve conditions in this respect also, house-sites are being acquired and money advanced by loans from Government through co-operative societies and though the landowners objected most strongly when this work was begun and sometimes refused to employ their own labourers for some time, they soon found that the labourer who has a house of his own is much less liable to run away, has more self-respect, has acquired a habit of thrift, has frequently, in order to repay his instalments of the loan, given up drinking and is a much more valuable asset to his master than he was when he had no hope of improvement.

Conditions of Life.—No statistics are available showing the hours of labour. It varies in different districts both as regards the time of starting and leaving work and the number of hours worked. In one district, the workers wait till the morning mists are cleared before starting, in another in the dry heat of the East Coast or the Deccan they start earlier to have a longer time off in the burning heat. The Madras labourer works long hours but works fairly leisurely. The whole family often set out together for the fields, the baby is strung from a branch of a tree watched by one of the elder children while the father and the mother are at work. Sometimes the mother arrives later than the rest of the family as she first sees to her household work. The mother will leave her work to give her child nourishment, and in the midst of the day they all foregather under the shade of the tree to rest and have their meal. On the whole, there is no articulate desire for any regulation of the hours of labour and it would be impossible to enforce such regulation even if it were insisted on. Similarly it would be impossible to insist on accident or sickness insurance or maternity benefits. The mother will not stay away long from her work after her child is born. Nature does not require it in the case of persons bred in the open air in a hot climate. A real danger is the ignorance of the midwives whose insanitary methods may cause danger both to mother and child. Great efforts are being made to train these women, but the Indian labourer is very conservative and often prefers the old ways. There is no regular weekly rest-day, but Hindu and Mahomedan festivals are frequent, and Mahomedans and Hindus in this Presidency attend them all.

Health and Sanitation.—Hookworm is almost universal and though it does not often kill, it largely increases the danger from other diseases, and reduces the efficiency of the labourers. Efforts are being made to stamp it out, but this is by no means easy owing to the habits of the ordinarily bare-footed labourers. Of epidemics, plague, cholera and fevers are largely due to the insanitary surroundings. Here again, efforts are being made by lantern lectures and other propaganda to educate the labourers in more sanitary ways. Water-supplies are being improved, less congested house-sites are being acquired; on some of the plantations especially, improvements are being made in these directions. This question, however, is rather a matter for the Health Officers to deal with than a mere layman.

Recreation.—The ordinary labourer has not the time or the money for any elaborate form of recreation. His chief delights are a festival, a marriage ceremony, singing songs, or beating the tom-tom. The telling of stories is a source of constant delight. If money can be secured, a pilgrimage is sometimes undertaken to sacred places. There is also the toddy and the arrack shop, which sometimes absorb too much of the labourers' earnings.

Scarcity, Famine and Unemployment.—The elaborate system of famine relief which has been organised by the Government of India and the Local Governments over a series of years will doubtless have been explained in detail by other and more experienced writers. The Government attempt to maintain the normal level of subsistence but not of comfort. In consequence, during these periods, migration to other and more favoured districts or to more distant parts increases. It is in the season of scarcity that the problem of unemployment becomes important. In ordinary years, there is no lack of employment among most of the labourers except in the hot weather when some of the labourers find it difficult to get continuous employment throughout the week.

Migration.—There is a normal movement of population every year from the poorer districts to the highly irrigated tracts of the deltas. The number who so move cannot be ascertained. But thousands move every year from Vizagapatam, from the uplands of Godavari, Kistna and Guntur to the lands watered by the Kistna and the Godavari. In some cases these people finding conditions favourable, settle down in the districts to which they have come. As however these tracts consist of almost an unbroken sea of irrigated rice-fields they crowd very often on mounds rising out of the waters and their congestion is a serious problem which has been dealt with by acquisition of better sites and raising the level of the land acquired. Wherever possible, land in the possession of Government or taluk boards by the side of roads or channels is being allotted free. Similarly there is an inflow of labour in transplanting and harvesting seasons in delta tracts of Tanjore, Trichinopoly and Madura. From the West Coast, large numbers go every year to the tea, coffee and rubber plantations on the Nilgiris, in Mysore and Coorg, from Salem to the coffee plantations on the Sheveroy; from Coimbatore they flock to the Anaimalais to the tea plantations recently started there; from Ramnad, Madura and Tinnevely a very large number go annually across the borders to Travancore. They generally stay on these plantations from 10 months to a year and then return to their own villages. They are recruited by *maistris* who receive some commission and also receive some money for advances to the labourer which is repaid out of his wages. The hours of work on these estates is about 10 hours a day including an hour's rest at noon, but, generally speaking, the labourers are set a certain task which they may complete in their own time. If they do more than the task they are paid by weight according to the amount they have plucked. The men earn from 7 annas to 8 annas a day, women 5 annas and children 3 or 4 annas. In some cases the estate pays the expenses of the labourers' coming and returning to their villages. In the matter of educational facilities, medical attendance and the water-supply, they are better looked after than they are in the plains. What they dislike is the cold and the wet on the hills as compared with the warmer weather in the plains. In fact if they do not find conditions better they would not go as the Indian labourer is a great lover of his home. The chief migration in India itself is to Assam and Burma. This is different from the migration to Travancore, Mysore and Coorg mentioned above, as there the labourers go and return as a rule in a single year and if they do not like the conditions there, they are able to return without much difficulty. Assam and Burma need a long and expensive journey. In fact they are a good deal farther and more different from the conditions at home than is Ceylon. The total number recruited to Assam last year was 13,684 of which Ganjam and Vizagapatam contributed 9,000. Owing to the immense demand for labour in this and other tea growing areas consequent upon the rise in the price of tea, an effort to open up new districts in the Assam was pushed on too quickly at first and a number of labourers returned. This was due to the fact that the emigrants did not understand the conditions under which they were recruited of the places to which they were coming. The proper method of recruitment to which they have now returned is to send to each village a person who has worked for some time in the plantation and

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can explain to the people what the conditions are like and what they may expect.

No figures are available for the annual migration to Burma where the Madras labourer goes to work in the rice fields and in the rice-mills as the Burman is not a labourer by nature. Probably about 12,000 go every year. Most of them go from Ganjam, Vizagapatam and Godavari in the north of the Presidency. A certain number go from the south, Tanjore, Madura, Ramnad, Malabar and Tinnevely.

With regard to emigration outside India, the assisted unskilled labourers who are almost entirely agricultural labourers can only at present go to Ceylon and Malaya. A few have recently also been sent to Mauritius and there is talk of re-opening emigration to British Guiana. For practical purposes, the only places outside India which affect this Presidency are Ceylon and Malaya. The boom in tea has enormously increased the demand for labour in Ceylon and similarly in Malaya the demand for work on the Singapore Docks and also the removal of the embargo on the export of rubber have very greatly increased emigration to that colony. Representatives of the Government of India are stationed in both these Colonies to look after the interests of the Indian labourers and considerable improvements in their conditions have recently been effected in both the Colonies. On an average, 90,000 persons a year went to Ceylon as agricultural coolies in the last five years. A very considerable number of them were persons who had been there before. To Malaya as many as 70,000 were sent last year. A greater part of the emigrants both to Ceylon and Malaya came from the Tamil districts on the East Coast. Trichinopoly, North Arcot, Madura, Tanjore and Salem also contributed a considerable number. Tinnevely, considering its proximity to Ceylon, sent remarkably few.

On the whole, according to the latest Census report for the decade up to 1921, this Province suffered a net loss of a million and a half of labourers in excess of emigration over immigration. Since then there has been a steady increase every year in the number of emigrants. This of course necessarily means that the demand for those agricultural labourers who stayed behind increases and conditions of employment are also growing better. The labourers who return from Ceylon or Malaya with considerable savings and the wider idea of the world must necessarily increase the ambition of those who stay in their own villages. However unpleasant it may be to the farmer in India, on the whole the lot of the labourer is improved by this emigration so long as the conditions in the countries to which he emigrates are carefully watched and provision is made so that he can return if he wishes to do so.

■ *Conclusion.*—On the whole the lot of the agricultural labourer is not so bad as would appear to be from the low wages which he receives. His wants are few owing to the fact that as there is no cold weather he needs spend very little on his clothes. In times of scarcity he certainly suffers, but the alternative of migrating either to other parts of India or to Ceylon or Malaya give him the chance of improving his lot. Wages though very low show a continuous tendency to rise. Even the depressed classes whose lot is far worse are beginning to improve, through the action of Government and of a few, too few, social workers. And if these efforts are re-doubled, education is made universal, water-supply, sanitation and housing are taken even more vigorously in hand than they are at present, a great advance may come in the next ten years.

Reply to the Questionnaire.

QUESTION 18.—(a) (i) There is not in my opinion any need for measures to attract labour to other districts. The planting industry where there is a shortage owing to the expansion of the tea industry has its own organised labour and recruiting department. The deltas, as I have said in my memorandum, are supplied from the surrounding districts. Something might be done and is being done to supply them with better house-sites.

(ii) Large tracts of cultivable land do not remain uncultivated for want of labour.

(b) There is not any shortage of labour in this Province.

(c) In some districts, especially the dry districts of the Deccan, there are considerable areas uncultivated—generally poor soils. Steps are being taken to assign these lands to the depressed classes who are agricultural labourers. As a rule, they will remain labourers and cultivate their lands in their spare time. They will have to be financed through co-operative societies who however only give short-term loans, Government loans for land improvement and agricultural loans under the various Acts.

Oral Evidence.

12347. *The Chairman:* Sir George Paddison, you are the Commissioner of Labour in this Presidency?—Yes.

12348. You have put in a note of the evidence which you wish to give before the Commission and in that note you have referred to a memorandum, prepared under your instructions, which is also in the hands of the Commission. Do you wish at this stage to make any statement of a general character?—The only thing I should like to say is that my experience of agricultural labour, apart from my experience as a district officer, is mainly concerned with the depressed classes who are the 'untouchables' as they are called and to some extent with criminal tribes.

12349. Now first in the reply to our Questionnaire, you say in answer to question 18, sub-section (ii) (c), "In some districts, especially the dry districts of the Deccan, there are considerable areas uncultivated, generally poor soils. Steps are being taken to assign these lands to the depressed classes who are agricultural labourers. As a rule, they will remain labourers and cultivate their lands in their spare time." I take it that whether land is or is not cultivated, or indeed is or is not culturable, does not depend upon some entirely stable condition or test; it is a question partly dependent on economic changes with regard to which cultivation of certain land becomes unprofitable, and it may be a question of the availability of some new system of cultivation which in more than one tract in the world has placed large areas of land in the region of profitable cultivation which, before that invention was available, had remained entirely uncultivable; so that there is no definite category in which you can put land as between cultivable and uncultivable, is there?—No. These lands I was speaking of, especially in Anantapur and Bellary districts, are going under ground-nut cultivation. A great many of them have become more valuable as the sandy dry tracts will grow ground-nut though it is difficult for them to grow any other profitable crop.

12350. That is purely a money crop?—Yes.

12351. How far has this experiment in settling the depressed classes on this particular class of land been successful?—In all 180,000 acres have been assigned, but that is on all classes of land, I think.

12352. All classes of uncultivated land?—All classes of land in the possession of Government, land that is owned by Government but which has not yet been taken up by other holders. Apart from that type of land, there is also disforested land which was formerly occupied by small scrub jungle but which has now been thrown open; I have been able to secure some of that for the depressed classes.

12353. Are most of these lands so situated that the depressed classes can cultivate them and at the same time earn a wage as agricultural labourers from owners of other lands?—Yes, as a general rule I should say they are.

12354. And without the support of wages, would it be possible for the settlers on these tracts to maintain themselves?—Yes, in some cases, especially I should say with the disafforested lands which, when once they are cleared, are sometimes much more valuable than the land which has been left by the ryots.

12355. Precisely. You say they will have to be financed through co-operative societies which, however, only give short-term loans?—I have been away for a year and a half and I am told they are now giving long-term loans.

12356. We shall probably hear about that from the witnesses who will speak more directly on co-operation. I was going to ask you whether, in that part of these lands where settlement has already taken place, short-term and even long-term credit is in fact provided by co-operative organisations?—In some cases it is. Of course it all

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depends on the conditions. If we are getting a compact block it is very easy to form a co-operative society; but if there are odd little bits of land it becomes difficult. We have one interesting experiment in what are called *Lanka* lands, the islands in the Godavari and Kistna rivers, where these people take up these lands; these are extremely valuable lands and pay a high assessment which is levied on them through co-operative societies. They borrow money from the Kistna Bank and the Central Bank; but these are lands which are so naturally fertile that they do not require so much initial expense as the lands of more barren tracts.

12357. Rich alluvial soil?—Very rich soil indeed.

12358. You say they are taking them up. Who are? The depressed classes?—The depressed classes.

12359. How comes it that the more fortunate classes have not taken up these lands?—Owing to the fact that they are subject to erosion by the river or owing to more alluvium being deposited, they are only leased for short terms; in the old days they used to be leased by auction and a large number of them still are; but some of them have now been taken up at a rate fixed by the Government with reference to the average of the previous years. They are given to these people direct; they are not put up to auction because, if they were, these people would not have the chance of competing with their richer neighbours.

12360. That is part of a social policy carried out at the expense of the general tax-payer?—To some extent; not to a very large extent. I should think we are trying to get the economic rent.

12361. Then I did not understand your answer?—Sometimes in public auction the bidding becomes so keen that they go almost beyond the economic rent.

12362. *Sir Henry Lawrence*: How many thousands of acres are involved?—I could not tell you the exact figures; but it is not a very large area.

12363. 200,000 acres?—Nothing approaching that, not for the *Lanka* lands.

12364. 5,000 or 10,000?—Yes; that would be the utmost.

12365. *The Chairman*: Do you think your experiment in settling the depressed classes on uncultivable land has proceeded far enough for you to give us a firm opinion as to whether that experiment is likely to succeed?—No; I think I should like to see it carried on further to see whether it will be a success. In some cases it has succeeded and in others it is more difficult.

12366. When was it initiated?—About five years ago; I am not absolutely certain of the date.

12367. Have you formed any estimate as to what total population amongst the depressed classes you may be able to settle in this way?—No, I have not.

12368. I only wondered whether you could give the Commission any idea of the scope of the problem?—The difficulty is that in these places like Anantapur and Bellary the population is rather scanty at present and people probably would not want to migrate from a richer district to these districts. As a matter of fact the actual assignment of the lands is done through the Revenue officials and not through me.

12369. Do I understand from your answer then that the rate of settlement is somewhat retarded by the fact that in some cases there is no population contiguous to these districts available for settlement?—For the large area that is available, yes; there may be one village with perhaps a thousand acres or more and the number of agricultural labourers in that village would not be large enough to take it all up.

12370. Could any part of that section of the population which is in the habit of going overseas, to Burma, Assam, Malay, Ceylon, there to work

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for a wage, be persuaded to settle on these lands in question?—I do not think so, in those districts. Some do go to Assam from Anantapur and Bellary as it is.

12371. They find that economically more attractive than settling on these relatively poor lands?—I think they do.

12372. Now may I turn to the memorandum which has been in the hands of the Commission for some time? I do not know whether you wish to say anything in amplification of this memorandum?—No.

12373. You give some very interesting figures. There are only one or two questions I want to ask you. I want you to give the Commission a picture of what happens when a cultivator migrates from district to district within the Presidency in order to work as an agricultural labourer. Does he move with his wife and his family?—I think invariably, yes.

12374. There is no leaving of the family behind?—Except when they go to tea gardens; even then they sometimes take their families, some of them.

12375. *Dr. Hyder*: Does that statement apply to the migration of labour into Burma?—No; as a rule they do not take their wives and children to Burma; they send over money from Burma by postal money-order. But you are talking of the people in this Presidency, I think?

12376. *The Chairman*: Yes, I was and *Dr. Hyder* was talking of Burma. I understand that as regards the Presidency, except in some cases where migration is to the plantations, they take their families. How about their housing when they get there?—That is a thing we are trying to improve at present; to give them better housing or rather better housing sites on which they can put up houses and then they probably will remain.

12377. Am I right in thinking that housing in the hill districts is even more important than it is in the plains owing to the heavier rains?—Yes.

12378. What does it cost, do you know, to erect a reasonably healthy dwelling in a hill area?—I do not know.

12379. Are labourers expected to provide themselves with houses or are houses provided in every case?—Houses are provided in every case in the hills.

12380. By the planters?—Yes.

12381. Do some labourers migrate to work as ryots in the hills?—No; very very few. That is to say, there may be Indian planters, but they are planters. They do not migrate to work on rice fields and so on.

12382. I was thinking of work on very small plots?—No; not in my experience.

12383. Is there any statutory obligation upon the employer of labour which has migrated to provide a sanitary dwelling for that labour?—They have to provide housing and sanitation in some districts where the Planters' Labour Act is in force.

12384. Are there planters in districts where that Act is not in force?—Yes; in Coimbatore that Act is not in force.

12385. Who decides?—The Government decide to what places it should apply. The Planters' Labour Act also gives certain facilities for realising advances in addition to certain duties in the way of housing, etc.

12386. I am not familiar with the terms of that Act, but no doubt we can acquire a copy; is there any inspection of dwellings under that Act?—Yes, not a very regular inspection of them, but they are inspected.

12387. Do you happen to know whether there is a parallel Act in Assam?—I do not know the terms of the Assam Act. Assam of course has a Labour Board

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whose Chairman is a man from the Madras Civil Service; he looks after the interests of the people there.

12388. But you are not familiar with the particulars?—I cannot tell you the exact terms of the Act. I may say also that as regards the Planters' Labour Act itself a Committee has been recently sitting, but has not yet reported, on the question of the revision or even the repeal of the Act.

12389. How long has the enquiry lasted?—I do not know when it began. I was away when it was put on.

12390. You mean within a few months?—Yes.

12391. There is one sentence on page 314 of your memorandum which seems to me a little obscure. You are talking about wages in cash and kind and you say: "The same persons will be paid at different times in cash and in grain." Does that mean at different times while working with one employer or different times when working with different employers?—At different times when working with one employer. During seeding time he might be paid at so much a day in cash and when working during harvest, for instance, at so much per day in grain.

12392. And not certain other perquisites?—Those perquisites will be given on certain days, certain festivals and that sort of thing.

12393. Is the general effect of this system to make it extremely difficult to assess the true wage of the agricultural labourer?—Very difficult indeed.

12394. You say "water-supply is being improved, less congested house-sites are being acquired." That refers to ordinary ryotwari villages, does it?—Yes, chiefly in the delta villages.

12395. Who is supplying these communities with better water-supply?—Government.

12396. Is that a considered policy?—Yes.

12397. Will you tell us a little more about that?—What happens is this. I am referring now chiefly, but not entirely, to the depressed classes. They live in separate hamlets at some distance from the main village, and of course they have not, as a rule, access to the village well. They might have if the water-supply were a river, but where it is a well they almost certainly would not have access to it. As a matter of fact they might not have access to a village school though that is not necessarily so. In various other points like that they suffer from certain disabilities. I have District Labour Officers in some, but not in all, districts who send their men to each village in turn and send their report as to what are the needs of the village, namely, if there is a school whether the depressed classes are freely admitted and not merely nominally, if there is a water-supply whether it is possible for them to avail themselves of it. Then the District Labour Officer may report that the house-site is congested and suggest acquisition of land; or he may find that a well is needed: then Government funds are supplied to give them these wells; perhaps a school might be provided, or a pathway to the main road or burial ground; all those sorts of amenities are being supplied wherever necessary. The house-sites as a rule are paid for by the people themselves by instalments. Water-supply, roadways and burial grounds are given as free grants from Government at the expense of the general tax-payer. The house-sites also in some districts, not in all, are given through a loan made to a co-operative society and the money is repaid through that co-operative society. Before we acquire any house-sites we demand a deposit of the total amount which is likely to be required. A certain proportion of it must be deposited; the rest is paid in instalments. So that we hope that by doing this we shall be able to give them some stake in the country and although at first the landholders object to it, in the end they find that these people are less likely to migrate and more likely to remain on the land than in their previous condition. They are more independent of the landlord or the landowner, but they are more likely to stay in the village.

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12398. Are these loans for house-sites provided through co-operative societies wherever co-operative societies exist? Is that the rule?—We should create co-operative societies for the purpose.

12399. It is a society for holding these sites, is it?—Yes, of course thrift societies might be combined with it. Perhaps until the co-operative society had been formed for some time they would not have enough capital to pay the instalments. But when they pay the instalments the money will be paid into the funds of the co-operative society, and when they have enough to pay the instalments of the cost of the house-sites we should acquire the land.

12400. How old is the oldest society created for the purpose in question?—Eight or nine years old, I think.

12401. Are the indications promising?—I think very promising indeed. Considering the low wages they get I have been astonished at the regularity with which they pay.

12402. Do you feel yourself, looking to the success which is being attained, that a sufficient effort is being made to extend this scheme?—Yes, I do because it only applies to certain districts. In those districts that I was referring to before in Anantapur and Bellary and the Deccan districts they have no great difficulty in getting house-sites. It is only in the congested deltaic tracts that they have difficulty.

12403. When you talk of dry areas do you include areas where well cultivation and well irrigation are in use?—Yes, I should.

12404. Where you decide for one reason or another not to set up co-operative organisations, how do you provide the means for creating these new village sites?—In some cases we take individual instalments and do not pay the money to the co-operative society; perhaps we want larger experience in that case.

12405. To go back for the moment to the co-operative experiment, are you working there through the Co-operative Department?—Yes. We have the benefit of the advice of the Head of the department and he lends us certain Inspectors to look after the work for the time being.

12406. But the capital placed at the disposal of these societies is shown in your own budget?—Yes, it is shown in my own budget.

12407. Now, so far we have been discussing the betterment of the position of the depressed classes; but I suppose that classes other than those depressed are receiving help and attention in the matter of improvement of water-supplies?—As a rule they have access to the village water-supply which is provided by the taluk and District Boards.

12408. Do you know whether the Health Officer is responsible for these matters in this Presidency? Are you satisfied with the water-supply of the normal village community?—I should not care to give an opinion on that matter but my own general impression is that the water-supply is very good; at least it is very much better than it is with the depressed classes.

12409. I suppose where the depressed classes are not provided with their own water-supply they are sometimes forced to get water from a local tank or any other source?—Yes, or perhaps if there is an irrigation well they would pay somebody for the right to draw water from there; or perhaps they would pay somebody to draw water from the common village well and pour it into their pots; or they may wait their turn until some kind person comes and does it for them.

12410. Talking about the incidence of hookworm, you say it is almost general?—I believe the proportion is extraordinarily high among persons who do not wear shoes.

12411. The organism enters the body through the foot, does it not?—Yes.

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12412. You say that efforts are being made to stamp it out, but this is by no means easy owing to the habits of the bare-footed cultivators. Do those efforts come within the ambit of your department?—No, not at all.

12413. Perhaps you would rather not go into that. You are talking about the difficulty of housing these large aggregations of population that take place in the thickly populated rice districts at the season of the year when labour is most required?—Yes.

12414. You point out how they crowd on those natural eminences which give a certain degree of dryness?—Yes.

12415. Has the practice of building a dwelling house on piles ever been attempted in the Presidency?—I do not know it at all. They may have it in some hill places where they are afraid of wild beasts; it is very, very rare and practically does not exist to my knowledge.

12416. Has it ever occurred to you that it might be worth while making some experiments in that direction?—Then you would have to take land on the edge of the village and would encroach on the rice land.

12417. You mean there is no spare ground that is damp which is not covered by rice?—It would be covered by rice.

12418. You say, "Wherever possible, land in the possession of Government or Taluk Boards by the sides of roads or channels is being allotted free"?—Yes.

12419. My suggestion to you is that, having regard to the extreme dampness, it might be advantageous to the population if they were encouraged to build their houses on piles. That has never been attempted, has it?—No, but the main village is probably on a mound, you see.

12420. I am thinking now of these accessory dwellings which have to be provided in relation to the main question at issue, namely, migration of labour?—Yes.

12421. Would you care to express any opinion as to whether any experiment of that sort might be attempted?—I will look into it.

12422. Will timber be available?—Not as a rule.

12423. To revert for a moment to this migration overseas. First of all what is, broadly speaking, the arrangement? Is the agreement between the labourers and the agent who collects the labour and takes it over, or is it an agreement with the planter in Burma who is going to employ the labour?—In Burma they do not go to planters so much. In Ceylon and Malaya, which are regulated, the labourer comes over with no agreement; he is absolutely free to go to whom he will when he gets there. There is a common fund through which this emigration is done, and the labourers can go anywhere they like. In old days, in Ceylon, certainly, and, I think, in still older days in Malaya, the labourer received an advance before he left his village and until he had paid off that advance he could not go from one plantation to another. But now there is no such system; that has been completely abolished; when he goes to Ceylon or anywhere he is completely free to go where he will.

12424. So that he makes in fact no agreement at all?—None at all. Of course when he gets there he has to work somewhere, but he has no agreement.

12425. He puts down a deposit for his own fare?—No, that is provided from this common fund.

12426. All of it?—Practically all. They do not come under my ambit at all if they go over by what is called unassisted emigration.

12427. But the great majority of plantation labourers go over at the expense of this fund?—Of course, if there was a *Kangani* with him, (the *Kangani* being a man who is looking out for and recruiting for a particular

estate), he would take him to that estate; but if on the way to that estate the labourer was to say "I am going to leave you and go off and work for someone else" he could do so; or he could still do so after he had worked in an estate for a week.

12428. Has the change you described been due to legislation or due to practice?—Due to legislation, I think.

12429. That applies to Malay States as well as to Ceylon?—Yes; it was done earlier in Malay than in Ceylon, I understand.

12430. I suppose, a certain quantity of labour is still going up to Victoria Point, that is to say Lower Burma rubber districts?—That would not come under me; I do not know about it because it is part of India; it is the same as going to Bombay.

12431. I rather gather from your memorandum that you think the general effect of this emigration of labour is to keep up the value of labour in the Presidency?—I should like to say that the Wages Census is going on now, and the figures are beginning to arrive. I have some of these figures, but they have not been checked. The results are so uncertain that I think they must be checked. But this I do see, that they show a fall in cash wages; whether it is a fall in real wages or not, I cannot say.

12432. A fall, since when?—Since five years ago. Of course prices were higher then.

12433. Probably you will let us have these figures later after they have been checked and arranged?—Yes, but it will take some time, I think. I will note it.

12434. I should like to ask you for your view on the comparative economic position of the small cultivator outside the rice areas; the small cultivator on the dry tracts on the one hand, and the agricultural labourer throughout the Presidency on the other. Do you think that the small cultivator is better or worse off than the agricultural labourer?—I should certainly say the small cultivator is economically better off and certainly he is a much happier man, because he has more to do; he is not so dependant on his employer; if the employer does not want him for a day, he can go and work on his bit of land.

12435. When was your census taken prior to 1921?—Census of Wages?

12436. Yes?—Five years previous to that. But I am sorry to say that in that census instead of giving the average wage they gave the wages as varying between two annas and four or five annas or something of that sort, so that it is extremely difficult to compare.

12437. Those were the limits, and you did not know the average?—We did not know whether it was $2\frac{1}{2}$ or $3\frac{1}{2}$; there was no comparison. I have now had a census taken, and got the averages instead, so that they can be compared.

12438. Was the census that was made on the original plan of no help to anybody?—I think this other way is better; I can only say that.

12439. The original scheme gave no indication of the wages of the greater part of the labourers, did it?—I think they probably would cut out any extravagant isolated figure; for instance, if a carpenter drew Rs. 2, another Re. 1 and another As. 8, they would not say wages were from As. 8 to Rs. 2.

12440. Perhaps you could let us have those figures?—My successor will give them to you; I am going to South Africa on Monday.

12441. Your office will do that. Have you had any indication that the rise in the wages of agricultural labour between 1916 and 1921 (which I presume occurred) had the effect of turning a certain number of small cultivators into agricultural labourers?—No; I cannot give any indication.

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12442. Was there a substantial increase in the wages of agricultural labour between 1916 and 1921?—It is very difficult for me to say; because in 1916 they had only the figures between two annas and four annas, as I was saying: they did not give the average; they gave limits and I find it impossible to make a comparison.

12443. But you do not see any indications yourself that there has been a diminution in the number of small cultivators and an increase in the number of agricultural labourers?—No; I do not think so, but I think the census of 1921 will give you the number that was put in as field labourers. That will give the comparative proportion.

12444. There has been an increase in population; otherwise that would be a true comparison?—It will simply give the percentage of the population in old days.

12445. Percentage?—Yes; that was my idea.

12446. *The Raja of Parlakimedi*: Your jurisdiction does not extend as far as the Agency tracts, does it?—I have not any Labour Officer at present there, so I cannot say that any intensive work is going on there.

12447. What is the difficulty in having an officer there? Do you mean to have one?—It is purely a financial difficulty.

12448. Has it come to your notice that want of labour is being felt in certain tracts of the Agency in Ganjam?—Shortage of labour?

12449. Yes, because of this emigration to Assam?—I do not know what the effect of it was at all. Mr. Macmichael would have known better than I do.

12450. Have you tried to introduce among these labourers co-operative organisations? In the absence of these co-operative societies, when they want money at certain times, they are obliged to go to the professional moneylenders and borrow at a most exorbitant rate of interest. If somebody will take up the work of organising co-operative societies among them which will help them to sell their produce collectively and also create a banking habit among them, it will be saving them from a great deal of loss?—Yes. We have some thrift societies. As regards selling and purchasing, these labourers have not much to sell or purchase.

12451. You have not tried to tackle the question of the Agency tracts?—No; I have not as yet touched the Agency tracts.

12452. *Sir James MacKenna*: I find rather striking figures on page 317 of your memorandum. You say that no figures are available for the annual emigration to Burma, and add "Probably about 12,000 go every year." You mean every week?—I got that from some report. That is not my figure.

12453. We in Burma calculated the migration at about a quarter of a million?—It may be 12,000 a month.

12454. Probably 12,000 a week?—That figure certainly did not come from my department; I took it from some other source.

12455. From the evidence you gave to the Chairman I gather that the primary function of the Commissioner of Labour is the settlement of the depressed classes in agricultural areas; is that correct?—No; I should say that is mostly done by the Revenue Department in assigning lands to them. His chief object is to give them water-supply, schools, roads, burial grounds, dispensaries, and things of that sort.

12456. You know, we have been struggling with this Labour Department since the League of Nations pressed its importance upon us. Most of us have had academic inquiries into the cost of living and family budgets?—No; we have not done much in that way.

12457. So that your work has a most practical bearing on agriculture; what you are doing is the alleviation of the condition of the depressed classes

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who are settled by the Revenue Department?—It is still more; we have to look after all those who continue as agricultural labourers.

12458. You are not wasting your time on academic discussions?—I have not the staff. I have to do with factories, emigration, the Workmen's Compensation Act and so on, and I have not the staff.

12459. Mr. Macmichael gave evidence this morning that the migration from the Agency tracts, which he knows very well, was after the harvest. When is the harvesting season in the Agency?—About December.

The Raja of Parlakimedi: The end of December. The migration is not entirely from the Agency tracts; it is also from the plain tracts.

12460. *Sir James MacKenna*: They come across to Burma to work in the rice fields?—I believe so.

12461. That of course gives a considerable increase in the wealth of Madras, but at the expense of Burma?—Yes.

12462. Did you hear about a Bill in Burma known as the Black Bill, last year?—No; I was away from India last year; I was away for two years.

12463. *Professor Gangulee*: I desire to ask you one or two questions about the settlement work you are doing. When you settle agricultural labourers, what area of land do you give them?—I think three or four acres is the ideal for those going to remain as labourers, because there is practically no irrigated land to be assigned; it is all dry land.

12464. In the dry tracts have you any definite areas for particular localities? Do you try to find out what could possibly be called an economic holding for a particular tract?—No, we do very little in that way, because this again is done by the Revenue Department, not by us.

12465. The allotment is done by the Revenue Department?—Yes. The idea is that the labour supply should not be depleted, that they should be working labourers with land to fall back upon. Of course, when we start a colony on a disafforested area we should try and give an economic holding.

12466. That allotment is done by the Revenue Department, on your recommendation, independently of your office?—Yes. Sometimes my Labour Officer, if there were one in the district, might help in distributing it, finding the people, and perhaps getting a co-operative society to finance it.

12467. Who is the guiding spirit in settling these labourers on the land? For instance, if they want good seed, manures and things of that sort, to which agency would they go? In actually settling these labourers on the land, they do require some assistance by way of manure or seed? What agencies can they fall back upon to supply them with those requirements?—They get that from their employers generally, the caste ryots.

12468. There is no official agency working in that direction?—No.

12469. You say that co-operative credit societies are being formed specially for the low caste labourers; have they begun the joint cultivation system?—If you have compact areas, my own idea is, as I was telling the Chairman, that it is better you have a co-operative society which makes itself responsible for the assessment, or a loan may be obtained to finance them, but each patch of land must be run by the man himself, so long as he pays up his share to the co-operative society; that is what I aim at.

12470. Do you encourage spare-time occupations in these areas?—I do not think we have done much in that way.

The Chairman: If an agricultural labourer is provided with a piece of land, tilling that land becomes his spare-time occupation.

12471. *Professor Gangulee*: Is there any office watching the progress of these settlements, keeping accurate data of their progress, and so on?—Not if it is simply a matter of assigning land by the Revenue Department. If you had a co-operative society specially for these people, that would be

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watched by the district officer, who would report on it, or, if the loan were assigned to a co-operative society, they would keep an eye on it.

12472. The position, then, is that you simply point out to these agricultural labourers a piece of land, and let them do what they please?—Yes. Up till now it has been very difficult for an agricultural labourer who belonged to the depressed classes to get any land; that was the object of this scheme, and considerable areas of these lands have been reserved specially for them, so that they have a prior claim to that land, and it enables them to get these lands; but once they have got them, as a rule, they look after themselves.

12473. Do you know if any assistance is being given to the depressed class settlers by the Department of Agriculture?—I do not think so; but occasionally we would take the advice of the Agricultural Department; for example in the case of the disafforested land I would ask the Agricultural Department for their advice, but not otherwise.

12474. Do you travel in the Presidency in connection with your work as Labour Commissioner?—Yes, I do, especially in the districts where we have a Labour Officer.

12475. In this memorandum you mention in several places “labourers” and “farm labourers proper”; then you say “farm servants” and “field labourers”; these designations of labour are rather vague; who are the actual labourers?—The farm servant is the man who is attached to one master and gets a monthly, not a daily, wage; the field labourers are persons who are employed by the day; they may work for anybody.

12476. Further down you say ‘the farm labourer proper’; who is he?—There are the village workmen like blacksmiths, carpenters, etc., as opposed to the man who works directly at agriculture.

12477. Most of these labourers, as I understand it, have no land?—No, most of these labourers have no land. When I say ‘most of these labourers’ I do not include the carpenter and the blacksmith; they might have an *inam*.

12478. Have you, in your Labour Office, collected any data showing the labourer’s family budget?—No, I do not think I have any.

12479. You have given here a list of wages; you say the ‘ordinary unskilled labourer’ gets 2 annas a day; what do you mean by ordinary?—I mean an ordinary man looking after cattle or that sort of person, as opposed to a specialist.

12480. Further down you refer to the ‘repayment of loan by service’ in the case of the low caste farm servants. Do you agree that the condition you describe here is almost a condition of slavery?—It was so; I hope we can get rid of it; there has been a very great improvement in that direction since Mr. Gray wrote his report; that part of my department which deals with them is largely founded upon the conditions disclosed by that report.

12481. Is it possible to get some data from your office with regard to the labourer’s diet?—No, I do not think I can give that information.

12482. Could you not give us any information as to what he eats and so on?—With regard to the amount he eats?

12483. What he eats and the amount, both quality and quantity?—No.

12484. On page 315 you say: “There is also the toddy and the arrack shop, which sometimes absorb too much of the labourer’s earnings.” Has this habit of drink been increasing? What is the tendency with regard to the sale of liquor?—I suppose the Excise officials would be able to tell you that. The depressed classes were neglected, and nobody went near them; they did not know any other way of spending their money. Now, certainly in some villages, there has been a great improvement in that direction, be-

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cause of thrift; they have begun, through their saving, to repay the loans for general purposes, or pay for their house-sites and things of that sort.

12485. I suggest that perhaps the very presence of the toddy shop may be an obstacle to their cultivation of the habit of thrift?—Yes, if they drink to excess, certainly.

12486. I understand you have prohibited the sale of liquor in some dry areas; is that right?—Is that so? I do not know; probably that is the case since I have been away.

12487. I understand that the Excise Department will not grant any licenses in dry areas?—You mean in unirrigated areas?

12488. In dry tracts, where the population is mostly poor?—I have never heard of that discretion.

12489. I gathered it from a friend; I do not know whether it is correct. With regard to Emigration, do you consider that the Indian Emigration Act of 1922 has improved the condition of emigration?—Yes.

12490. The Act has succeeded in checking improper methods of recruitment?—I think so. Very often (it was not intentional perhaps), people were induced to go to distant places like British Guiana and Fiji, where they had no idea what the conditions were going to be like. Now, because of the fact that every emigrant has to appear and get a certificate from the village officer before he can leave that he leaves willingly, everybody in the village knows that he is going; that, I think, has had a certain effect; I do not say an exceedingly good effect, but it has had a certain effect.

12491. You say "if education is made universal"; have you any definite idea about the introduction of education among these labourers?—Making it compulsory, you mean?

12492. You say "if these efforts are redoubled"; are you referring to compulsory education?—Yes.

12493. Do you think that compulsory education would be necessary, or would help to improve the condition of the labourers?—I think it would; I think it would make them self-respecting; with many people, the depressed classes especially, I think, they would not feel they were being kept under.

12494. Do you think the time has come to do that?—It is very difficult, but it is being tried, I understand, in certain parts.

12495. *Sir Henry Lawrence*: What is being tried?—Compulsory education; it is being tried in certain of the towns; I am not talking of the rural areas. Of course, it cannot be brought in suddenly, because we have not got the necessary school accommodation and things like that; but they are working up to it in some places.

12496. *Mr. Calvert*: In your memorandum you give a total for farm servants and labourers of about 8 millions, and I see that about 8 millions are also included in the tenant class; is there any sharp division between these two classes?—Very little.

12497. They merge one into the other?—That is what I think. For instance, these persons I am speaking of, people who have got small patches of land, would be proud to describe themselves as landowners in the next settlement if they had a *patta*, but practically speaking they would remain labourers.

12498. I see large numbers are paying one rupee and less; are these mostly labourers?—Yes, I think so.

12499. Is there any tendency for the artisan class, the blacksmith and leather worker, to take to cultivation, or *vice versa*?—They generally have a little land; in the old-fashioned villages they have a piece of land allotted to them, but I do not think they are ceasing to be blacksmiths and becoming cultivators.

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12500. Take the ordinary village; has not a *pattadar* rather a higher social status than a blacksmith?—I do not think so; I think it varies very much.

12501. They do not try to take to cultivation just to raise their social status?—In some cases, perhaps; but they would find it difficult, because some of the cultivating classes consider themselves higher; I think it would go upon castes and not upon social status.

12502. Has any attempt been made in this Presidency to estimate the supplementals to agricultural labour in terms of money?—They tried for a time to convert those into money, at the time of the wages census, but it is very difficult, I think.

12503. It is possible to make out a long list of supplementals, is it not?—Yes, tobacco, betel, and things of that sort.

12504. Do the depressed classes get a free house-site?—Yes, as a rule.

12505. And free mud for the bricks for their houses?—You mean from the employers?

12506. From the village lands?—If there is any available, they would not pay for it.

12507. Would they get the material for the roofs of their houses free?—There again, they might have to pay; it will depend on the locality.

12508. Do they get free firewood from the village common?—In some cases they will, but in the delta tract, where it is all rice, they would get practically nothing.

12509. Would they find free grazing for their donkey or cow?—In some places, yes; round here in Madras, if you went out 20 miles in one direction, you would find large agricultural grazing grounds or *porambokes*, some of which I have tried to get for the depressed classes. There are large areas of grazing lands or *porambokes* which are free.

12510. Is there any practice whereby during harvest time these labourers are allowed to carry home a headload of the harvest as well as their payment?—As a rule I think they would be paid in addition to the headload, but I am not quite sure about that; I would not like to say anything about it.

12511. Has anyone ever tried to examine what happens to the little bit of the harvest given as charity? Does that go to the agricultural labourer or his children?—I do not know.

12512. But the gleanings after the harvest are given to the labourer's children and womenfolk?—Yes.

12513. The actual real wages of the agricultural labourer are probably considerable and certainly incalculable?—It is extremely difficult to calculate the total amount.

12514. The mere anna per day criterion does not mean very much?—No.

12515. You say on page 314 that the reduction in the proportion of women labourers is a sign of increasing prosperity?—Yes.

12516. You would say that of England?—Yes, I would. In my young days all women used to go working in the villages; now they do not. I think that is a sign of increasing prosperity.

12517. Is the fact that the womenfolk work in the fields here a sign of low social status?—I do not think so. I am not talking of social status. It would not be a necessity for them to go out; that is the point.

12518. Is it not the point that a man tries to raise his social status by withdrawing his women from labour in public?—Yes.

12519. Is it not necessarily a sign of increasing prosperity?—I think it would probably be a sign of increasing prosperity in England if he could really afford it.

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12520. Has not increased prosperity gone hand in hand with increasing female labour?—In factories you mean?

12521. Yes, factories, shops, post offices and offices of all kinds?—I do not think agricultural labourers' wives go to these fashionable employments. I should say the comparison would be with Lancashire or some place like that, where women go and work in the factories. If the men are well-off, their wives will sit at home and not go into the factories, that is my opinion.

12522. There is no idea of the daughters going to work for the sake of being independent?—No; I have never heard of that.

12523. On this question of a sort of permanent debt system, is that also found among the village artisan classes like weavers?—I do not know; I have no experience about that, but I should not think so.

12524. May I ask you what is the remedy you are applying?—I think the co-operative societies and the work which is being done to help these people are improving their position. There have been one or two cases in which the man has been turned out of the society.

12525. Are these depressed class people for whom you are trying to get small plots of land given any legal protection against attachment of their property for debt?—When we give land to a man of the depressed classes, we make provision that he should not alienate it except to Government or to co-operative societies or to a member of his own class. That is done in order to protect him in that land. The *sowcar* might lend him money on that land but he could not foreclose on the land.

12526. If you give him land, you do increase his credit?—Yes.

12527. And therefore he is more liable to run into debt?—That is true.

12528. But you have no special provision to protect his immovable property from attachment for that?—No, none.

12529. You recollect that the Fiscal Commission reported that one of the reasons why you had not got labour to move from villages to towns was the lack of housing accommodation in towns. Does that hold good for the Madras Presidency?—It is not nearly so bad as in Bombay; Madras has larger areas. I do not mean to say there is no housing problem in Madras, but it is nothing like so appalling as in Bombay.

12530. Is there not a complaint among the industrialists here of shortage of labour?—No, I do not think so.

12531. Such mills as you have have enough labour?—Yes.

12532. Then the Fiscal Commission also say that one of the special causes preventing the agricultural population from going into industries is the conservatism shown in the reluctance to adopt a life of industrial labour. Does that apply to Madras, to general conditions of life of industrial labour?—I have seen that a man would want larger wages to do industrial labour. He would much prefer, even if he gets a small wage, to work on the land rather than in a mill. But I do not know whether it prevents his going into a mill, because he gets more wages there.

12533. You have heard, of course, that certain people advocate industrialism as a remedy for the surplus labour power on the land, and the Fiscal Commission puts forward these two objections, shortage of housing accommodation in industrial centres and a general reluctance to adopt industrial life. Are there any other factors which retard rural life from coming into industrial pursuits?—No, except they like living at home; they like to sit there.

12534. Is the industrial labour here of a seasonal type?—Does it go there when there is no crop and come back again when the agriculture season is over?—To some extent; but not to such a large extent as in Bombay, because here persons living in Madras or near Madras might work on

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the land sometimes and then go and work in the mill. A good many of them have houses in villages near by.

12535. I understand that there is a little difficulty in Bihar coal mines; they work for a short time and go to the fields again?—They do. A certain amount of what they call absenteeism may be due to their going back to the land. But they are never absent here for such a long time as they are in Bombay, because the surroundings of Madras are so much more rural.

12536. On page 316, on this question of unemployment, you say that in the hot weather the labourers find it difficult to get continuous employment throughout the week. Is there any hope that they could be organised to work for the improvement of their own surroundings?—In what way?

12537. Village roads, village sanitation, better water-supply and so on, spending their labour on their own improvement?—They do to some extent. Sometimes when we are digging a well, they will do the digging of the pit themselves.

12538. But you require organisation?—Yes, and with their wages you cannot expect them to do much for nothing.

12539. *Mr. Kamat:* When was the Labour Department brought into existence in this Presidency?—In 1919-20, I think.

12540. And since then no official enquiry into agricultural wages has been held?—We have only this quinquennial wages census. It is the only thing we have, a cash wages census and an attempt to convert grain wages into cash, but it is not a real wages census.

12541. What I am talking about is perhaps a more comprehensive enquiry of the type held in the Bombay Presidency in 1924?—I have seen that report; but we have nothing of that sort. We are much poorer in Madras than they are in Bombay and we have no staff.

12542. Is that the only explanation?—That is the reason.

12543. But have you collected no official data about such important matters concerning agricultural labourers and others and is it not a great handicap to the steps to be taken towards the improvement of agricultural labourers?—With our limited amount of money, we can spend every penny on work which we know will be useful. If we had a larger amount we might then make an investigation as to how we could spend more money; but at present, with the money we have, all we can do is to dig wells and make pathways and that sort of thing.

12544. Is there any tendency in this Presidency for labour to move from villages towards urban centres?—Not nearly so much as in some other parts of India, because there are so few industries. I think there is a slight indication from the census figures. I think about 70 odd per cent depend on the land.

12545. That fact hardly helps us?—I mean a slightly smaller percentage depend on land than in the previous census, very slightly smaller.

12546. Have you noticed any tendency for the small agriculturists to become agricultural labourers? Is there any percentage which you can indicate showing that the class of labourers has gone up or has gone down proportionately?—I was suggesting to the Chairman that these would be found in the Census Report, under landowners, tenants and farm labourers. The figures are there, but they must be taken with a grain of salt; not that I mean that the figures are wrong, but socially the position of a tenant or a landowner is so much higher that people are inclined to put themselves down as such when for practical purposes they are agricultural labourers.

12547. Have you got in your office figures showing the cost of living during the War and the cost of living now for the agriculturists?—No.

12548. Even that takes money to find out?—Certainly it does; my clerks are all overworked.

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12549. Do you notice a tendency for the agricultural labourer at the present day to work a smaller number of hours than perhaps he did ten years ago?—I have no reason to think so.

12550. In this Presidency he has not taken the law into his own hands and he has not curtailed his hours of work?—I should say not.

12551. There is no such tendency?—I do not know of any such tendency.

12552. And during certain seasons of the year, do you notice any tendency for the employer to be at the mercy of the labourer rather than the labourer at the mercy of the employer?—No.

12553. There is no such phenomenon?—Do you mean to say in the harvest season, for instance?

12554. Yes?—That is so, I should say; but certainly I think you put it much too strongly if you say that the employer is at the mercy of the labourer. I do not think so.

12555. With regard to this process of emigration overseas that is going on, do you think the emigrants improve their position by going overseas?—I think they do. That is one special reason why they do emigrate. The Madras labourer is such a home-lover that he would not go unless he knew his position would improve. He may of course be deluded into going by wrong impressions of conditions, but he can always write to somebody from the village who knows the conditions and tells him. He always asks before he goes.

12556. Can you tell me whether the betterment of wages is the same thing with the labourer as the raising of the standard of living?—I should say generally it was. If you give him more wages, as a rule his standard of living will rise.

12557. Have you noticed this from the observations you have made on the home life of labourers? Supposing a man instead of getting 8 annas gets 12 annas, does it mean that he raises his standard of living?—Not necessarily; he may spend it on toddy.

12558. Or he may work less?—Yes.

12559. I want your observation in this Presidency?—You speak of the agricultural labourer?

12560. Yes?—I do not know of any case in which it has been raised by 50 per cent.

12561. You do not think it is rising?—I do not think it has risen sufficiently to make any marked change of that sort obvious.

12562. From your experience as a Labour Commissioner would you think that even supposing the labourer earns more he would improve his standard of living without definite, deliberate and conscious effort being made to teach him better means of living? Does he know how to spend his increased earnings?—I do not know.

12563. Have you observed his home life sufficiently to draw any deductions as to whether, given increased power to earn, he knows how to live well, or is it necessary to make a conscious effort to teach him?—I do not think so. At present I do not know what form of better living you would suggest. Do you mean to say that he should have a better house?

12564. What I am suggesting is this. Unless you give him compulsory education he will not be able to understand for himself how to spend his increased earnings on clothes, house, education of children, etc.?—He might spend it mainly on his food.

12565. For this reason do you not think that compulsory education is necessary?—I am in favour of educating these people and we are making an advance in that direction.

12566. Do you agree that the standard of living can never rise automatically?—I think that a small rise in the standard of living would mean that he was less in debt and had more to eat.

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12567. That is the whole point I am driving at. The standard of living of an ordinary labourer or an agricultural labourer cannot automatically rise and some other means has to be tried, say compulsory education. Do you think it would automatically come?—It is so hypothetical; I do not know.

12568. It is not hypothetical; it is a matter of observation of the life of the people?—My observation of the life of the people is that there has not been such a rise as to enable me to express an opinion.

12569. *Sir Henry Lawrence*: Do I understand that your duties are confined to the depressed classes?—As far as labourers are concerned, yes: I have many other duties. In some places in the deltas I have been working for house-sites for caste labourers, *Padayachis*. They are not technically out-castes. That is not my main work.

12570. What is the budget for your department?—My budget last year was mostly for loans.

12571. To what extent are these operations for the depressed classes and to what for the criminal tribes?—I am afraid I cannot tell you.

12572. Can you put in figures?—For the depressed classes and criminal tribes separately?

12573. Yes?—Would you want, for instance, the criminal settlements included?

12574. Yes, what it would be for the criminal tribes. Do you deal with your criminal settlements under the jail budget?—No, it is in my own separate budget.

12575. Now what proportion of your total population do your depressed classes represent?—Well, it is about 1 in 6; 7 millions out of 42 millions, I think.

12576. So that you have quite a considerable proportion to deal with?—6 to 7 millions is quite a large number. I am looking after emigration, about 52 per cent of which is from the depressed classes.

12577. Would you like to tell us your budget?—8 lakhs are allotted to the Labour Department; 1.56 for free grants (that would be for pathways, burial grounds and things of that sort), 2,19,000 for education charges for the depressed classes, 4 lakhs for loans for the acquisition of houses, which we have to get back and of which we are getting back a large amount already.

12578. Where do the criminal tribes come in?—It was not mentioned separately here.

12579. Are they included in the 8 lakhs?—Yes.

12580. The net expenditure for 6 millions will be 4 lakhs?—Yes, that is so. I have great difficulty in getting that.

12581. You think you ought to be able to get a larger grant from the Government?—Yes, we always ask for a larger grant.

12582. You mentioned emigration. How does this emigration affect the economic position of your agricultural labourers and depressed classes? What proportion of the adult males of this class emigrate every year? Would you put it as high as 10 per cent?—I think the figures are here: 40,000 from Madras last year and from Negapatam 45,000. That means about 100,000 people went to the Malay States.

12583. For one year?—For last year; and for Ceylon about 75,000 under the Act and 50,000 not under the Act.

12584. Where does the labour come from?—According to the returns no less than 80 per cent come from Madras.

12585. For one year?—For last year.

12586. I have got some figures here which show 80,000 from Madras?—That is exact, I think. According to the returns no less than 80 per cent are from Madras.

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12587. Can you look up those figures and send them to us?—I was away when this was drawn up. 76,000 persons went to Ceylon last year as emigrants under the Act.

12588. Would you compare the figures with the Indian Year Book for the current year which gives the figures as 400,000 or 405,000 total emigration, out of which 80 per cent is from Madras?—I shall look up the figures and let you know later.

12589. Have you any information as to the estimated receipts in Madras by postal orders from overseas?—I have not.

12590. Could you get that?—I will get it. Do you want it by colonies?

12591. If you give the details so much the better. I just want to know how much your labourers get by emigration abroad as registered by this method. Have you not had any figures at all collected hitherto?—No, I do not remember having done so. I once got figures for Ganjam from Burma but I have not got those figures here.

12592. Is this emigration of sufficient importance to be detrimental to the agricultural interests?—I do not think so; though there are complaints, I do not know of any land which is not cultivated for want of labour.

12593. Where do the complaints come from?—There are complaints from the landowners in some of these deltaic tracts, I think.

12594. Is there a definite movement to try to check emigration in the interests of landowners?—I do not go so far as to say that. But if the question were raised, there probably would be objection to emigration. Probably many persons would object on the ground that too many had gone and that there was shortage of labour in consequence.

12595. Was there any movement on the part of your office to assist such emigration?—No.

12596. It has not reached that point?—We do not assist emigration. All I see to is that people do not go against their will. There is no assistance from my office. We do not assist emigration; we are responsible for seeing that they are not improperly recruited.

12597. It might be possible to reconcile the two; there might be a good opening somewhere, and you could induce people to go there?—You mean Malay, Ceylon, etc.?

12598. Yes?—You cannot assist emigration to any place, except Ceylon and Malay.

12599. Emigration to other places overseas has been stopped since when?—To British Guiana, Fiji and Mauritius since 1922, when the Emigration Act was passed. They are talking of reopening emigration to British Guiana, and I think they are allowing about a thousand a year to go to Mauritius. Of course that lies with the Government of India.

12600. Have you got Madras emigrants for British Guiana?—A certain number.

12601. Are you in touch with them?—Not, except when they come back. Mr. Kesava Pillay went to British Guiana to make enquiries and to report upon the conditions there.

12602. Was his report satisfactory?—I do not think he was very much in favour of it. Since his report somebody from the Government has been there, and I hear he has made a more favourable report. While I was in South Africa, I saw in the papers that there was talk about their reopening emigration to British Guiana.

12603. If it is reopened will it be of economic assistance to the labourers?—It will depend upon the conditions; you will have to have a more careful enquiry into the conditions in those places than in places like Ceylon and there you will want careful safeguarding to see that the people who emigrate realise what they are in for.

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12604. Have you any definite opinion whether the economic future of this class in Madras will be satisfactorily righted?—I hope it will become so.

12605. You think it will?—Yes; I think they are waking up in a most remarkable degree. They are getting on. They are nominated on the Taluk Boards, the Municipal Councils, the Legislative Council and so on.

12606. A spirit of hope is being awakened?—I think it is.

12607. And with that and thrift, good will come?—I hope so.

12608. Is it the case that in the past no land was held by the depressed classes?—It was extremely difficult for them to get it.

12609. Have you got the system here of *inam* lands being held by village servants?—There is an odd case here and there of that sort; in a few villages there might be *inam* lands, but it is not general. There was real difficulty in getting them, more in the South and in the West than in the North; the Telugu country is more free from this prejudice. I think.

12610. In the adjoining districts of Bombay they hold a good deal of land?—Do they? Is that a Telugu district?

12611. Kanarese?—You mean Bellary.

12612. Is the population of the Madras Presidency increasing rapidly?—It did not in the last decade, although it may be going up now.

12613. Is there much movement from the unfavoured districts to the favoured; from the dry tracts to the deltas?—You mean, to stay there?

12614. Yes?—Not really a large movement; there would be if there were room.

12615. Was there in the past when the irrigation canals were opened?—Yes, it was very large then. In Godavari and Kistna they have a large number of people who came there from the dry tracts, such as Vizagapatam.

12616. You were asked just now whether a wage-earner receiving an increased wage spends his increase on liquor. Can you tell us what is the average expenditure on liquor?—No, I cannot.

12617. What is the total abkari revenue?—I do not know. I will find out. It is in the Administration Report.

Dewan Bahadur Raghavayya: It is from 4 to 5 crores.

12618. *Sir Henry Lawrence*: You have had no enquiry to ascertain what is the family budget?—I am sorry to say we have not worked out family budgets at all.

12619. *Sir Ganga Ram*: What is the rise in wages since pre-war days?—I was telling the Chairman that we cannot judge that, because we have no figures for the pre-war wages. We have no real figures for comparison. The pre-war figures, instead of giving the average wage in a particular tract, give the limits within which the wages vary; they put it as two to four annas.

12620. What is it now?—Now we give the averages: 2 annas, 2½ annas, and so on.

12621. Has there been no material rise?—I do not think any comparison is possible. There has been a rise; that is my impression; how much I could not tell.

12622. Is the rise in wages in proportion to the rise in the price of food-stuffs?—I do not know. The wages census for this year is at present going on, and the wages census of pre-war years does not give a basis on which we can give a comparison.

12623. *Sir Thomas Middleton*: In the statement of figures extracted from the census you say: "Cultivation in this Presidency supports as workers and dependants 30,000,000 out of 43,000,000 inhabitants as enumerated in the census of 1921, or 7 out of every 10 persons. Of these, farm servants and field labourers number 3 out of every 10." That is, there are 3 labourers against 4 of the occupying class. In view of the size of the holdings in this Presidency the ratio between occupiers and employees is very narrow; it

seems to me a very close similarity in numbers. Do you know whether, included under farm servants and field labourers, there is a number of relatives of occupiers?—I do not know. Do you mean you are surprised the number of labourers is not larger?

12624. I am surprised the number of labourers is so large in view of the small holdings; there seems to be much more hired labour than can be accounted for by the area available under cultivation. I was wondering whether that number might not be affected by the inclusion of the relatives of occupiers of land under one or the other of these categories. I know that there is very often difficulty in connection with census figures in distinguishing between relatives of occupiers and hired labourers?—But I think “three out of every ten” means 7 to 3. That is how I read it. 30 millions out of 43 millions are dependent on cultivation. Of these 30 millions, three out of every ten are labourers. That is my idea.

12625. I was not sure which was meant?—That is how I read it; that is what I think it means.

12626. Then I have misunderstood your figures. I thought the ratio was 4 to 3; but I now see it is 7 to 3?—I thought it was the other way; I thought I underestimated the number of labourers, and that some of the labourers might have shown themselves as owners or tenants.

12627. I was not sure of the point; I looked at the percentages; we have much the same percentage for labourers as for tenants or landowners, and I came to the conclusion that what was meant was 4 occupiers to 3 labourers?—I will verify it.

Dr. Hyder: I understand you have taken the figures from the Census Report. This is what is stated in the Census Report: “Of every 10 agriculturists 4 are cultivating landlords, 3 are labourers, 2 are cultivating tenants, and 1 is a non-cultivating rent receiver or rent payer. At the same time there is a tendency throughout the 20 years for cultivating landlords and labourers to lose ground to the cultivating tenant and the non-cultivating rent-receiver or rent payer.”

12628. *Sir Thomas Middleton:* You describe the work you are doing in the Bellary district, where you are endeavouring to settle landless labourers on holdings of about 4 acres. Do you expect these men to find labour locally, or are you going to find them work as migratory labourers?—I do not think they will be employing labour. The average is four acres; that includes irrigated land, well-land and all sorts of land, so that one man can cultivate four acres of these very light dry lands.

12629. I was thinking of the supplementary work of the settlers?—They live in the villages near by; sometimes they go to their own holding, and sometimes work for their master.

12630. In view of the risks of scarcity in this district, seeing that work would not be available in famine times, what would be his position? He has got four acres of land in his own occupation, and he has been depending very largely on labour in local holdings; when a bad year comes that source of labour dries up, and at the same time his own crop fails?—I think, in a good season he may out of these four acres supplement his wages and then have something to fall back upon when the bad times come.

12631. You think he will be all right in a bad season?—He will get in a good season a little over a poor living wage, and I hope that with the extra amount he gets he will be able to tide over a bad season.

12632. You do not anticipate that there will be a tendency for the population of that precarious tract to increase?—I do not think so; that would be the danger; that is the danger of which I was telling the Chairman; I do not think they would emigrate.

12633. From the point of view of the labourer and from the point of view of the country, which do you consider the more desirable type of supplementary labour; that which you get in the locality or that which you get by

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migrating to districts where there is a big demand for labour?—From the point of view of the labourer, I think the labourer would do very well if he could live all the year round in one place.

12634. From the point of view of the economic position of the country, which type of supplementary labour would you prefer?—I think sufficient labour must go to these districts for harvests and other things.

12635. Is it not the case that when a system of migratory labour is developed in any area, there comes in, as Sir Henry Lawrence suggested, a considerable sum by way of remittances?—Yes.

12636. I am thinking now of the case of Italian labour and Irish labour, for example?—Yes.

12637. And in the case of both these countries, migratory labour has become of considerable economic importance to the country?—Yes, in the case of both countries.

12638. What I was asking myself was whether you, in charge of labour questions in this Presidency, aim at developing migratory labour, or whether you aim rather at providing local work in districts such as Anantapur and Bellary?—In Anantapur and Bellary, they are too far away; that is the difficulty with those places; they are too far away from the delta tracts to come down there. I do not think they would do it very much. Dewan Bahadur Raghavayya would know better.

12639. *Dewan Bahadur Raghavayya*: Very few come?—They are very few; from the neighbouring districts they come swarming in the time of the harvest, but I should not think a very large number comes from these districts I am mentioning.

12640. *Sir Thomas Middleton*: Is that because at present they are thinly populated?—Yes.

12641. If, as a result of your efforts at settlement, the population should increase, there is always an opening for migratory labour for these people?—Yes.

12642. You mentioned that there was a certain proportion of what are called 'tied' cottages in this Presidency. I did not realise that such cottages were found here?—Not so many; Chingleput, South Arcot, Tanjore and perhaps Trichinopoly are perhaps the main places.

12643. That is quite an exceptional state of affairs in the Madras Presidency, is it not?—Yes.

12644. It is not an urgent question as in some other countries?—It is rather urgent in these particular districts.

12645. The sites are so limited?—Yes.

12646. *Sir Henry Lawrence*: What is the result of the 'tied' cottages?—The result is, I think, that these people do not get a good chance; they do not get the chance of natural competition.

12647. *Sir Thomas Middleton*: We had a considerable amount of discussion this morning as to whether the Indian cultivator was as thrifty as he might be. Can you tell me whether the village *panchangamdar* whom you mention is paid a salary or is paid by results?—He is paid so much per plough, or something of that sort; perhaps he may have *inam* land.

12648. He predicts the weather?—Yes, and frames the almanac.

12649. *Dr. Hyder*: On the question of wages, are those figures for any particular year or are they the average figures?—These are the average of that year, and then we compare them with the average of this year.

12650. You give different figures, 2 annas, 8 annas and so on; what are they?—Those were the figures that were ascertained in 1921.

12651. Could you tell me the number of days in the year for which the labourer would find so much work at 2 annas, 5 annas, and so on?—I could not tell you; it is very difficult indeed; it is different according to the land he is working on; it would depend on whether it was irrigated or not.

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12652. Could you give us any idea as regards the supplementary earnings of the family; that is to say, there might be the wage of the head of the family, and there would be his wife and one or two children, perhaps, working; how much would they bring in at harvesting?—I have said here that the wife gets two-thirds of what the man would get, on an average.

12653. You could not give us any figure as to the number of days during which such a wage would be earned?—No, I cannot tell you anything about that.

12654. You could not give us any idea about their spare-time earnings, as to what they earn, and for how many days they earn in their spare time, when they have got no field operations?—Apart from this census which is being undertaken?

12655. Could I have from you a rough guess as to the amount of money which an agriculturist's family obtains during all the 365 days of the year, a rough guess as to what it will come to from all sources, agriculture and subsidiary occupations?—I do not think my guess would be of any value.

12656. Have you ever been a jail officer?—I have had sub-jails under me; that is the nearest I got to being a jail officer.

12657. How much did you allow per prisoner?—I have forgotten.

I will give you the figure; three-fourths of a seer is the daily allowance in the Presidency.

The Chairman: Simple confinement or hard labour?

Dr. Hyder: That does not appear clearly.

The Chairman: That is the real point.

12658. *Dr. Hyder:* I was wondering whether you could tell me how much rice would be required by an agriculturist's family, consisting of a man, his wife, a son and one or two more children. How much rice would be required for such a family?—You say they want three-fourths of a seer per head.

12659. That is the jail allowance. In your opinion, how much rice would be required for such a family?—I suppose it comes to about $2\frac{3}{4}$ seers for the whole family, but I do not know, and I would rather not give an opinion; I am not good at these things; if you got an opinion from an expert, it would differ from mine.

12660. You must have come across this Census Report relating to your Presidency?—Yes.

12661. There are some very interesting tables with regard to the incidence of disease, which I showed you, and the most affected districts are Ganjam and Vizagapatam; that table relates to leprosy. I was wondering whether there was any relation between the nourishment factor and the liability to such diseases as leprosy?—I have no idea. The latest theory, I think, is that it is due to eating bad fish; I do not know anything about leprosy.

12662. A question was put to you by Mr. Calvert, who was quoting from the Report of the Fiscal Commission, regarding the disinclination of Indians to work in factories. I was wondering whether it is known to you that about the beginning of the last century, in 1800, it was said of Italy, a country which perhaps you know intimately, and of Germany, that the same disinclination prevailed there, and they would never become industrial. I was wondering whether you had come across any such statement in any book?—No.

12663. In your memorandum you say, "it would be impossible to insist on accident or sickness insurance or maternity benefits". I will leave aside the other things, but as regards maternity benefits, why should it be impossible?—It is very difficult to do it in these rural areas.

12664. Is it because the woman is given a daily wage?—That is what I think in regard to maternity; it is very rarely that a woman is a permanent servant, and if she is merely on daily wages it is difficult to give her maternity benefits.

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12665. That would apply to agricultural labour; would you apply it to industrial labour?—I do not know; the question did come up some time ago.

12666. With regard to emigration of labour to Burma, you say that the labour is seasonal?—Yes.

12667. I have an impression that the labour is seasonal, that is to say, these labourers go over to Burma to harvest the rice crop and come back; they do not settle there?—Some do, and work in the factories there.

12668. *Sir James MacKenna*: The majority of them?—Yes, the majority; some go just for the season.

12669. *Dr. Hyder*: It is an expensive journey; I was wondering who provided the funds?—These contractors, I understand; of course, it is not regulated in any way, and I cannot give you the same information about it as about emigration to foreign countries. That is one kind of migration, from one part of India to another; that is not regulated. I have met these contractors in various places, and they seemed to have done rather well in taking agricultural and other labourers over to Burma.

12670. I want to put to you that it would not be desirable to restrict the free movement of labour, either within the Presidency or outside the Presidency, just as it would not be desirable to restrict the movement of, say, the professional classes, if they found a chance of getting better salaries elsewhere?—It would be unfair, I think.

12671. *Dewan Bahadur Raghavayya*: You said that in the case of disafforested areas, on which some of the depressed class members have been settled, it has been possible to carve out economic holdings?—In some cases, yes.

12672. Have any of those holdings been worked on co-operative lines?—Yes, and also under the Divi Island project. I think the Mettur project would be quite possible to work on co-operative lines, but not co-operative cultivation; each man cultivates his own plot.

12673. Not joint cultivation?—Not joint cultivation.

12674. What I want to know is, have the men to whom these holdings have been assigned worked under the auspices of a co-operative society? Have they been having recourse to the advice of the agricultural officers in regard to better farming methods?—I think they have.

12675. Have you been observing, on the whole, better farming on these small farms; is the farming done better than on an average small holding?—No, I do not think so, because these persons have not the experience; they are not farmers, they are learning farming, and I think a man who is already the owner of a farm is more likely to be a good farmer than a labourer.

12676. So the advice of the Agricultural Department has not yet been tried?—I think it helped them; but I do not think that these labourers are better farmers than the other small holders.

12677. In the districts of Bellary and Anantapur, where the poor soils prevail and where much land is out of cultivation, has any attempt been made to encourage these depressed class members to raise such perennial crops as the palmyra or the date or the aloe which, though not yielding food, would be commercially profitable and would also afford occupation during spare time?—No, I do not think so.

12678. No attempt has yet been made?—I do not think so.

12679. In your memorandum I see that you have said how a certain amount of labour migrates from the dry districts to the delta districts during the harvest season. You have said nothing about the housing of that labour during the time it remains in the delta districts to do the harvest. My impression is that no housing accommodation is made, with the result that that labour lives mostly on mounds near the rice fields and very often epidemics break out? That is what I mentioned here. They live in the middle of rice fields.

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12680. On the fields themselves?—On the fields, in one corner. When the field is low they put a heap of earth in one corner; there may be one or two or three houses on that mound.

12681. No roofing accommodation is provided?—No.

12682. In regard to drink, I am sure you are aware of the experiment which is being tried in this Presidency by prohibiting country liquor and arrack in five taluks in the Presidency where toddy is used. That is what Professor Gangulee was referring to?—When was that?

12683. Two years ago?—That is when I left.

12684. There is one feature in the census figures in regard to which I should like to have the benefit of your opinion. There is a distinct fall in the last census as compared with the census of 1911 in the number of cultivating landowners and there is a rise in the number of cultivating tenants per thousand. What do you think it is due to? Could you explain that phenomenon from your knowledge of the districts and your general experience?—It may be that the middle classes are taking to other pursuits. Some of these landowners instead of farming themselves are leasing their lands out to tenants. That has a good deal to do with it.

12685. There is an increase in the number of non-cultivating owners?—I say it may be due to the fact that their standard of life is rising and they try to get into Government service, try to get into law and other professions, leasing out their lands to other people. I think there is a tendency to that effect.

12686. Do you think it may be partly due to the fact that the cultivating landowner has to part with his land to clear the debt which he contracts and has to seek the protection of becoming a cultivating tenant?—It may be that also.

Dr. Hyder. There is a remarkable increase in this Presidency in the number of non-cultivating tenants. Could you explain that, apart from the circumstances perhaps of Malabar where you have the sub-tenures?

12687. *Devan Bahadur Raghavayya*: 28 per thousand as against the other method of dealing with the lands. The big *mirasidar* non-cultivating tenant leases out his lands; he sub-leases them to the cultivating tenants. That may explain it?—It is rather complicated.

12688. Of late, the depressed classes for whose uplift you are working have got, even by the door of election, into such organisations as co-operative societies and village panchayats?—I believe there are some cases.

12689. Yes; I am enquiring as to how far it is done?—There are some cases; but I do not know whether they are isolated cases or whether they are general. I am making enquiries at present.

12690. *Mr. Calvert*: I should like to ask you whether you foresee any likelihood of any early relief to rural congestion from the expansion of industries within the Presidency itself?—No; I do not see much at present.

12691. *Professor Gangulee*: What influence do the labourers who return from overseas exert on their own villages, morally and socially?—Those who come from the depressed classes certainly have a very strong influence in the way that even though they only go as far as Burma they have a different view of their position; that is one point. Then they help to build in a number of cases a substantial house, which is a good thing; it means that he wants to stay in the hope that he may get a better house of that sort himself. I think that as a rule their influence is quite good.

12692. In social outlook?—Yes.

12693. Leading to a decided change?—I think it leads to a distinct change.

12694. *The Chairman*: You mentioned during the course of your evidence that the Presidency of Bombay was more wealthy than this Presidency. How do you account for that fact?—With the larger amount of industries, cotton mills and others in Bombay, I suppose they are better off. I always feel that they are.

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12695. Apart from the question of trade at the port of Bombay, do you think that the growing of money crops rather than of food crops has any bearing on the point?—There I cannot speak with any authority at all. I do not know the Bombay agricultural side at all. I do not even know that they grow money crops.

12696. I do not say they do. I wanted to know whether you had that in mind?—I do not know about that.

(The witness withdrew.)

APPENDIX.

Statement showing the budget grant for the Labour Department for the current official year and the actual expenditure incurred during 1924-25 and 1925-26.

37-R.e. Miscellaneous Departments— Miscellaneous—Commissioner of Labour.	Accounts 1924-25.	Accounts 1925-26.	Budget grant 1926-27.
	Rs.	Rs.	Rs.
(i) <i>Direction.</i>			
Pay, travelling allowance, contingencies, etc., of the Commissioner.	(1) 2,11,624	56,726	69,600
(ii) <i>Depressed Classes.</i>			
District staffs for conducting special operations for the amelioration of depressed classes. Pay, travelling allowance, contingencies, etc.	A.	1,58,043	1,98,000
(iii) <i>Depressed Classes—Betterment.</i>			
(1) <i>Establishment</i> —Pay of teachers	1,23,377	1,47,156	2,20,600
Contingencies	13,048	17,123	23,200
(2) <i>Supplies and Services—</i>			
(a) Scholarship and stipends	19,637	24,039	43,500
(b) Sheds and equipments for schools	23,328	24,886	49,000
(3) Grants-in-aid—Miscellaneous—Recur- ring—Grants to private Institutions, Taluk Boards, etc., for the better- ment of depressed classes, for open- ing new schools and hostel for Adi Dravidas.	20,500	41,259	38,200
(4) Grants-in-aid—Grants for wells, path- ways, burial grounds, sanitary improvements for cheris in Madras City and construction of houses at Pulianthope.	1,61,264	1,45,847	2,10,900
<i>Criminal Tribes and Settlements.</i>			
(iv) Kallars—Reclamation	1,61,732	2,13,665	3,11,000
(v) Settlement—Kavali	76,797	89,998	90,000
(vi) „ Sitanagram	12,058	33,562	16,600

(A included in (1) Direction.)

Sir George Paddison.

Statement showing the budget grant for the Labour Department for the current official year and the actual expenditure incurred during 1924-25 and 1925-26—contd.

37-R.e. Miscellaneous Departments— Miscellaneous—Commissioner of Labour.	Accounts 1924-25.	Accounts 1925-26.	Budget grant 1926-27.
	Rs.	Rs.	Rs.
<i>Criminal Tribes and Settlements—contd.</i>			
(vii) Settlement—Stuartpuram	20,883	22,847	22,500
(viii) „ Aziznagar	7,359	8,752	10,900
(ix) „ Kulasekharapatnam	4,428	2,687	2,900
(x) „ Siddhapuram	2,022	3,187	7,200
(xi) „ Pallavarām	6,936	8,723	8,100
(xii) „ Reformatory Perambur	26,746	9,697	10,500
(xiii) Industrial School, Perambur		15,922	17,100
(xiv) Industrial School for girls, Nellore	2,756	8,339	8,800
(xv) Eonga Dasatis	11,900	8,450	8,100
(xvi) Industrial Settlements—General	1,957	4,416	7,900
TOTAL	9,08,350	10,44,774	13,64,700

	Balance outstanding on 31st March 1926.	Budget grant for Advance to be paid in 1926-27.
	Rs.	Rs.
Loans and advances for acquisition of house-sites, house building, etc.	10,45,015	5,04,500

Sir George Paddison.

Sir K. V. REDDI NAYUDU, Kt., B.A., B.L., M.L.C., Madras.

Replies to the Questionnaire.

INTRODUCTION.

I belong to the Kapu caste, a purely agricultural community. My kith and kin are tillers of the soil and producers of corn. I was Minister of Agriculture in the Government of Madras during the first three years after the introduction of Reforms. I own lands of considerable extent and have always taken a keen interest in agriculture.

QUESTIONS 2 AND 23.—AGRICULTURAL AND GENERAL EDUCATION.—I prefer to answer these two questions together as they have considerable bearing upon each other.

We have an Agricultural College at Coimbatore where Diplomas were prior to 1922 granted to successful candidates. I was partly responsible for having the college affiliated to the Madras University and the B.Sc. Degree in Agriculture instituted. There are no high schools at all but there are two agricultural middle schools where instruction is imparted in vernacular. One of these schools was started by me but I am sorry to state that it has not attracted a sufficient number of students to keep it a going.

2. (i) The supply of Professors in the College is sufficient and so it is in the two middle schools. I cannot say that the institutions themselves are sufficient in number. In the Legislative Council demands have been made during the last three years for an agricultural school for the Tamil part of the Province but how far the new institution will attract boys of the right type it is difficult to predict.

(iii), (v) and (vi) I have always held the opinion that both teachers and pupils in the agricultural schools should be drawn from the agricultural classes. While I was Minister I insisted upon boys being drawn only from those classes to the College Courses and in 1923 I selected the boys myself with the assistance of the Director of Agriculture. But in this, as in other cases of Collegiate Courses, education is received by the boys with only one view, namely, entering the Government service. When I selected boys I plainly told them they should go back to their farms and utilise the knowledge they acquired at college on their own fields. But this certainly had no effect on them and I found almost every one of them asking for a Government appointment after they obtained their Degrees. There is no incentive other than public service which induces lads to study agriculture. That is the reason why most of the pupils that hitherto received agricultural education, happened to belong to the community of Brahmins or of high class Non-Brahmins whose fathers were not actual agriculturists.

(ix) The careers of the majority of the students who have studied agriculture have been entirely limited to public service starting as Demonstrators, some of them have risen to the place of a Deputy Director while others are employed as Professors in the College and in the Research institute. Very few have taken to the profession of agriculture.

(x) Under the present general system of education it is not possible to make agriculture attractive to middle class youths. This system was conceived nearly 50 years ago and has been developed on the same old lines. At that time the exigencies of Government required a number of clerks, officers, ministerial and executive, in various departments such as Revenue, Judicial, Secretariat and the like; and since fairly respectable careers with power and prestige were thrown open to Indians, University education naturally attracted a very large number of pupils. Conditions have changed. The requirements of Government are more than met and to-day we are face to face with the problem of unemployment among the educated middle classes. About 1,500 graduates are being turned out of the portals of the Madras University every year and the number is bound to increase now that we have another University in the Andhra portion of the Province. The public service and the professions

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cannot absorb more than 750 every year. Even if another 250 can be employed by banks, firms and other agencies, there are still left more than 500 graduates, not to speak of an equal number of under-graduates without any employment whatsoever. Their education having been designed and imparted with a view to make them fit to be clerks and officials, those of them who were not so employed find themselves unfit for any other avocation. Manual work they consider degrading. They have no training for industries, or for banking or trading. The result is that they find themselves unable to earn enough for their livelihood. They feel that their investment in education has ended in loss. They become discontented. They turn politicians and agitators, with what consequences it is difficult to predict at present. Nothing concerning agriculture is taught to them. In fact they look down upon agriculture as a profession not worthy of their education, prestige, or status.

QUESTION 23.—GENERAL EDUCATION.—This system of education is quite unsuited to modern conditions and a change is required. At the stage when a student passes his Third Form, that is to say, when he finishes his middle school course, I would suggest that not more than 10 per cent of the boys from the rural area should be allowed to take to higher or collegiate education.

The headmaster of the school has to certify that those boys are fit for such cultural education. Of the remaining 90 per cent, 60 should be asked to go to agricultural high schools and the remaining 30 to go to industrial schools. This industrial and agricultural education must be made compulsory until the age of 16 and those boys must not be permitted to study in any other schools. It is too soon to give any idea of the way in which compulsory elementary education is working in rural areas. So far, nothing untoward has happened and I expect it will work all right.

QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(a) (i) and (ii) The great curse of the agriculturist to-day is his chronic indebtedness. The main causes of his borrowing are his old debts, marriage expenses, cost of educating the children, living beyond means, heavy interest, poor crops, vagaries of rainfall, love of litigation and the like. Of these it is the old debt that is most crushing. Pride forbids him to sell a portion of his land to clear off his debt. In my part of the country an acre is worth Rs. 1,000. Assuming that a man has got three acres of land it will be worth Rs. 3,000. If he has a debt of Rs. 1,000 he has to pay an interest of Rs. 90 a year at the least. His 3 acres will yield three *putties* of paddy, worth about Rs. 180. Half this amount is required for the *kist* and cultivation expenses. The balance will be Rs. 90 which will meet the interest he has to pay. But then he will have nothing to live by. So he does not pay the interest and it accumulates and in years will eat up the whole land. Amongst the lower classes the drink evil has spread and is now one of the main causes of borrowings.

(b) The co-operative credit societies have given immense relief to the ryots. They have secured cheap credit for his current needs such as preparing the lands, sowing, transplanting, weeding, harvesting, *kist* paying, and even marketing. But he has not been absolved from the curse of chronic indebtedness. That is a mill stone round his neck and the co-operative movement did not and could not extricate him from it. The establishment of land mortgage banks alone can save the ryots and legislation to that effect on the lines of the Federal Farm Loans Act of the United States of America will have to be undertaken.

(c) I am not in favour of taking any measures to control the credit of cultivators. I do not know of any non-terminable mortgages in this Province. The old saying "once a mortgage always a mortgage" is true in this Province and in the sense in which I take it, it is always redeemable.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—(a) Excessive sub-division of holdings exists in this Province as well as elsewhere in India, perhaps more widely in this Province than in others. It is a settled fact. There is no denying that it impairs agricultural efficiency and causes loss to the cultivator. I cannot think of any means for reducing this, excepting intensive cultivation.

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(b) The obstacle in the way of consolidation is the Hindu Law itself. The Law of Partition and the right by birth of every male child for a share in the family property necessarily leads to fragmentation and I find it impossible to overcome this difficulty. Hindu law is intermixed with Hindu religion and the cry of religion in danger will at once be raised if any attempt is made to alter the law.

QUESTION 8.—IRRIGATION.—(a) I belong to the Godavari district which is blessed with one of the best irrigation systems in India. All the canals in this system are perennial. Non-perennial or inundation canals are not to be found in this district or for the matter of that in this Province.

There are, however, several hill streams in South India which are not *bundled* up by any anicuts but which supply water in flood time. These may be treated as perennial, because they supply water quite as well as the delta canals throughout the period of the crop. They also fill tanks.

(i) In spite of the extensive Godavari irrigation system which irrigates seven lakhs of acres first crops and three lakhs of acres second crop, there is still land to the extent of 4 or 5 lakhs of acres capable of being irrigated by the existing system. I advocate extension.

In other parts of the Province, there are various schemes proposed and undertaken by the Public Works Department for which plans and estimates have also been prepared and in some cases even sanctioned and work has been commenced. The most notable case amongst the sanctioned schemes is of course what is known as the Mettur project, which is to cost 6 crores and irrigate 3 lakhs of acres besides supplementing supply to the existing area of 10 lakhs in the Tanjore delta. Amongst those for which estimates have been prepared, the most important, beneficial and necessary works are (i) the Thungabadra Project which commands 35 lakhs of acres of famine stricken country and may easily supply 7 lakhs of acres, and (ii) the Kistna Reservoir Project which commands and can easily irrigate about 10 lakhs of acres of first crop and 7 lakhs of acres in the second crop besides insuring the supply for the existing 7 lakhs under the Kistna delta. This work is considered remunerative.

(ii) There is no question of extending tanks and ponds. They can but be improved. The Tank Restoration Scheme has been in operation for the last thirty years. For want of funds, however, sufficient progress could not be made. If tanks include reservoirs there are as many as 40 schemes for which estimates have been prepared and which are capable of irrigating several lakhs of acres.

(iii) The Industries Department has undertaken the task of boring operations and has been assisting the ryots in digging wells for irrigation purposes. Throughout the Province nearly ten lakhs of acres of land are irrigated by these wells as against thirty lakhs of acres by tanks and thirty-three lakhs of canals. There is a large scope for extension of irrigation under wells and if only Government come to the rescue and administer the Loans Act in a more liberal spirit than at present, the possibilities of increased food production are easily realised.

So far as I am aware finance is the first obstacle to the extension of irrigation in this Province. Secondly there is the policy of the Government with regard to the construction of irrigation works. The question of finance is not at present very embarrassing. Time was when the Loan Policy of the Government of India was limited and restricted. But after the Reforms the borrowing power of the Local Government has largely been increased. Formerly too it used to be said that loans for irrigation works would not be sanctioned by the Secretary of State for India, unless a definite irrigation law was passed. Recent attempts at legislation in this direction however have unfortunately failed, but considering that one of the greatest projects, *viz.*, the Mettur Project costing about 6 crores of rupees has not only been sanctioned by the Secretary of State but the work itself is going on, the condition precedent of having a definite irrigation law does not seem to be insisted on.

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The policy of the Government in the construction of irrigation works still remains a serious obstacle to the extension of irrigation. This policy may be briefly stated thus. The Government divide irrigation works into two classes, Productive and Protective. The latter are unproductive but are limited to the famine area and are rarely undertaken except when a crisis arises. The only Protective works that I am aware of and that were undertaken and finished, are the Rushukulia and the Mopadu projects. Both the works were financed by the Government of India probably from the Famine Insurance Fund with that Government. These works must have cost about a crore of rupees and the net revenue therefrom does not seem to amount to an interest of more than one or two per cent. But the more important question is that of Productive works. Here the policy of Government is to undertake such works only as would fetch such net revenue that would amount to 6 per cent interest after the maintenance charges were deducted. Most of the available important works were undertaken and completed long ago, such as the Great Anicuts of Godavari, Kistna, Cauvery, and Pennar. This was at a time when the rate of interest was about 3½ per cent and when the rule was that Government should realise only 4 per cent interest on the amount invested, of course after deducting maintenance charges. Conditions have changed, the rate of interest has risen and easily workable schemes are not available. If the present policy of the Government is to be pursued, it is apprehended that no new works can be undertaken. Schemes there are. The amount to be invested on them is not also large. But if the 6 per cent rule is insisted upon, they cannot be said to be productive. It is submitted that the policy of the Government is neither wise nor just. The benefits and advantages of irrigation schemes cannot be judged by the sole standard of net revenue only. The material prosperity of the ryot due to the increased yield and rise in the price of his land, the increased food production and the consequent increase in national wealth cannot be ignored. In fact in a progressive State the above consideration ought to be the guiding factors in shaping its policy of constructing national works of irrigation. The present policy is no more than a commercial policy in a narrow sense and the sooner it is abolished the better it is for the country as well as for the Government. The increased capacity of the ryots to bear higher taxation not only on land but also in the matter of other taxes such as Excise, Stamp duty, Court fees, and the like as a result of their increased prosperity has also to be taken into consideration as a reason for changing the present policy. It must not also be forgotten that Irrigation is now a Provincial subject where as it was, before the Reforms, a Central or Imperial subject. The policy hereafter should also be provincial and on the lines above indicated. It may further be noted that if instead of taking individual schemes as separate units by themselves whereon the standard required for a productive work is based, the Government should take into account the entire irrigation system of the Province as a unit and the standard of the productive nature of a work is estimated thereon, there will be less difficulty and greater scope for financing irrigation schemes. So far 830 lakhs of rupees have been invested in irrigation works in this Province and an interest of about 10 per cent is at present being realised thereon.

(b) I cannot say that I am satisfied with the existing methods of distributing canal water to cultivators. The four inch pipe introduced about 1908 has created an amount of discontent which has not abated to this day. This system is, I believe, called a continuous supply system. Prior to 1908 there used to be what are known as Palmyrah spouts. These were of almost uniform size. In flood season water used to flow to the tail end and there used to be an uniform supply of water throughout. But when the water fell below the flood level, it could be supplied only by turns in the various reaches of a canal. Such a system of turns is no doubt now avoided by the introduction of pipes of varied calibres. At the same time in actual practice it is discovered that sufficient water did not flow from the 4" pipe, with the result that the ryot is tempted to make breaches in the channel *bunds* to sufficiently irrigate his lands and thereby commit a breach of law submitting himself to heavy pecuniary penalties. It has got to be admitted, however, that if we exclude the

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4" pipe, the introduction of the pipe system has undoubtedly its own advantages. For one thing it prevents wastage of water, for another a proportionate supply of water is guaranteed and thirdly the simultaneous supply of water through the channel is secured. In this connection, perhaps, reference may be made also to a rule made by the Public Works Department and Revenue Department as regards what is known as Black Water. That rule enjoins that this water should not be used for irrigation but could only be used for raising seed beds. The result is that in the lower reaches, transplantation cannot take place until flood water is available which takes place only in the month of July or August. In these lower reaches the fields are naturally low in level and rains set in about that period. The consequence is that transplantation is delayed and very often fields are submerged and the eventual crop is either scanty or lost altogether.

I am not aware of any methods employed to prevent wastage of water by evaporation or absorption in the soil. This probably is due to the fact that the available supply of water from the rivers is more than what is required for our present needs. But if every drop of water is to be utilised for irrigation purposes and all the commandable area is to be brought under irrigation some steps to prevent wastage would become necessary. It is only then that a greater economical use of water could be assured.

At present there is no immediate necessity of devising any measures for economising water.

QUESTION 10.—FERTILISERS.—(a) Natural manures can no doubt be used profitably. But these are not available at present in large quantities. *Pati* earth (old village soil) is all exhausted and is not available to-day. Green manure, cattle refuse, cowdung and the rest can be had only in small quantities. The cultivator knows the advantages of using these manures, but cannot get enough. So far as indigenous artificial fertilisers are concerned, the somewhat prohibitive cost is against their use. In recent years the cost of these manures has gone up so high that it is not covered even in two or three years by the price of the increased yield. This increase in price is due to the fact of large quantities of these manures being exported to foreign countries. Bonemeal, fish guano and oil-cakes are enormously exported from this Province to Ceylon and other places, leaving very little in the land of their production. Reduced supply naturally increases prices. I think it is essential that the export of these manures should be prohibited or limited. Railway concessions for conveyance of the manures from place of production to the field should also be arranged, otherwise the cost will be prohibitive. When I was in office I raised the question and the South Indian Railway Company was prepared to reduce fares but I do not know what happened afterwards.

(b) I am not aware of any fraudulent adulteration of fertilisers of a serious character. Frauds, if any, are easily detected and that means loss of credit to the producing firm. It is therefore very rarely indulged in.

(c) New and improved fertilisers can be popularised only by demonstration of better results in production. Cheapness in cost so as to be within reach of the cultivator and appreciable results alone can induce him to go in for these manures.

(d) The only way in which the use of cowdung as fuel can be discouraged is by reducing the cost of fuel itself. 30 years ago, a *putti* of firewood could be had for a rupee. To-day it is worth Rs. 3-8-0. Unless it can be demonstrated that the use of cowdung as manure would fetch more money by increased production, than what it would cost to purchase the firewood required to replace the cowdung cakes, the farmer's wife will never give up the use of the dung for cakes. Demonstration and propaganda, may, however, do a good deal, in inducing the agriculturist from not using cowdung as fuel.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(a) On a rough estimate I think the average cultivator in my part of the Province does not work for more than 120 days during the year. In the slack season, he mostly wastes his time, goes about to see his relations or attends marriages or goes on

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pilgrimage if he has money in hand. He does nothing which fetches him anything.

(b) and (c) State aid coupled with departmental assistance and demonstration will encourage the adoption of subsidiary industries suitable to local conditions such as sericulture and making ropes, baskets and mats. In my part of the country there are extensive coconut gardens and there is a large scope for making ropes and mats with coconut fibre. At present the outer portion of the coconut is to a large extent used as fuel. The obstacles in the way of expansion of such new subsidiary industries are ignorance, want of education, tradition, social conditions, and the like. But these are not insurmountable. The average ryot is fairly intelligent and is anxious to make some little money by subsidiary means. He rears poultry though not on an extensive scale. The good housewife sells eggs, milk, butter and *ghi*.

(d) I do think that Government should do more to establish industries connected with preparation of agricultural produce for consumption as well as for sale and export. In my district paddy is produced largely in the delta and there are rice mills in almost every village. Nothing need be done in that direction. But we have also extensive coconut gardens and copra is exported to other countries largely. There is room for a decent coconut oil factory in the Godavari district.

(e) Subsidiary employment can be found by encouraging industrial concerns to move to rural areas. But the industry must be such that vigorous work can be done in agricultural slack season. Rice mills, for instance, have a season of their own. In other months they are idle. During that period they can be used for oil pressing. Labour will be available in both periods excepting for about 30 or 40 days during transplantation time and a similar period in the harvest time.

QUESTION 25.—WELFARE OF RURAL POPULATION.—The average villager in this Province has no club, no recreation ground, no hospital or dispensary, no village road, and no post office, much less a public library. Very often water-supply is insufficient and such water as may be available is often contaminated. Schools are now spreading and the co-operative movement is extending its activities but it will take a long time before we can have one school and one co-operative society for every village or group of neighbouring villages. Until that stage is reached I do not think that there is much use in undertaking any economic survey. The average ryot is unwilling to disclose his economical position.

His pride does not permit him to tell us what his debt is. He very often exaggerates his income except when there is an apprehension of income-tax being levied. If there is a co-operative society of some standing in the village, the members and the directors will know the economic condition of every member and more accurate information will be available, regarding the produce of the land, the expenses of cultivation, other sources of income and the exact debt of a family and the like. I should like therefore that Government should wait for another decade before any economic survey is undertaken.

QUESTION 26.—STATISTICS.—(a) At present statistics of areas and crops are not available for zamindari land except in surveyed areas. In unsurveyed tracts of the zamindari area, reports are no doubt sent but these are based on what are known as *paimash* accounts and are so inaccurate that sometimes lakhs of acres will be found missing. I am of opinion that accurate reports from zamindari tracts which form nearly a third of the extent in the Province, will be of immense use, and in order to get at such reports survey should be made compulsory and the *Karnam* should be directed to prepare accurate accounts. At present the village officers are subject in the zamindari tracts to a dual control and this leads to laxity in discharge of duties. So far at least as the submission of the statistical reports is concerned, the village officers in the zamindari tracts must be brought under the direct control and supervision of the Government revenue officers.

The estimates of the yield of agricultural produce of such crops as paddy and cotton are fairly correct but in the case of dry crops a great deal of

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difficulty is experienced in ascertaining the approximate yield. In the Ceded Districts and in part of Guntur, for instance, cotton and *korra* are sown in the same field, no doubt in different rows. At present instead of showing a mixture crop over a definite area, the *Karnam* thinks that two-thirds of such mixture crops is cotton and one-third is *korra* and reports accordingly. This belief has often led to inaccurate estimates. If a joint crop return is given, the higher authorities may be in a better position to estimate the approximate yield.

(ii) Rail-borne Trade Returns used to be published by the Board of Revenue and later by the Director of Industries up till 1922. These returns were of some value not only in showing the extent of production in particular areas but also in showing the quantities available for export.

In the craze for retrenchment, that immediately followed the introduction of Reforms, these returns were abolished following perhaps the action of the Government of India in this matter. Instead of abolishing these returns, if they are improved on the lines of the Report of the Railway Statistics Committee they will surely serve a useful purpose.

(iii) At present a Census of Cattle and Implements is taken once in five years. This work is done rather very carelessly. The *Karnam* very often sits at his house and asks the village *Vettian* as to how many cattle A or B or C has and between them would be manufactured a census which, when used as evidence in courts of law, has caused immense mischief to individual litigant ryots. I am not however sure whether it is worth while to improve this system of enumerating livestock.

(b) At present fortnightly retail prices are compiled by the Agricultural Department and fortnightly wholesale prices by the Director of Industries, while average weekly prices and average monthly prices are compiled by the Board of Revenue. I am of opinion that all this work must be done by one agency and one department.

Oral Evidence.

12697. *The Chairman*: Sir K. V. Reddi, you have been good enough to provide the Commission with a very interesting memorandum which my colleagues and I have read and we are greatly obliged to you for the trouble you have taken to make your views so clear. Do you wish at this stage to say anything in amplification of your note of evidence or shall I ask you one or two questions?—I am at your service. I think there are one or two points which I wish to place before the Commission, possibly the information is already before the Commission. But I should like to bring certain figures to your notice as to how much money is being spent on agriculture in other countries,* and what the produce† is in other countries of two important crops: paddy and cotton.

12698. Would you like to put that in the shape of a statement now, or in the form of a statement in writing?—I can place that before you to-morrow.

12699. If you could send it to the Secretaries, that would probably be the best way, unless you wish to say anything on the point?—No; I just wanted to place that information before you.

12700. Do I gather that the general tendency of those figures is, in your mind, to show that more money might with advantage be spent in this Presidency on those subjects?—Yes.

12701. From your experience (and as a Member of Government and a Minister of Agriculture in this Presidency it has been wide) do you feel that the money so far spent on research, on propaganda, and by the Agricultural Department generally, has shown a good return in increased prosperity?—It has been well spent, I would say.

12702. Of course, in view of the immense population that inhabits this Presidency and in face of an ancient system of agriculture, the Agricultural Department is very, very, young, is it not?—It is.

12703. So that even such research work as has been done already may be expected to yield greater results in the future?—Yes.

12704. It must take time to popularise new methods and new varieties?—Naturally.

12705. I should like to ask you one or two questions on your memorandum which, I think, in most respects speaks for itself; is very clear, if I may say so. You were responsible for initiating a vernacular middle school, were you not?—Yes.

12706. Was your intention there to educate boys who would return to their paternal acres?—Yes.

12707. And you found that it failed?—It did fail.

12708. Through lack of demand for that type of education?—Well, possibly the parents thought that their boys did not learn much in the schools.

12709. But that is really what I am saying, through lack of demand for that type of education?—Yes. It may be put so.

12710. Do you think that the lack of demand is due to the fact that parents still wish their children to be taught English?—Not exactly. It was my impression at any rate that we could not give them a sufficiently good education in those schools, not one much better than what their fathers would have taught them on the field.

12711. I should like to be quite clear as to your last answer. Are you thinking of vocational training in agriculture or a general education in the vernacular?—These schools gave a little more than this general education.

12712. They were chiefly vocational, were they?—Yes, teaching was given in the field.

* See Appendix, page 331.

† Not printed.

12713. Would you say that agriculture was one of the main subjects taught or that agriculture was used as a channel of education?—My own impression has been that agriculture was taught definitely as a vocation in the middle schools.

12714. As a vocation?—Yes.

12715. You think that these schools rather slipped between two stools; they neither provided a good enough general education nor a sufficiently good vocational training?—I should think that is a correct description.

12716. Do you feel that by any improvement in the curriculum it might have been possible to meet the demand?—Yes, and provided also provision is made for a little higher standard than what we could give in English in these middle schools.

12717. But when I spoke of English I was of course thinking of the fact that in this country, at this moment, English is the only door to a University career. Do you not think that fact limits the demand for a purely vernacular education?—It does to some extent, but I should take it that, provided the right kind of education is given in agriculture alone and in the vernacular, it will serve some purpose and possibly pupils can be found.

12718. Do you yourself feel that there is taking place and becoming apparent any reaction against the extreme demand for University education because of the serious unemployment amongst graduates?—I am one of those who think that University education has been overdone here.

12719. Do you think the public feels it; do you think there is any slackening in the demand for University education?—Not yet generally, but I feel that thinking men who apply their minds to it feel that they are wasting their money on it.

12720. Until you come to the point when parents and boys begin to realise what you now realise you are not likely to find a diminished demand for University education, are you?—No; that stage has not yet been reached.

12721. You do not look forward to the initiation of any scheme which would make agriculture attractive to middle class youths; you would feel satisfied if you could make it more attractive to boys of the agricultural class?—Yes, that is to say, if sufficient attractions were available and they could be taught in such a way as to make it more profitable.

12722. If you could give the son of a cultivator good general education of such a nature as to fit him to be a better farmer than his father, would you regard that as the ideal?—Yes.

12723. You were at pains, when you were responsible for the matter, to pick the entrants for the Agricultural College very carefully, I observe?—Yes.

12724. You picked mostly rural boys?—Yes, boys whose parents were engaged in agriculture.

12725. Do you know whether in fact many boys, the sons of cultivators, are at the moment in the Agricultural College at Coimbatore?—I do not know just now; there were three years ago.

12726. Is it not the case that unless a great effort is made the usual experience is that it is the urban boy who goes to the Agricultural College because he wishes to enter a public service?—That is so, yes.

12727. One page 346 you are talking about the difficulty of relieving the indebtedness of the agriculturist and you describe how he gradually sinks into a position in which he had to choose between a bare living for himself and his family and the repayment of interest?—Yes.

12728. And of course he chooses the former?—Yes.

12729. Is it the fact that that choice is possible when the *sowcar* lends the money while it is not possible when Government lends the money?—There are various reasons why *tarcari* is not keenly taken up; one reason is that it is not easily available; there is some trouble with the clerks and underlings in the revenue office.

12730. Does that mean irksome enquiries?—Yes, and something worse.

12731. They may not get the whole of the 100 rupees they borrowed?—Quite so.

12732. But do you not think the fact that there is rigidity in claiming the payment of interest and capital is also a cause for the relative unpopularity of *taccavi*?—Of course it creates difficulties. The man would like a creditor who would wait longer.

12733. The rate of interest which the *sowcar* charges is often not so very much more than the co-operative organisation charges, is it?—It is about the same, about 9 or 10 per cent now.

12734. But, in the case of the *sowcar*, if the payment of interest is not forthcoming there is foreclosure and it is by the monetary advantage to the *sowcar* of such foreclosing that his business is mainly financed, is it not?—There is the additional reason that perhaps he has an eye on the land itself, thinking he can purchase it himself if the debt swells. That is why most of our *sowcars* are very often big landholders now.

12735. They foreclose and then present themselves as prospective buyers?—Yes, and if the land had not been mortgaged they obtain a decree and sell the land.

12736. So that even in the case of unsecured debt they manage to get the land in the long run very often?—Yes.

12737. You are not very hopeful at the moment about any lessening of the practice of sub-division by inheritance?—No.

12738. But you do think that something might be done to prevent that sub-division bringing about unnecessary fragmentation?—I am not aware of any methods.

12739. If the methods were purely voluntary, that is, if communities agreed, on co-operative lines, to attempt to mitigate the evils of fragmentation, do you not think that that is a perfectly safe direction in which to move?—It is rather difficult to induce our people to do it; fragmentation and partition are ingrained in our system; one finds it very difficult to keep the holding together.

12740. Of course it was evolved in centuries during which war, famine and pestilence kept the population down at very much lower levels than it now stands, was it not?—In ancient times there was no idea of individualism; there was advantage in being members of a joint family; but with English education and British administration we have acquired, to some extent, ideas about individual living and competition and things of that kind; they have a hold on our minds; the whole social aspect has changed.

12741. Any extensive reduction of the population as the result of any of these three calamities which I have mentioned would of course effect a considerable measure of consolidation by natural means?—Yes.

12742. So that in ancient days the scheme probably did not have so serious an effect, if indeed any, upon the efficiency of the agricultural system?—I should think so.

12743. But nowadays with a teeming population, both sub-division and the consequent fragmentation do, occasionally, proceed to a point where agricultural efficiency is seriously reduced. But your view is that the habit or custom is so ingrained in the population that it would be idle to attempt any positive remedy?—I should think so. There is one other point: We have, for instance, in Malabar less of fragmentation. In the district of Malabar the family property continues to be joint. There may be 100 members in it yet the land will be one unit.

12744. They share the produce?—Yes.

12745. But they leave the family property as one working unit?—Yes, the head of the family would manage it; not much advantage was derived from that; there is not much difference between the prosperity of the *Tarwad* and that of the individual in the East Coast whose land is only a small portion.

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12746. Has that plan led to family strife in many cases?—There is a very peculiar law in Malabar, one man alone is in charge of the estate and he distributes what produce he thinks fit to the various members of the family.

12747. How does it work?—It has created its own difficulties and there is just now a law on the anvil of the legislature. The advantage of large farms is not recognised in this country because we cannot introduce machinery and things of that kind. The machinery is not suited to this country, and especially in my district there is no use for tractors. So that the disadvantage of fragmentation, and a disadvantage it no doubt is, is not so bad as it is believed to be. I do not know whether I have made myself clear.

12748. Perfectly; it is mainly manual labour, so that the fact that many of the fragments are too small for the use of modern implements does not matter so much?—Yes, even a man with 500 acres does not find it very convenient to have machinery and tractors.

12749. *Sir Henry Lawrence*: Is that in Malabar?—No, in my own district; men who have 1,000 and 2,000 acres never use machinery.

The Commission then adjourned till 10 a.m. on Saturday, the 20th November, 1926.

Saturday, November 20th, 1926.

MADRAS.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE, K.C.S.I., I.C.S.	Mr. H. CALVERT, C.I.E., I.C.S.
Sir THOMAS MIDDLETON, K.B.E., C.B.	Raja Sri KRISHNA CHANDRA GAJA- PATI NARAYANA DEO of Parlaki- medi.
Rai Bahadur Sir GANGA RAM, Kt., C.I.E., M.V.O.	Professor N. GANGULEE.
Sir James MACKENNA, Kt., C.I.E., I.C.S.	Dr. L. K. HYDER.
	Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU.	} (<i>Co-opted Members</i>)
Rao Bahadur B. MUNISWAMI NAYUDU GARU.	

Mr. J. A. MADAN, I.C.S.	} (<i>Joint Secretaries.</i>)
Mr. F. W. H. SMITH.	

Sir K. V. REDDI NAYUDU.

Further Oral Evidence.

12750. *The Chairman*: You say at page 349 on Fertilisers, "I am not aware of any fraudulent adulteration of fertilisers of a serious character. Frauds, if any, are easily detected and that means loss of credit to the producing firm." That natural protection against adulteration does not, of course, apply to adulteration by middlemen or distributors, does it?—In one sense it does, because the producing firms always take care to see that their agents are reliable men. There is only one firm in this Presidency and their sales are not much. So in the beginning there is no chance of any frauds.

12751. So, from your experience you do not think that adulteration of fertilisers, in this Presidency at any rate, is a problem?—I do not think it is a problem.

12752. I should like to ask you a general question about agricultural industries, spare-time occupations, let us call them. How far do you think Government is justified in expending public funds in popularising part-time occupations for agriculturists?—I think Government would be perfectly justified in a country where most of the revenues come from the agricultural class. In fact, the bulk of the population is agricultural. Not merely is the land tax the largest tax in the Province. For instance, in my Province we have 7 crores from land revenue and 2 crores from water tax which is also connected with the land. The other taxes are also incidental to land. In a sense even the drink revenue comes mostly from the agricultural classes. Practically all the taxes are paid by the agriculturists and anything done to such a class as that would, I think, be the duty of the Government.

12753. That is on the question of equity as between tax-payer and tax-payer?—Yes.

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12754. Now, as regards the soundness of the policy towards the agriculturist's improvements, would you agree with me that a broad test that you can apply to all these questions is that, if the industry that you are recommending is likely to be a sufficient success to stand on its own legs after a reasonable period of encouragement, then you are justified in going forward?—The industries that I suggested are not such as would compete with the rest of the world and the persons engaged cannot in the ordinary sense be said to be commercialists or merchantmen. They are just intended to make up, during the little time that these people have at their disposal, any losses that they may have incurred on account of a bad season or a bad crop. It is intended as a supplementary or subsidiary assistance.

12755. What I really meant was this. I presume that you do not contemplate a lasting expenditure of public funds or permanent annual expenditure of public funds, but rather some expenditure at the outset in order to popularise these industries?—I would be satisfied for the present with that.

12756. You must fix a limit to the amount of help that you are going to give?—Yes.

12757. On page 350 you say, "There is room for a decent coconut oil factory in the Godavari district." Why does not somebody start one?—Perhaps it is due to want of enterprise. Agriculturists rarely think of industries. Some initiation from Government, some help and incentive would be necessary in the beginning.

12758. Is it your experience that in this country there do exist openings which, if Government point the way, are taken advantage of, but if Government do not give the lead, nothing is done?—Practically, yes.

12759. Have you got any coconut oil factories in the Presidency?—Yes, on the West Coast we have; there is the Tata Company in Cochin and there is one in Pondicherry.

12760. The Tata Company does not lack enterprise as a rule, does it?—It does not; they have got enough funds. Unfortunately in this case there were some persons who did not work well and there was loss.

12761. Tata's Oil Works are losing?—They lost, 4 years ago, at any rate. I do not know the present condition.

12762. I want to ask you a question on a small point on page 351 of your note. You say that the cattle census, when used as evidence in courts of law, has caused immense mischief to individual litigant ryots. Is the statement accepted as preappointed evidence by courts in this country?—It is looked upon as a public document, a document prepared by a public officer in the discharge of his duties according to the Evidence Act; so it is used as evidence. The Census Report itself is not, but it is looked upon in another light altogether.

12763. Is that not sometimes traversed successfully?—It all depends upon the circumstances of each particular case.

12764. You mean individual hardship?—Yes.

12765. I do not know whether you wish to expand the information provided in the figures which you were good enough to hand in after adjournment last night?—I have only one or two remarks to make with reference to each of these statements.

12766. Perhaps I might say that statement No. 1 shows the amount spent annually by the Government of Madras on agriculture?—Yes. I just wish to point out that that is a very small proportion. For instance, the total revenue is 17 crores and we are spending only 9 per cent of that.

12767. If you take the land revenue which is in column 3, it is 6 to 7 crores and the percentage spent on agriculture would not come to 3 per cent?—That is only to show that very little money is being spent in the Province on agriculture when we remember that the bulk of the revenue comes from the land; that is the first statement. As regards the second statement, it is a comparative statement of different countries. Whereas the United States of America are spending Rs. 1,681 per 1,000 of population, we in Madras are

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spending Rs. 24-6-0 and India is spending Rs. 33-10-8. I agree that populations differ. Our population is very large and the revenues of the United States of America are of course very large. All the same, I submit that Rs. 24 per 1,000 people is a small sum. I may now refer to the third statement; the paddy yield in Madras is only half a ton per acre; when we come to Spain it is about $2\frac{1}{2}$ tons per acre. I may be wrong in my figures but these are the figures supplied to me by the Secretariat when I was in office. Italy has $1\frac{1}{2}$ tons yield per acre. Considering that we have some of the best rivers in this country and considering also that our land is not poorer in quality than that of other countries, with the bountiful sun we have got, one fails to understand why we are producing so little. If science is applied, improvements are effected, new strains are evolved and all that should be done is done, then possibly our yield can be increased. That is, however, a matter for your investigation. I am just putting it as a point that has occurred to me.

12768. The outturn of paddy in Spain is about $2\frac{1}{2}$ tons per acre?—Yes.

12769. What is the yield per acre in the United States of America?—It is four-fifths of a ton.

12770. Are you certain that that is not the 12 months' yield per acre whereas yours is the crop yield per acre?—The majority of fields in this country give us only one crop. It is only in the deltas and other places that two crops are raised, but the second crop is always unreliable.

12771. You have known this Presidency and particularly its agricultural life for a long time. Have you gathered that any change has taken place in the outlook of the rural population or in their standard of living?—I cannot say that any appreciable change has taken place; but I assume that, ever since the canal system was introduced, we have got undoubtedly a better standard of living but it is not as is to be found in other countries.

12772. Do you think there is a growing demand for a better standard of living; do you see any change in that direction?—Yes, I think it is practical human nature. I cannot say that my observation pointed it out to me, but something tells me that every man tries to live better than he is living at present. He wishes to have a better standard of life, better food, better clothing, better housing and so on.

12773. But you cannot say you notice any increase in the manifestation of that tendency?—No appreciable increase.

12774. Is it your experience that the Reforms of 1919, and the discussions in the legislature on agricultural subjects which have no doubt in this Presidency followed those Reforms, have had the effect of quickening public interest in agricultural questions?—No, except in a certain class which is more or less devoting itself to politics. I do not think the Reforms have touched the agricultural population.

12775. You do not think that there has been any stimulating of the agriculturists in this matter by the politically-minded class?—No, except a vague fear that something is wrong with the Government and things of that kind. Those ideas have been inculcated, I know, but they do not know what it is actually. People say everything is wrong with the Government and everything is wrong with the Legislative Councils and with the Ministers, but when they are asked what it is, nobody is able to say.

12776. That phenomenon is not confined to India, I can assure you from my own experience. You cannot tell me that you think the general effect of an increased interest in politics has been to quicken interest in agricultural affairs?—I do not think I can say that.

12777. Can you say that that same experience has had an influence in educating the intelligentsia, as it is sometimes called, in rural matters and rural economy?—My own belief is that the intelligentsia do not take any real interest at all in rural economics.

12778. Are they only interested in so far as those two things touch upon political values? Is that the point?—Politicians only take care of themselves. They want something which they call by various names, but they do not im-

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part it to the villagers. The villagers' demand is only an ignorant demand; they do not know what it is that the politicians are asking for. I wonder whether many politicians themselves know what they are asking for.

12779. Do you think it would be a good thing if a University degree in rural economics were instituted?—I am not a great believer in the science of economics.

12780. Rural economics in its widest sense touching the general life of the cultivator, not systematised political economy applied to rural life; would a degree in that subject make any contribution towards a better appreciation of the rural problems by the intelligentsia?—I do not think it would serve any purpose. I would rather prefer the Minister in charge of Local Self-Government to have a scheme for himself of rural reconstruction for supplying each village with a school, a road, a library, a hospital, a recreation ground, etc. If a programme of that sort for a number of years is kept in view and carried out, it will certainly do more good than any such education which may be attempted.

12781. *Professor Gangulee* : How can you draw up a programme without any economic data?—Economic data are necessary, I agree; but for the purposes I am mentioning, I do not think any original economic data are required. For instance, I do not think it is absolutely necessary, for the purposes I am speaking of, to know what a man has got, what is his debt, what his property is worth, what his annual yield is, and so on.

12782. *The Chairman* : Are you influenced at all in that view by any opinion as to the merits of so called Western economics as applied to Indian conditions?—I have in my humble way tried to do some work in that line. When I was President of a Taluk Board I tried to get information from villagers; when I wanted to know what a cultivator paid for his cattle, he told me he paid Rs. 200 when he had only paid Rs. 100; when I asked him what his debt was he would not tell me his actual debt; he would put it at a low figure and being afraid of income-tax he would not tell us what his income was. So that there is considerable difficulty in finding out the true state of affairs.

12783. You have had much experience, and I want to find out whether by any educative means, either in the high schools or in the Universities, it is possible to render the educated class more sympathetic towards the needs of the rural classes?—Of course it must be admitted that education will do a good deal, but how far it is enough to change national characteristics, and how far immediate results can be expected from such education it is difficult to say. For instance, we have had University education for the last 50 years, and I do not think I can say that education has helped us in that way.

12784. It has been of the right type?—I do not think it has been. I have said in my note that the education we receive at present is not of the right type.

12785. You have failed to get education of the right type. You say that in this note?—Yes.

12786. That is as far as middle schools go; is it not?—I have said that after the middle schools some education in the professional lines, such as agriculture and industry, should be given.

12787. Do you not think it would be a good thing to carry that forward into the Universities and attempt to give learners at the Universities some education in and knowledge of agricultural problems and rural life generally?—I would limit University education to purely cultural purposes, that is, for the development of the culture of the individual. I would rather separate agricultural and industrial education from University education and utilise it merely as a means of making, if I may say so, two blades of grass grow where only one grew before.

12788. You do not think, for instance, that as a qualification for public service in departments other than the Agricultural Department a degree in rural economics in its broadest sense might be in the public interest?—I do

not think so, because I find that this economics would be very rarely required in the public services.

12789. Rural economics in its broadest sense, I repeat, is not merely the application of systematised political economy to agricultural subjects; I am thinking rather more of a broadly devised course on rural life and rural welfare as those are touched by the economic conditions of the country side?—I can only answer that the science of economics, both political and rural, is a new thing in my country; it is much more new here than in other countries. Unless I am sure of the particular curriculum I shall not be able to give an opinion on that.

12790. Do you agree with me that it is very important, if possible, to excite sympathy for and interest in the welfare of the cultivator in the minds of the educated classes of the country?—Of course it will be very desirable and very patriotic.

12791. Could you suggest any constructive measure by which this might be achieved? I am a believer in the theory that the desire to work for the people is instinctive and intuitive; patriotism alone can induce a man to work for his people?—Education alone, whatever shape you give to it, will not be able to achieve it. Unless people learn to be more patriotic than they are at present, they will not achieve anything in the sense of doing something for the people.

12792. And even in the case of the large landholders, there are very few who take an active personal interest to the same extent as the landholders in England do?—Yes, I am sorry to admit that, but I believe it is so. There are of course exceptions; some landlords do take a real interest in their tenants; but on the whole, the touch between landlord and tenant is very small.

12793. The tradition of a country life is not established in the same way in this country?—I do not know much about England; but I am afraid here it is not to the extent to which we are accustomed to read about as to England.

12794. And you can make no positive suggestions with a view to achieving those two *desiderata*, namely, wider interest on the part of the landholder in the business of the countryside generally and wider knowledge of and sympathy with the cultivators' affairs on the part of the educated urban classes?—I should think the first is almost an impossibility, because of the existing relations between the zamindar and the tenant. The tenant has very little to do with the zamindar nowadays except to pay his rent. All his relations are with Government, and the Government have taken all the powers of the zamindar; the zamindar has only to pay his *peish-cash* and receive what he gets from the tenant; permanent occupancy rights have been given to the tenant; the zamindar cannot eject him, that is not within his power. There is no corresponding relation between the two, so that I should think hereafter to expect any such interest on the part of the zamindar for the tenants is out of the question. As regards educated men taking interest in rural affairs and serving their countrymen by helping them to raise their standard of living, I think those things are possible, but I do not know whether under the present circumstances it will be easy to achieve.

12795. *Sir Henry Lawrence*: You have, I believe, visited Bombay on various occasions?—Yes.

12796. You have been able to compare the position in the neighbouring districts of Bombay with that of the neighbouring districts of Madras?—Very little; I cannot say I have much experience of the countryside; I have visited the city more often than the countryside in Bombay.

12797. Well, we have an idea that in Bombay there has been a considerable awakening of public spirit among people who represent the Taluka or District Local Boards, and that a good deal of public work is being done during the last few years. I gather you do not hold the same view in regard to your Taluk and District Local Boards?—No.

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12798. Is there any special reason in Bombay to account for such a difference? Do you admit that there is such a difference?—I cannot tell that, unless I know the conditions in Bombay.

12799. You have seen something of them?—I did, but not enough to form an opinion.

12800. Were you not struck by any difference in the interest that the people take in local self-government?—Yes, and the work that is being done by the representatives of the people on the Municipalities and Local Boards. I do not think I can say there is much difference so far as I have seen, but I have not seen much of Bombay.

12801. You have seen nothing to cause you to take a pessimistic view. It is just the difference between an optimistic and a pessimistic outlook, is it?—I cannot answer that question; it of course depends upon the temperament.

12802. We were told by a witness yesterday that in Bombay people are generally richer and among the agriculturist and industrial classes there is a higher standard of living?—I cannot agree with that proposition. If you take the cities it is all right; but I think the Deccan ryots are much poorer than our ryots; as a matter of fact if I can judge them on the one or two occasions I saw the houses they live in, the food they eat, and the dress they wear, and the very look of the men, I should certainly think that the Madras ryot is far better off than the Deccan ryot.

12803. That is a very interesting point of view. Is the standard of wages higher in Madras than in Bombay?—I cannot tell you because I do not know the wages in Bombay. I know the wages here; if you can tell me what wages the ryots of the Bombay Deccan get I may be able to say.

12804. *Sir Ganga Ram*: Can you say what the agricultural wages here are?—It ranges from Re. 0-6-0 to Re. 1; it rises to Re. 1 in the season; in the off season it ranges between As. 6 and As. 12.

We were told yesterday that it was 2 annas.

12805. *The Raja of Parlakimedi*: That is, in the Agency tracts; they are hill tracts, where labour is not at all needed?—I was referring to the delta tracts; I come from the Godavari district.

12806. *Sir Henry Lawrence*: In your statement you say that one of the causes that are unfavourable to the ryot is expenditure on drink?—Yes, the lower classes.

12807. Only the lower classes?—Yes.

12808. What proportion of the families in Madras you would suggest have the drinking habit?—Almost all the labouring classes, and a few amongst the tenants, that is, those who have only small holdings.

12809. Would you put that at one-third of the population?—I have not thought over that matter, but considering that we get 4 to 5 crores of rupees from the abkari revenue I think it ought to be a little more than that.

12810. Rather more than one-third?—I am not sure because I have never calculated it.

12811. Have you got no figures at all to show what proportion of your total population is given to drinking?—I do not know of any; probably the Excise Minister will be able to answer that. I was not in charge of that department.

12812. Do you think it would be something less than half the total?—I should think so; it is a pure guess.

12813. Your excise revenue, you say, is about Rs. 5 crores?—Yes, about 5 crores.

12814. The Government take a very large proportion of the price for a bottle of country liquor, do they not?—Yes.

12815. Can you tell me what proportion that is?—I cannot.

12816. Will it be five-sixths or nine-tenths?—I have no idea.

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12817. In Bombay it might be about four-fifths?—Yes.

12818. In this Presidency, presumably, it would be something similar?—Yes.

12819. So that the total expenditure on drink would be in the neighbourhood of 6 crores?—Probably.

12820. And your population is about 4 crores?—Yes, 41 millions.

12821. So that, roughly, the expenditure per head is Rs. 1-8-0; have you worked that out?—It was worked out, but I do not remember the figure exactly; it must be somewhere about that figure. Some time ago, this Government was complaining that our abkari charges were more than in other Provinces, and that we were paying more per head.

12822. I just want to arrive at some idea of the figure that the people expend?—Yes.

12823. That is Rs. 1-8-0 per head; that represents 2 annas per month, does it not?—I have a vague impression that Sir Charles Todhunter put it at Rs. 2-12-0. I do not know whether he is referring to this figure, but I have some impression of that kind; it is Rs. 2-11-0 if I am not mistaken.

12824. Per what? Per head?—Yes, per head.

12825. For the year?—I should think so.

12826. I want to get a figure which represents the expenditure of the drinking man in the drinking family. You have never worked that out?—No.

12827. You make the general statement that it is a substantial contribution to the debt or poverty of the ryot?—Yes, a general observation not based upon any of these figures; a general impression that in the lower classes money is being spent on drink which they might have saved and used for better purposes.

12828. You can give us no further indication of what the total amount is in a drinking family per head?—No.

12829. On the question of emigration, are you acquainted with any men who have emigrated for a period and have returned to this country?—The people of my district go mostly only to Burma.

12830. Which is your district?—The Godavari district in the Northern Circars; the people from the delta, that is the lower classes, the toddy drawers and the depressed classes, go to Burma and come back.

12831. Do they improve their economic position by going there?—I should think so, because I found some of them bringing money from Burma and purchasing lands here.

12832. Were those the depressed classes?—Some of them; the class called the *Shettibaliyas*, corresponding to the toddy drawers, is more improved than others.

12833. They are not untouchables?—They are not; but I know of *Panchamas*, who are untouchables, going to Burma and coming back with a little money.

12834. Do they come back with an improved standard of living?—I cannot tell that, but I know they are better off in circumstances; they own land, and they possibly dress better than their fellows in the village.

12835. Do you find any difference in their moral standard or in their outlook on life; are they more ambitious; do they cause any trouble in their villages?—No, they do not cause any trouble that I know of.

12836. So that, on the whole, this emigration is beneficial?—So far as Burma is concerned, I should think the people are improved, they are better off for it.

12837. Have you any views on emigration to other places, to Ceylon?—No, except what we read in the papers; the Assam troubles and the Ceylon troubles are common property now. There is a vague and general impression

in the country that something is wrong with the means by which this emigration takes place, the *Kanganis* play false and there is another vague impression that something is wrong in those places, that they are not well treated and things of that kind, but I have no evidence to go upon.

12838. Nothing more than the vague impression that the Ministers are not doing their job?—No.

12839. Do you think that those conditions of emigration could be improved?—I have not studied that question at all, but I have that vague impression, again, that something better could be done.

12840. Is emigration permitted to other places overseas?—I thought it was stopped, (was it not?) to Fiji, Mauritius and other places.

12841. It is completely stopped, is it?—I cannot definitely tell.

12842. *Professor Gangulee* : Not completely; indentured labour is stopped by the Act of 1922?—Something of that kind happened; so far as I know, many people are not going from this country to those parts.

12843. *Sir Henry Lawrence* : If it is not prohibited, it is at any rate discouraged?—Yes.

12844. Do you think it is rightly discouraged?—Well, it is right in places where labour is sparse, but if there are districts where there are more men than we want, I should certainly be glad if some of them go out and come back with a little money, provided of course they are better treated there.

12845. Do you think that would be the general view of educated opinion in Madras?—At least those that belong to my school of politics think like that.

12846. How would you label your school of politics?—I am known as a Justicite. We have in Madras the Justice party, the Swaraj party and the Congress party.

12847. Those who hold with you would take that view?—Yes, I should think so.

12848. *Sir Ganga Ram* : May I ask you, first of all, a personal question? You say you belong to the zamindari class?—No, I have never said that; I belong to the agriculturist class; I am a farmer's son.

12849. That is what I mean; have you any lands?—I have.

12850. How much?—About 200 acres.

12851. In the Godavari district?—Yes.

12852. You also lease land to the tenant?—Yes.

12853. Then, you do not suggest that the land can ever be regarded as a profession, or that agriculture can be made a profession. I understand that all the people here who own lands, as soon as they become a little educated, come to the High Court to practise?—Yes.

12854. They leave the land to tenants; in that case, what improvement in agriculture can you possibly expect?—Well, not from these educated classes surely, but from the others; I am only perhaps one in a million.

12855. Are there a million landholders here who own large areas of land?—Not large areas, but they own small areas.

12856. What area of land would you consider sufficient to attract a man to agriculture as a profession, so that he would not go to practise in the Courts?—In my district 5 acres.

12857. For the educated classes, how much would an ambitious educated man require? I understand that you are owning 200 acres, but you do not consider it worth while to settle on the land?—I can.

12858. How much land, do you think, would attract an educated man?—It is not merely a question of the extent of the land; the educated men think that there are careers open to them, which will be more dignified.

12859. It is the amenities of life that they require, is it?—Yes; we are accustomed to town life, which we do not find in our villages; we want society, newspapers, discussions, politics and lots of other things.

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12860. You cannot suggest any constructive scheme by which agriculture can become a profession amongst the rising generation?—It is a profession, but it is not the profession of the educated classes.

12861. But people are getting educated; the craze is now for educating everybody; do you mean to say that agriculture will go to the wall then?—It will never go to the wall, because there are always a sufficient number of men in the village and in the fields to look after it.

12862. Do you mean uneducated people?—Uneducated or halfeducated.

12863. I understand you were Minister for three years?—Yes.

12864. Did you ever represent to Government that they are spending only 1 per cent of the revenue on agriculture?—I have done that all my life. These figures were taken from a speech which I made defending the policy of Government, and asking for more money when the opposition wanted a lump sum out of Rs. 2 lakhs out of the provision of Rs. 14 lakhs.

12865. Did you represent to Government all these views that you have given us in this memorandum?—It was not necessary to represent to Government, because I was part of the Government; I had to represent to the Legislative Council, and I did so speaking in the Legislative Council.

12866. Under the head of Irrigation, you give a lot of figures; are you quite certain of your figures?—I must apologise to the Commission, for this reason. I was engaged in the elections till the 8th of this month; I did not see the Questionnaire; I did not receive any notice of it personally myself; I arrived here on the 10th, and I had only three days to prepare my replies; I will not vouchsafe for the correctness of these figures.

12867. I see that there are three or four projects for irrigation on the anvil of the Legislature; the one you mention is the Mettur project; that, you say, has been sanctioned?—Yes.

12868. And the work is going on?—Yes.

12869. Is that project a productive or protective one?—It is put under productive schemes.

12870. How? Six crores at 6 per cent means 36 lakhs; divided by 3 lakhs it means Rs. 12 per acre; do you think the landholder will ever be able to pay Rs. 12 an acre? Then you must also add the working expenses at 25 per cent at least; that means Rs. 15 an acre?—Yes.

12871. If Rs. 15 an acre is to be charged to the landholders, how can you call it productive?—There are people who are prepared to pay even higher rates. I remember in the Legislative Council a member from Coimbatore saying that, if what is known as the Bhavani project were carried out, there are people who would be prepared to pay even Rs. 40 an acre.

12872. Then your whole difficulty is solved. If you charge the people who use Government water at the rate of even Rs. 10, you make at least Rs. 10 crores?—In a general form like that, it is rather difficult to work out; each scheme will have to be taken by itself of course. Government would construct these productive works, provided it came within their standard. Sometimes, people who have no other means of growing crops may be willing to pay a higher rate.

12873. Have you ever consulted these people whether they are willing to pay Rs. 15 per acre?—No.

12874. Have Government consulted them?—I should think so.

12875. What is the acreage rate for water?—I am not quite sure of the figures.

12876. You say it is 6 crores; I say at 6 per cent it means 36 lakhs; add to that 25 per cent for working expenses, that means Rs. 15 per acre?—Yes.

12877. Are the people willing to pay so much? If people are willing to pay so much, every protective work becomes productive?—No doubt, it does.

12878. You were telling me about the Bhavani project. I saw some figures in this morning's *Madras Mail*, and according to those figures it comes to

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Rs. 15 an acre, and if you add the working expenses, it comes to Rs. 20; with regard to the Bellary West Canal project, it will come to Rs. 90 an acre, which means Rs. 100 an acre including the working expenses; Rs. 90 lakhs is going to be the cost for a project to irrigate 57,000 acres. Can you suggest anything in that? Is it true that these figures are correct and yet, with these figures before you, you would call these projects productive?—I thought you were questioning me as to the correctness of my figures; I think they are correct in the sense that I have taken them from the speeches of two responsible Ministers and Members of Government. On the whole, I can claim them to be correct.

12879. That is how it works out. All I ask is, what is the future of the Madras Presidency as regards irrigation if irrigation projects like that make the people pay Rs. 15?—I do not advocate the payment of Rs. 15 at all. On the other hand if you have seen the other paragraphs where I question the policy of the Government I suggested that the 6 per cent rule ought not to be enforced.

12880. Then what should be enforced? The Government credit is now only 5 per cent?—Yes.

12881. Perhaps when the Secretary of State laid that down it was 6 per cent. You think that Government should give the money at 2 per cent and let the general tax-payer pay the rest?—I should think so; yes, it comes to that, probably. I said that this rule ought not to be enforced but that they must be prepared to suffer a certain amount of loss.

12882. Loss from what source?—The general tax-payer's money.

12883. The general tax-payer has to pay the money for the benefit of the agriculturist?—Yes, because it will improve the national wealth and will improve the food supply of the country.

12884. You say that teachers should come from the agricultural classes. Is there a caste of the agricultural class. Will you define the agricultural class?—I understand it in the sense that all those who are engaged in the profession of agriculture belong to the agricultural class.

12885. When you talk of the teachers of that class what do you mean by that? A man whose father was an agriculturist, but who himself has never done any agriculture?—I drew a distinction between the Brahmns and the high caste Non-Brahmins who do not actually concern themselves in cultivation. The teachers come from that class and even the boys are coming from that class at present. My idea is that both the teachers and the boys should come from that class.

12886. Properly speaking what I learn is that the depressed class is the only class which is to be considered as the agriculturist class generally?—I will not accept that at all. I belong to the agriculturist class. My father and forefathers belonged to the agriculturist class and my brothers and brothers-in-law are tilling the soil to-day.

12887. Why have you not made agriculture a profession? Why go to law?—Because I find law more profitable.

The Chairman : You are not speaking for the whole Commission, Sir Ganga Ram, when you say that we learn that the depressed classes alone are the agriculturists. Some of us did not at all gather that yesterday.

12888. *Sir Ganga Ram* : When you say first crop and second crop, do you mean from the same field?—Yes.

12889. Do you take two crops always?—In some cases; not always. In the delta some lands are given what is known as a turn, or the closed canal and the open canal as they call it. They give us water for some fields. One section gets it and another section does not get it.

12890. *Sir Thomas Middleton* : I see from your précis that you have taken a great personal interest in the Agricultural Department. You have yourself selected the young men who went to the Coimbatore College but at the end of their course these young men disappointed you by seeking Government service?—They did.

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12891. What remuneration would they get in Government service? How much a month?—After the college course, I suppose they start on Rs. 80 or 90 a month as Demonstrators.

12892. How many acres of land in your district would one of these young men have needed in order to make Rs. 80 a month from their improved education?—20 to 25 acres.

12893. Twenty to twenty-five acres? I think you must be estimating the gross proceeds from 20 to 25 acres. Remember that in order to get value for his education he has to increase the value of the produce?—Yes.

12894. He would have to be a very clever man to get that from 25 acres?—Yes. I see the mistake; it ought to be fifty acres.

12895. How many of these ordinary college students could command 50 acres?—Very few.

12896. Then may I put it in this way, that the college student is a believer in economics and that you are not?—Very likely.

12897. Is that the explanation, do you think?—It is possible. I do not put it on that ground because I think I can claim a certain knowledge of our people. The one desire of the people is the belief that there is dignity and power in office, which they do not get when they are on the land. Circumstances have so conspired for the last 40 or 50 years. For instance, a Revenue Inspector on Rs. 30 or 40 is much more respected than a landholder with 200 acres or with 1 or 2 lakhs to his credit. That man has to get up and salute the Revenue Inspector when he passes. We have things which you never find in any other country. All that means that people have been drawn away from the land.

12898. I appreciate that difficulty. Now, is there any organised attempt to combat that feeling in the students' mind?—Yes; I should think so. Our own party, the Non-Brahmin party in Madras, has been trying its level best to remove these difficulties.

12899. You point out very clearly the rate at which unemployment is increasing among graduates?—Yes.

12900. You say, "Their education," that is, the University students' education, "having been designed and imparted with a view to make them fit to be clerks and officials." Now I ask you the question, has it been designed for that purpose?—It is difficult for me at this distance of time to say what the original design of the original framers was; but it turned out to be the fact. They wanted men; there can be no doubt about that. The early officials and authorities of this country wanted some medium by which they could carry on the Government.

12901. I am aware that 70 or 80 years ago there was this definite policy; but I was under the impression that in the interval the policy of University bodies had been entirely modified?—There was a change in 1904 and recently in our own Province during the first Ministry and the second Ministry; but not much change has been effected by these new Acts.

12902. Having that statement of yours in mind, I was very much surprised to hear you say that you yourself would confine Universities to cultural subjects?—Yes.

12903. And that you would employ, shall we say, technical high schools or technical institutions for all other subjects?—Yes.

12904. Is it your view that agriculture for example or engineering may not be a cultural subject?—From University education I would not exclude that at all. I would leave the engineering side of it, the scientific side, even the agriculture side. That ought to be done by the University. I was only thinking of the requirements up to the age of 16. Those of course that are fit for scientific education, for engineering and other sciences, certainly will have to go to the college.

12905. What I wanted to get your view on is the proper University policy to adopt for a set of conditions such as we are faced with. Would you approve

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of Universities introducing, so far as they go, such subjects as engineering, commerce, agriculture, as has been done in the Universities of Europe?—Yes.

12906. You would approve of that and would not confine Universities to literary subjects?—No. In culture I would include the higher sciences, whether they be agriculture or anything else.

12907. I wanted to make quite clear what your intention was. You make a very interesting suggestion about the selection of 10 per cent of the boys from rural areas?—You need not take the figures exactly at 10 per cent. I meant only to say a certain proportion.

12908. Is it to be a certain proportion in all the rural areas of the Presidency or would you go from area to area and fix a number to be taken from that particular locality who could be allowed to enter the higher institutions?—I do not think that I would give any attention to that. Particular areas were not in my mind at that time, but I suppose when it comes to a question of practical working out, some such thing has to be considered.

12909. I tried to work out the matter practically and I was at once up against this difficulty of how you are to decide what boys are to go forward?—The headmaster of the school can certify that they are fit.

12910. Headmasters differ in knowledge, experience and quality in every taluk. How can you get the headmaster to certify?—I quite agree but my difficulty was this. Some step has to be taken against what is going on just now; this is only given as the basis; I may be wrong and better schemes might be conceived. But I was only driving at this, that the present system of education must cease and something more practical and more useful to the country adopted. Probably I was wrong in giving the percentage.

12911. I agree with the object which you have in view, but I cannot see how the methods would work out?—I see the difficulty.

12912. Can we, in practice, get away from the old and despised system of examinations?—Well, there were days when there were no examinations and I believe that even now in some cases where diplomas are given they are not merely based upon examination but on the experience of the teacher of the boy in the class and what he knows and sees in the boys.

12913. It is an easy matter when you have a small number but it is a matter of some difficulty when you come to deal with all the children of the Presidency. How can you do that?—I see the difficulty.

12914. You say in quite another connection “I do not know of any non-terminable mortgages in this Province. The old saying ‘once a mortgage always a mortgage’ is true in this Province.” Have you never heard of a sinking fund in this Province?—Not in land.

12915. Is there any reason why that method of repayment should not be introduced?—It has not been in vogue here. I know of no case of that kind.

12916. *Dr. Hyder* : I find on comparison that your figures are quite correct, 3 lakhs?—Yes.

12917. I understand you are not satisfied with the loan policy followed by the Government of Madras?—I am not.

12918. You say that the six per cent rule stands in the way and you want to abrogate it?—Yes.

12919. I should like to go into that question. There is scope for irrigation here in this Presidency?—There is.

12920. You say financial difficulty stands in the way?—And the policy of Government.

12921. Take the Mettur project. Suppose after deducting the working expenses the project is not expected to return 6 per cent, your view is that if the policy were rigidly followed that project would not be constructed?—Yes.

12922. But I think the Government could not depart from the policy laid down in the Report of the Indian Irrigation Commission, because there are a number of other things which ought to be taken into account. I do not

know what arithmetical calculation has been made. Taking into account the area that will be irrigated, I suppose this Mettur project gives only a return of Rs. 3-8-0?—We will assume that and proceed.

12923. Then with reference to the indirect charges, I want to draw your particular attention to a chapter in the Indian Irrigation Commission's report where it is said that these indirect charges vary with the nature of the project?—It is some time since I read the report, probably 8 years ago. .

12924. I will tell you the substance. Indirect charges will vary with the project? If the project will yield much there will also be an indirect increase in the revenues of Government; if the direct yield is small the indirect yield also will be small; taking Rs. 3-8-0 as direct yield and 25 per cent as the indirect yield that will give Rs. 4-8-0. Then this project would remain not unconstructed. But there are one or two factors which if brought to the notice of the Government would lead to construction, leading to an increase in resources and the avoidance of cost entailed in future measures of famine relief. If those factors were taken into account and the factor of increase in the future resources of the country were also taken into account I think many of the projects which at first sight seem unproductive would become productive?—Yes.

12925. I want to know if that matter has been threshed out in the Legislature of the Madras Presidency? Not in that light. But the general run of the members of the Legislative Council will almost be of the same opinion as myself, that the Government policy is too rigid and that a little loss need not be feared; that the incidental advantages, what you call indirect advantages, would outweigh such disadvantages as additional expenditure that the Government may have to incur.

12926. Both as regards famine relief and the probable increase that may take place in the resources?—And also the capacity to bear additional taxes in other directions. If it is worked out like that, probably there will be many projects which might be taken up.

12927. With reference to the question of a philosophical nature put by the Chairman I was wondering what your answer was. Is there any desire for better life?—It is human nature to desire, but how is that desire to be achieved?

12928. The only class among which there is the desire for a better life is the educated class?—That is the audible one, if I may so put it.

12929. What is that due to? Is it due to Western influence?—Yes.

12930. If the mass of the people were brought under Western influence you think that they would also have a desire for better life?—I should think so.

12931. At present they have not made any such demand because they have not been brought under Western influence?—Not many of them.

* 12932. Did any of the sappers and miners who returned from the War have a desire for a better standard of living?—None of them returned from Flanders, and as regards those returning from Mesopotamia they found no new ideas there. •

12933. What is the attitude of these people? They had been to other countries. Do they not desire a better life?—I have not come across them. Possibly they are glad they came back with their lives and brought a little money. Their stay in Mesopotamia was very short.

12934. Now in regard to the Farm Loans Act of the United States, I was wondering whether you could briefly enumerate the chief provisions?—Well, I would prefer to supply you with a copy of it. There are 12 States. A certain sum of money is earmarked for a particular purpose. The co-operative societies collect by debentures being issued and the co-operative bank of each State stands security for the debentures of the other 12 banks. •

12935. I was wondering whether the State Government and the Federal Government were effectively helping from the financial point of view the

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formation of these banks?—I would not like to express an opinion without the Act before me.

12936. *Dewan Bahadur Raghavayya* : What is the attitude of those officials of the department which has most to do with the ryot population and the agriculturist. It is not hostile, I take it?—It is not hostile. So far as the Agricultural Department is concerned they are very sympathetic. They have been trying their best to improve the condition of the ryot.

12937. Officials of the Revenue Department?—It is a matter of indifference to them so long as the revenue comes in.

12938. Do you agree that this is due more to their ignorance or want of knowledge on matters of rural economics. If these officials instead of themselves being ignorant had a knowledge of rural economics they could and would throw out suggestions for the improvement of the agricultural population, could they not?—They are fairly well educated men. They are all graduates of the University. Just like myself they are not versed in economic science.

12939. And a better knowledge of rural economics in particular would help them considerably in helping the ryot to earn more?—I cannot say because it has not been tried and experience has not shown.

12940. Do you think it is worth trying?—I am afraid it is a difficult question to answer. It is difficult to say. In this Province at any rate it has not been tried and I have no precedent or previous experience to say whether it will succeed or not.

12941. *The Raja of Parlakimedi*: Considering the size of the Presidency would you not advocate another college for the Northern Circars?—Certainly, yes.

12942. Where would you like to have a college?—At Samalkot; it is my district.

12943. Would you select a site a little north of that, Vizagapatam?—No, because Samalkot is nearer to the other districts and the Ceded Districts will be far away from Vizagapatam.

12944. It will be a compact area?—We have got other difficulties; we have delta cultivation. For garden cultivation your district is quite good, but there is no delta cultivation. It is nothing like the one at Godavari.

12945. It has not been possible for the department to pay attention to that part of Madras?—It is not the fault of the department; Government do not provide funds.

12946. As regards middle schools and high schools, have you got a comprehensive supply of vernacular books?—I cannot say. I remember the Director sending me one book which I was never able to get through. We have no text books at present. I think the department is trying to get some books prepared.

12947. Vernacular will be the medium in those middle schools?—Yes.

12948. It was not popular because boys did not have proper books and so on?—I cannot say. Perhaps what they want is more training on the field than actual book reading.

12949. Have you visited one of these schools?—I visited both these schools at Taliparamba and Anakapalle.

12950. Is practical work incorporated in the curriculum?—That is the most important portion of the work.

12951. Were they taught to work?—They were taken to the field and made to work there.

12952. As regards your remarks about the present curriculum of teaching in different schools and Universities do you think that unless the public are made to feel that it is time to take to these agricultural avocations and unless they insist upon boys taking to this sort of education, much can be done in reforming the present curriculum followed by the University?—Well, I cannot tell. If

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I have followed your question correctly, is it that the time has not yet come and there is no public demand for any such change as this?

12953. There is a demand. But the need is that the country people have not yet understood fully that they should not hereafter stick to Government employment but that they should go back and work on their fields and recognise that labour is just as respectable as office work?—I quite agree. Possibly we are in the transition period. In the next decade they will feel it.

12954. Do you think anything is being done to popularise the idea to change to that way?—I think, as they say, the test of the pudding is in the eating, and when they find that investment has no return they will take up this.

12955. There is no particular body tackling the question?—No; none that I know of.

12956. As regards irrigation in the Godavari canals you say there is still land for irrigation. Are they cultivable areas?—Yes, cultivable areas.

12957. May I know what is the obstacle in the way of irrigating them at present?—The original delta system was intended for about 6 or 7 lakhs of acres; we have already reached 8 lakhs of acres, and the P. W. D. authorities are afraid they may not be able to supply water unless it be by a remodelling scheme which involves the taking of the canals to higher lands. Then there is the further difficulty of water in the river; at present the level is 3 feet; the proposal is to raise it to 6 feet. If the remodelling scheme is put through then higher lands will be irrigated.

12958. With this improvement, will it be possible for those areas to raise second crops?—Yes, as a matter of fact at present a second crop is not allowed on all plots; if one section is allowed the other section is not.

12959. The whole area will be under a second crop?—Very nearly the whole; of course some fields are unfit for second crops.

12960. All others can be cultivated with a second crop?—Yes.

12961. Even these additional lands?—I do not think so, because they are higher lands.

12962. Have you at any time taken a personal interest in the cultivation of land?—I do take some interest in it whenever I go to my fields. If you mean to ask me if I have ever held a plough, I must say no, not that I am ashamed of it.

There is nothing to be ashamed of. I may tell you I have done it myself.

12963. I want to know what acreage of paddy cultivation one man can cultivate himself?—I think 4 to 5 acres would be quite sufficient.

12964. For a field labourer?—It varies; if the land is of a common level it is always at an advantage. The larger such area the better it is; the water will spread evenly.

12965. That depends upon the power?—Water-supply?

12966. Water-supply as well as animal power?—Yes. Four acres will be a good thing if they can be divided into plots of one-fourth or one-eighth of an acre.

12967. Are you following the methods advocated by the department for manurial purposes as well as their methods of improved cultivation?—I should think so.

12968. On your fields?—No; I lease out all my land.

12969. Do you persuade the cultivators?—We do, so far as planting single seedlings are concerned; they used 5 to 6 *putties*, and now they use 2 to 2½ *putties*.

12970. If the seedlings are stout enough the transplanter automatically does transplant single seedlings?—It is not merely in the seed bed itself; when they took to transplanting they used to transplant in bundles, but now they put in one or two.

12971. Have you ~~any~~ ~~tried~~ any manures in your fields?—You mean my own fields?

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12972. Yes?—No.

12973. Potash manures or green manures?—I know they are used, but I have not used them myself, because I have leased out my lands. I know these green manures have given excellent results; I am referring to what you call *jeelinga*.

12974. How much do you get by lease?—For coconut gardens I get Rs. 75 to Rs. 100; for paddy fields Rs. 50 to Rs. 60; there are other lands which are not so profitable as those.

12975. Of course you are convinced about the increase in yields when you apply these manures?—Certainly.

12976. Do you not think you should induce the ryots to take to these improved methods of cultivation?—I have done my little bit in this direction. We issued pamphlets; the issue of the pamphlets that the Director of Agriculture referred to was partly due to me; I got some of them translated into the vernaculars.

12977. If you apply those methods practically in your fields it will serve as a demonstration to the neighbours?—It will, certainly.

12978. *Sir James MacKenna*: What are your views regarding the training of Indians for the superior posts in the Agricultural Department?—They will do quite well.

12979. I want to know how you think they should be trained?—I would take graduates of our University here, give them practical training in office for three or four years, and then send them to foreign countries to study for one or two years.

12980. Graduates of the University, in what subject?—Graduates in agriculture.

12981. You mean graduates of the Coimbatore College?—Yes, and send them over to foreign countries.

12982. You would give them some training here before they go, and then send them to a particular foreign country where they can get the required training?—Yes.

12983. So that they would get a little field training before you send them?—Yes, unless the boys themselves come from agricultural families; and even in their case some short training would be necessary.

12984. I am very much depressed by the gloomy view you give of the people of Madras?—In what respect?

12985. With reference to the lack of public spirit and the lack of a desire for public service. My experience of the people of Madras in a Province where they are very numerous, is that they are ambitious and very adaptable. Is there no other solution or no prospect of any public life amongst the lower classes of the Madras Presidency beyond going to Burma?—The only other thing is what I was speaking of, namely that Government should take some interest and see that they are better educated and better provided with the amenities that I spoke of.

12986. But you do not believe in education?—Still it has its own place.

12987. Why should Government waste its resources? Is not public spirit a self-growth; has it ever been encouraged by Government?—I do not know.

12988. It must come from the people themselves?—Government, I suppose, do not attend to it.

12989. Government is a mere machine?—I am reminded of the saying of General Booth that Government officers are not only hard of hearing but also dumb.

12990. *Professor Gangulee*: You are a large landowner?—I do not know whether you can call it large, but I have given you the extent of my holding.

12991. And you have leased out your land?—Yes.

12992. Can you give us an idea of how many tenants you have in this holding?—Say about 20.

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12993. You are interested in the development of the agricultural practice of these tenants?—Yes.

12994. Have you started any agricultural farm in your estate to serve as a model farm?—No. May I tell you that all these acres are distributed over various places?

12995. In order to introduce agricultural improvements you have not started any demonstration farm?—I have not.

12996. Have you invited any Demonstrators from the Department of Agriculture to your estate?—There is a Demonstrator in my district, and he generally goes over those parts.

12997. And you are in touch with him?—I know him.

12998. Did you observe a change in the agricultural practice?—There is a little change.

12999. In what direction?—For one thing, in transplantation by single seedling; then in regard to sugarcane crops they are adopting methods which are practised on the farm at Samalkot.

13000. You mean ridge-planting?—Ridge-planting, cutting of the crop and various other methods.

13001. Do you take any share in the introduction of those improvements?—I did not, except what I did as a Minister; I do not claim that I did anything as a private citizen.

13002. Before you took office as a Minister of Agriculture, you did not take any direct interest in agriculture?—None that can be mentioned here.

13003. Before taking office as Minister of Agriculture did you pay a visit to the Coimbatore Agricultural College?—Yes.

13004. In what connection?—I went to Ootacamund and when there I paid a flying visit just to see what was being done there, as a sightseer.

13005. In this memorandum you have not told us anything about the condition of the cattle in your district. Are you in touch with the work being done in connection with that?—I know something about it.

13006. Are you in touch with the scientific cattle-breeding experiments being carried on by the Agricultural Department?—I know something as a Minister, but not in my private capacity.

13007. You have devoted some considerable attention in this précis to agricultural education; at page 345 you say that one of the agricultural middle schools started by you, perhaps when you were Minister, has not attracted a sufficient number of students to keep it going. Have you tried to find out why these vernacular middle schools failed to attract students?—I did not investigate it; by the time it was known to be a failure, I had ceased to be a Minister.

13008. And since you ceased to be a Minister your interest ceased?—As Minister it ceased but as a citizen it did not cease.

13009. On page 345, you say "While I was Minister I insisted upon boys being drawn only from those classes." Do you wish to close agricultural education to any other classes? For instance, do you hold the opinion that a Brahmin should not be educated in an agricultural college?—Yes, because there is a sufficient number of boys of that community who are turned out by our Agricultural College.

13010. So, you would see the Agricultural College run on a communal basis?—No, on a class basis. I have also mentioned the Non-Brahmin upper classes as well as the Brahmin; I wonder whether you have noticed that. I think both these classes receive agricultural education only to enter Government service. We must have persons who will acquire the knowledge to utilise it in their own fields and not merely for the purpose of obtaining appointments under Government.

13011. The Agricultural College is a public institution?—It is.

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13012. Can it close its doors to anybody?—I do not say it ought to close its doors to anybody.

13018. Now, with regard to the excellent advice you gave, namely that the students should go back to their farms and utilise there the knowledge they acquired in the college, can you suggest in what way they could utilise their knowledge in their fields?—In this way: we took only those boys who had got land of their own or whose closest relations had land and we obtained a promise from them that they would go back to the fields belonging either to themselves or to their close relations who would admit them to their fields. It was on that promise that we admitted them to the college.

13014. Supposing your son was sent to the Agricultural College, he would certainly say: "Yes, my father is a big landowner," and yet you have not got an acre of land with yourself; you have leased out all your land?—Yes, but that is only for a year or two; I can get back my lands in a day.

13015. You say: "There is no incentive other than public service which induces lads to study agriculture," and I understand in answer to a question by the Raja Sahib you said that you recommended another agricultural college; do you think there is a demand for it?—An agricultural college also associated with the agricultural institution; there is the research institute along with it and there would be boys in the Agricultural College coming from my parts. The conditions differ to a certain extent, that is, the conditions on the West Coast and on the South are different from the agricultural conditions in the Northern Circars and in the Ceded Districts; no doubt, it may be expensive but still it is worth having.

13016. It is not a question of expense; you say that public service is the only incentive that these boys have, and public service of course has certain limits?—That depends on whether hereafter the boys will be the same. We are thinking of the agricultural boys joining these schools and colleges and trying to utilise their knowledge on their own fields.

13017. During the time that you were Minister of Agriculture, did you think out any practical step that might be taken towards establishing agricultural colonies, or settling agricultural graduates on available culturable land?—No, there is not much scope for that in this Province.

13018. Have you any idea of the extent of land available?—In name you have got about a fifth of the Province; I believe the culturable land is 80 per cent; and 20 per cent is either waste land or saline land, or rocky soil, and things of that kind.

13019. You say there are one or two limiting factors in every case?—Yes.

13020. In one case perhaps water, and in another case saline deposits and so on?—Yes.

13021. You do not think that through scientific investigation you can find a way out of it?—You can find a way out of it at enormous cost, which does not pay.

13022. On page 346 you say, "This industrial and agricultural education must be made compulsory", are you advocating compulsory agricultural and industrial education?—I am advocating agricultural education until the age of 16.

13023. Not general education?—My general proposition is that education should be compulsory until 16 years, but I want that the sons of the agriculturists, who are not fit for cultural education, should also be compulsorily educated in agriculture.

13024. This idea of yours about compulsory education is not quite clear to us. You say this industrial and agricultural education must be made compulsory until the age of 16; that is, boys must not be permitted to study in any other schools; in this one sentence you have condensed the whole idea on compulsory education?—I need not discuss the point here.

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13025. With regard to drink, you say that among the lower classes the drink evil has spread; have you any statistical basis for making that statement?—No.

13026. In the Excise Administration Report, I find that in 1915-16 the consumption per 100 of population is 3·7 proof gallons of country spirit, and in 1924-25, 3·5. So from these figures, I see that the tendency has decreased?—Yes.

13027. I was not able to understand it when you say that among the lower classes the drink evil has spread?—I am speaking from experience, of course; I am not speaking on the basis of statistics, they may give you a correct impression or they may not.

13028. When you make those remarks in your note, you are guided by your impression?—That is all.

13029. Are you aware of any experiment conducted by the Excise Department in any district here to enforce prohibition?—Yes, 5 taluks have been prohibited.

13030. What has been the result?—I cannot tell you definitely, but my information is that smuggling and drinking outside have increased; though it may have reduced the consumption of drink to a certain extent, it certainly has not had the effect which the authors of that scheme had in their minds.

13031. *Sir Henry Lawrence*: Is illicit distillation increasing?—That is my information.

13032. That is what you mean?—Yes, illicit drinking, and also they take out the liquor in water pots to drink outside.

The two go together.

13033. *Professor Gangulee*: In co-operative agricultural societies, are you of opinion that at present the credit facilities are inadequate?—For ordinary needs, it is quite all right, but for long-term loans it is not sufficient, there are absolutely none at all.

13034. And you advocate here something like land mortgage banks?—Yes.

13035. You are of opinion that land mortgage banks would furnish the sort of credit needed by the small cultivators?—Small and big.

13036. And you also make a reference here to the Federal Farm Loans Act of the United States of America; have you studied it?—I have read it at one time, and I mentioned it in my address to the Co-operative Conference at Bombay.

13037. Do you know to what extent that Act affects the small cultivator?—In America everything is big; I only think of the general principles involved in it, one association being a guarantee for the others and the State being behind them all, the debenture system and things of that kind.

13038. Are you satisfied with the administration of the agricultural co-operative societies?—Yes.

13039. Have you got any non-credit societies in this Presidency?—Very few.

13040. Only credit societies?—Credit societies are developed more than the non-credit.

13041. Is there room for the non-credit side?—There is room; you have heard about the famous Triplicane Store Society which is a splendid example of such societies.

13042. On page 346 you say: "Excessive sub-division of holdings exists in this Province", you do not say anything about fragmentation?—By sub-division I also mean fragmentation.

13043. It is the same?—More or less.

13044. You think sub-division and fragmentation are the same?—More or less the same.

13045. You say that sub-division is one of the causes of low agricultural production in India?—Yes, in some sense.

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13046. You say here "The obstacle in the way of consolidation is the Hindu Law." Do you envisage some time when the general public opinion of this country will be prepared to make such changes in the Hindu Law of Succession as might arrest the fragmentation of agricultural lands into uneconomic scraps?—In my opinion, this question of fragmentation is made too much of; I do not think that the evil is so great as is apprehended in some quarters.

13047. With regard to irrigation, on page 348 you make a statement "So far 830 lakhs of rupees have been invested in irrigation works in this Province, and an interest of about 10 per cent is being realised thereon." In that 10 per cent you include the $3\frac{1}{2}$ per cent interest or whatever it may be?—Yes; the great anicut works on the Godavari and the Kistna were constructed at a low cost at that time; interest on that amount was calculated at 3 or $3\frac{1}{2}$ per cent; they are now fetching 20 per cent.

13048. What is the profit to Government?—They made 20 per cent, when they were paying 3 per cent; I put it down at 10 per cent on the average, because the recent works cost more, the earlier works cost less, and the return is 10 per cent on the average for all irrigation works up to date, including this 8 crores and odd.

13049. You give all these figures from official statistics?—Yes.

13050. Or from your impression?—Not merely impression; I do not think that they would be wrong, at any rate very far wrong.

13051. You have come to this figure of 10 per cent, which you definitely state here, from official documents?—My calculations are from official figures.

13052. *Mr. Calvert*: On this question of indebtedness, is it your experience that the number of people engaged in moneylending is on the increase?—No, but one cannot say one way or the other; I do not suppose there is any decrease.

13053. Is the capital invested in this profession of moneylending on the increase?—I cannot state the figures; it is only an impression.

13054. You have made no detailed enquiry?—No.

13055. You mentioned that drink is now one of the main causes of borrowings?—Yes.

13056. Does not that point to a thoroughly bad system of credit?—It is in the village; the man takes his small vessel worth Rs. 4 and pledges it and gets Rs. 2 for it; he may spend Re. 1 out of it for drink.

13057. Can you approve of a system of moneylending for drink?—No, not at all.

13058. You would not restrict that credit?—I do not understand; I thought it was a case of interest; I thought you were referring to the rate of interest and the conditions.

13059. You cannot have borrowing without lending?—Of course not.

13060. I am talking of the lender, the man who lends money for drink?—But the man will say that there is no food in the house and he wants Re. 1 on loan for his food; half of it goes to the toddy shop.

13061. Does not the moneylender know that?—Perhaps he knows; and possibly there are no people to protest; that is an incentive to him not to care for the morals.

13062. You mentioned a suggestion for legislation for land mortgage banks?—Yes.

13063. Is it your experience that you cannot organise these land mortgage banks inside the existing system?—I am afraid we cannot.

13064. What exactly is the difficulty?—The present system does not admit of long-term loans.

13065. There is no prohibition?—There is no prohibition, but the whole system is based on short-term loans and easy payments and small amounts.

13066. Is there any peculiarity to Madras, as compared with the Punjab, which requires legislation?—I was under the impression that the present Act

is not wide enough to admit of enough extension, particularly long-term loans, but other concessions will have to be brought in; a separate Act by itself, suited to the peculiar requirements of these long-term loans, would perhaps serve us better.

13067. You do not think you can get over your difficulties by improving the education of the people?—No.

13068. Would you rather have legislation than education?—Yes, the two together.

13069. On the general rule for mortgages in this Presidency, what is the condition as to redemption?—Redemption is always provided for in the bond itself and the law also allows it.

13070. Do the profits from the mortgaged land wipe out both interest and principal?—That is so in the case of usufructuary mortgages; very often the mortgage is a simple mortgage; the mortgagor retains possession of the land.

13071. Your mortgages, then, are non-terminable?—I do not quite follow that expression.

13072. By terminable you mean a mortgage in which the profits of the land pay off the interest and principal within a fixed number of years, and on the expiry of that period the mortgage ceases and the debt is paid off?—That is one form of the usufructuary mortgage, but there are very few of those.

13073. Would you not favour that class of mortgage which automatically redeemed the mortgage?—Then what is the mortgagor to do during the period, if he hands over possession of the land? He must live on it.

13074. In your experience, have you many cases in which a mortgage has been of any economic benefit to the mortgagor?—No, unless it be a case where a man wanted the money for the purpose of trade or for business.

13075. Have you ever heard the expression that the mortgage holds up the farmer like the rope holds up the hanged man?—I have not heard of it, but I believe in it.

13076. Are the Madras Government to guarantee interest on these land mortgage bonds, on the debentures?—It was my policy at any rate; but I cannot speak for the present Minister.

13077. About fragmentation, you told Professor Gangulee that you thought the evil was exaggerated. Is that opinion based on any careful scrutiny of actual conditions in the villages?—I do not find any difficulty at all. I move very frequently in villages, I spend my vacation there; all my relations are there and yet I do not find any difficulty.

13078. Is that based on actual careful examination? Any scientific research?—Nothing of that kind. But if one's experience counts for anything and if one's knowledge of the country has any value, I should think there is not much. I do admit that there is some difficulty in this fragmentation; but it is not perhaps so big as it is supposed to be and that is my impression. I have not investigated into each case and taken the figures for every field and so on.

13079. Have you seen the Punjab methods of consolidation?—No.

13080. Can you make any suggestions whereby Government could encourage the sinking of capital in land improvement, apart from the Land Improvement Act?—For one thing, I would have the administration of the two Acts transferred to the Minister; at present they are reserved. I would also have the amounts distributed through the co-operative societies which again are under the Minister. These two might go a long way in helping the ryots more usefully than at present.

13081. They make it easy for him to get State loans?—Yes.

13082. But apart from that can you suggest any means of encouraging investment of capital in land improvement?—I cannot suggest any means unless it be these agricultural banks again, the land banks.

13083. Have you ever heard the complaint that when a cultivator takes a State loan he has more difficulty in borrowing from his village moneylender?—

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I referred yesterday, in answer to the Chairman, to the fact that he does not get all the money; he gets some per cent less.

13084. Have you in this Presidency and class of moneylending landlords?—Nothing like a class.

13085. It is growing to a class, moneylending landlords?—There are people who lend money.

13086. Do these people attempt to get their tenants into a sort of permanent debt?—Not always. I suppose circumstances conspire to bring the tenant to that condition.

13087. Is it not the devised policy to keep the property to themselves?—I do not think it is a deliberate attempt to acquire lands; but every opportunity will be taken to acquire the land.

13088. Have you found that such Acts as the Usurious Loans Act have any effect in restricting the credit of the cultivator?—No; I do not think that Act has been applied in this Province at all; occasions did not arise.

13089. It has not served to send up the rate of interest against the cultivator?—No.

13090. In this Presidency, they can alienate their land?—They can.

13091. Are there not restrictions, social or religious, on that alienation?—Nothing. Even in the case of a joint Hindu family, they can alienate; only the purchaser will have to bring a suit for partition. There is no restriction, except that there is difficulty in getting the land. If I purchase the undivided share of a joint Hindu family, I have to bring a suit for partition and for the recovery of the share of my vendor.

13092. Is the transaction of alienation simple in this Presidency?—Fairly simple, I should think.

13093. The procedure of alienation is not so difficult as to impose a real restriction on alienation?—None that I know of.

13094. You know in some countries the legal difficulties are very great in selling the land?—I do not think it obtains in this Province.

13095. *Mr. Kamat*: In the figures which you have handed over this morning to the Chairman about certain items of expenditure, comparative statements of expenditure, you complain that on the Department of Agriculture this Government are spending less than one per cent or something like that?—Yes.

13096. When you were a Minister did you press on the Government as a whole, that is the Reserved half and the Transferred half, for more expenditure on agriculture?—Certainly I did.

13097. And you could get that figure raised by no substantial amount?—No; but if you had examined my budgets, we always got something over and above the previous years; but difficulties arose in other directions and we could not spend the money in some years. Then there is the trouble between the Reserved half and the Transferred half about the percentages that we have to get; you know diarchy and its difficulties.

13098. There was some trouble?—Not serious trouble; but difference of opinion and things of that kind.

13099. When you say that 1 per cent or less than 1 per cent is too small a percentage, how much would have satisfied you?—It is rather a difficult question to answer. Nothing would satisfy me. I would like to have as much as they could give. You know only from 14 to 16 lakhs a year is spent on the Agricultural Department. I should certainly start with 20 lakhs and would have an increase of 5 lakhs every year as a working basis, not that there is any scientific basis for it. As a working basis I would start with 20 lakhs and would be satisfied for the next ten years with an increase of 5 lakhs every year.

13100. The only point is, did you as a Minister press for the whole of what you say you now want?—Not by way of policy; I told them that agricultural expenditure should be increasing every year and they satisfied me by giving me a lakh or two which sometimes I was not able to spend.

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13101. And you acquiesced in that?—I had no other option.

13102. And therefore there was no point in complaining that 1 per cent was not sufficient?—Why not?

13103. You acquiesced in that?—I could not help acquiescing although it does not mean that I was satisfied. I could not get more. I am not one of those who would throw away half a loaf because I did not receive a whole one.

13104. Just a word about the Agricultural Department about which so much has been said. In view of your remarks as to the future careers of agricultural graduates from Coimbatore and also as to the fate of the middle schools which you initiated, I ask you, suppose you were the Minister of Agriculture again, would you modify your agricultural educational policy to some extent, and, if so, to what extent?—I should like to know the direction in which you are thinking.

13105. Would you continue the policy of duplication of colleges, duplication of middle schools, agricultural bias schools, or would you in the light of your experience and in the light of your own remarks, see the necessity of modifying the policy which is now being pursued?—I should be glad to change the policy if I had an alternative one.

13106. Do I take it that you would have no alternative and you would continue this policy?—I would introduce such changes as were practicable and within the means and resources of the Government and their officers.

13107. In a word would you go to the length of multiplying the middle schools, for instance?—I would, only I would take care to see that the boys of the right type come there. Now we have failed in attracting the best into our schools. I would like to know where the mistake lay, remedy it and see that more boys came into the schools. I would not scrap the schools altogether, because the boys of the best type have not come.

13108. You mean you have no other definite suggestion to offer except the continuation of the present policy?—No; I would compel the boys to attend the agricultural schools till the age of 16 provided they were fit for cultural education and provided they were farmers' sons.

13109. Now about this irrigation policy of your Government, supposing the irrigation projects were a Transferred subject, would you have much liberty to initiate your own policy or instead of demanding the 6 per cent as the return on irrigation money, what would be the outline of your policy?—I think I have sufficiently indicated that in that answer of mine; but I do not mind telling you again. It is this: I would take into account all the factors which I have mentioned there, for instance, the increased production, the immunity against famine, the food supply, the increased wealth, increased prosperity and increased capacity to bear additional taxation. All these factors would be taken into account and a certain value would be given to them and would come back to the interest that we have to pay and a certain percentage would be struck as reasonable.

13110. I am asking you whether you would be satisfied with the return of less than 6 per cent?—I would.

13111. You would be able to borrow and get the loans in these days at less than 6 per cent?—I should not find any difficulty in that, because all the resources of the Government and all the property of the Government would be a security. It is not merely on the works that we borrow.

13112. That is to say, after paying the interest on your loans and the working expenses, you could still make your irrigation policy self-supporting and yet be within the 6 per cent?—Not in the sense that the revenue will cover the interest. But I would get more revenue from other sources because my people would be more prosperous; for instance, I could raise other taxes.

13113. In other words, increase of deficit; you are asking the general taxpayer to pay that deficit?—Yes; the general tax-payer, of course. He does pay for particular things. All the revenue comes from my districts and it goes all to these officers who never come to my districts.

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13114. You advocate the deficit being made up from the general funds?—That is so in theory.

13115. *Dr. Hyder*: Is not the Famine Insurance Fund provided by the general tax-payer?—Certainly it is.

13116. *Mr. Kamat*: Now about Fragmentation: We have no authoritative data, you say, whether fragmentation of holdings is increasing or whether it is stationary?—I do not know what is meant by authoritative. If it means statistics, I have not got them.

13117. Your Government have statistics on the point?—None that I know of.

13118. And yesterday also we were told that there were no up-to-date statistics or data, say, for instance, about other economic factors, on cost of production and so on. Is that also correct? We were told so by the Commissioner of Labour?—He is correct, I think.

13119. And this morning you have told us, in fact you have said in your memorandum, that Government enquiry should be undertaken?—Yes.

13120. For ten years you do not want any authoritative data about the economic condition of your Presidency?—You will never be able to get the economic data at present.

13121. So that is your view with regard to economic enquiries?—In fact I was not examined by the Economic Enquiry Committee; but I was by the Taxation Committee and I think I expressed the same view there.

13122. The whole policy of the Madras Government should be to proceed in its agricultural policy on the principle of groping in the dark?—I do not believe that because your economic figures are not before us we are groping in the dark. Somebody said there are three kinds of lies, white lies, black lies and statistics.

13123. You consider that statistics also are lies?—They are not always reliable; I shall put it in that form.

13124. So this Commission in coming to any conclusions, about the prosperity or otherwise of your Presidency should proceed purely on impressions?—It is rather difficult for me to answer that. I am giving evidence before you. I do not wish to say anything disrespectful. I have every respect for you; but I should say this that if you proceed on figures of that kind, I shall not be satisfied. Suppose an economic committee has prepared some figures or suppose scholars interested in economics go to the village and enquire into the conditions and collect certain figures of income and expenditure of a family, I will not rely very largely on those figures.

13125. Now about rural reconstruction. You are in favour of efforts being made towards the welfare of the villagers and rural reconstruction as a whole. Elsewhere we were told that the best agency for doing this sort of work would be something like the Servants of India Society or the Servants of the Rural India Society or perhaps something like the Y. M. C. A. agency. Do you think it possible?—I certainly respect those persons who do work in that line, but I am afraid this work should not be done by such a body. There should be a definite programme of Government.

13126. There should be a Government agency. Would not the Justice Party be able to do much on this line?—I do not think they are capable of achieving any more than anybody else.

13127. Because public spirit is like that throughout the country?—Public spirit alone does not feed the people, does not give them schools, does not give them hospitals, and does not give them village roads. You can teach them well, and impress upon them to behave better.

13128. It educates public opinion?—To what effect?

13129. *Professor Gangulee*: In other words public opinion is not created?—It is rather scientific language. If you mean to say that it does not supply these things and these needs I would agree with you.

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-- 13130. *Mr. Kamat*: In other words, you are not a believer in creating public opinion by non-official agency as a whole?—That is rather broadly put. Private agencies have got their own place for creating public opinion. But this is not merely a matter of public opinion. It is one of the substantial things being to the villagers.

(The witness withdrew.)

APPENDIX.

(Supplemental Memorandum submitted by Sir K. V. REDDI
NAYUDU, Kt.)

I.

Amount spent annually by the Government of Madras on Agriculture.

1	2	3	4	5	6
Year.	Total Revenue.	Land Revenue.	Spent on Agriculture.	Percentage of Col. 2 to Col. 4.	Percentage of Col. 2 to Col. 3.
	Rs.	Rs.	Rs.		
1921-22 . .	16,00,00,000	6,20,00,000	14,21,000	·9	2·3
1922-23 . .	15,64,50,000	6,43,00,000	14,45,000	·9	2·2
1923-24 . .	16,58,00,000	6,34,00,000	14,50,000	·8	2·3
1924-25 . .	16,27,00,000	7,40,00,000	14,00,000	·8	1·9
1925-26 . .	16,41,00,000	7,50,00,000	15,50,000	·9	2·1

II.

Amount spent on Agriculture by Governments of certain countries per 1,000 of their population.

	Rs.	A.	P.
Madras	24	0	0
India	33	10	8
Japan	216	15	0
France	948	0	0
United States of America	1,681	0	0

Mr. D. A. D. AITCHISON, M.R.C.V.S., M.P.S., I.V.S., Veterinary Adviser to the Government of Madras.

Replies to the Questionnaire.

QUESTION 1.—(a) (ii) VETERINARY RESEARCH.—Muktesar is our Central Research Institute and is under the Central Government. In the matter of the way in which Muktesar has been run it is my humble opinion that the Central Government have been shaping a wrong course and have not succeeded in making the best use of their most experienced scientific man, *i.e.*, the Director. The Director should have administrative work only to occupy his time; with that alone he would find no day too long for the work he had to do. The present Director might be styled Imperial Research Officer. There is a very strong feeling in the Indian Veterinary Service that they should be represented in the Central Government by a Veterinary Adviser to the Government of India, and in the Presidencies and Provinces by a Veterinary Adviser to the Local Government or by a Director, Veterinary Department. The Director at Muktesar should therefore also be Veterinary Adviser to the Government of India. The system of the Government of India has been to bring out a man specially trained at Home in research and all its allied laboratory subjects, and then to turn him on to the administration of an institute like Muktesar without his having had administrative experience, and, what is more important and special still, administrative experience in India. It is more essential that the Director should be an officer of much Indian experience than that he should be merely an experienced research officer if the best use of Muktesar is to be obtained.

QUESTION 15.—VETERINARY.—(a) In this Presidency the Civil Veterinary Department is independent of the Agricultural Department. To obtain the best efforts from the Veterinary Department, this is as it should be. The department can represent its own cause to Government and in doing so is in the best position to further the use of the department in its services to the country. The responsibility of its work is also brought home to the Veterinary Adviser to Government in a way that it would not be, were the department under the Director of Agriculture.

No officer of the Veterinary Service wants to be Director of Agriculture. Any officer of the Agricultural Department, however, seems to consider himself able to fill the appointment of Director of Agriculture, it does not matter whether he be a Chemist, Botanist, Sugarcane Expert, Cotton Specialist, Paddy Expert, etc. Perhaps that may be a reason why any of these officers feels capable of also successfully running the Veterinary Department in addition to the Agricultural Department. To put it another way, the Agricultural Department would like to enjoy the credit for the work of the Veterinary Department.

I noticed that Mr. E. J. Bruen, Livestock Expert, Bombay, in the course of his evidence stated: "As a means of establishing closer co-ordination between cattle-breeding and veterinary work, the Director of Agriculture should be in control over both. That lack of co-ordination was being very seriously felt at present." It does not seem to occur to him that the reason for the lack of co-ordination complained of may be found in the short-comings of the officers immediately concerned. It may be safely accepted that in this Presidency no such lack of co-ordination exists, officers of the two departments being only too delighted to be of assistance to each other.

(b) (i) No veterinary dispensaries are under control of local bodies in this Presidency.

(ii) I have no room to complain of any want of support from the Madras Government in the expansion of the department.

(iii) Yes.

(c) (i) More use is being made of veterinary dispensaries by agriculturists as time goes on. Some districts are more backward than others, but yearly I

Mr. D. A. D. Aitchison.

have several petitions from local bodies to open a veterinary hospital in their area.

(ii) Yes, and from several places I have had complaints from ryots on the absence of the Touring Veterinary Assistant Surgeons.

(d) In this Presidency we do not now have much opposition in dealing with contagious diseases, still it does exist in places owing to prejudice, religious and otherwise, and on the ground of its being ploughing time, etc.

Under the Madras Cattle Disease Act, notification of disease is compulsory and we can segregate animals and have the disposal of diseased carcasses, also we can do compulsory inoculation of all animals by the serum-alone method. There would be much opposition to compulsory serum-simultaneous inoculation, especially if it happened to be in the ryots' busy time when they require the use of their cattle, and on the ground of expense attached to the operation.

(e) Occasionally we run short of serum owing to delay in delivery after it has been ordered from Muktesar. The delay seems to be in the difficulty of transport between Muktesar and Kathgodam railway station. Better arrangements there would facilitate quicker delivery.

(f) We meet little opposition in preventive inoculation by the serum-alone method in rinderpest, and also little opposition for inoculation against other diseases. A system of charging a fee of eight annas per head was introduced here for a time and it almost stopped inoculation.

(g) Further facilities for research into animal disease are most desirable.

(i) Muktesar Institute should be equipped with a research staff which would be free from any routine work responsibility.

(ii) Provincial research institutions should be extended and each Province should have its own.

(h) Research should be conducted at Muktesar as well as by officers in the Provinces. There is plenty of ground for both and frequently combined efforts would no doubt be required.

(i) It is very desirable that a Veterinary Adviser to the Government of India should be appointed. He should be an experienced and senior officer of the Indian Veterinary Service with knowledge of Indian conditions and administration of Veterinary Departments. This officer should also be Director of the Muktesar Research Institute. He would be a safeguard against mistakes in the field which have been caused, and which are likely to be caused, by a Director who is merely a research officer and who does not possess sufficient Indian experience.

Heads of the Veterinary Departments in the Provinces would readily consult on all veterinary matters with the Veterinary Adviser to the Government of India, and he would be in a better position to get whatever information on veterinary matters he required for the Government of India from his personal knowledge of some of the local conditions and of the veterinary officers in different parts of India than any Agricultural Adviser.

Oral Evidence.

13131. *The Chairman:* Mr. Aitchison, you are the Veterinary Adviser to the Government of Madras?—Yes.

13132. You have put in your answers to the Questionnaire sent by the Commission and we are obliged to you for that; and also I think we have to thank you for the memorandum* on the Civil Veterinary Department which has been in the hands of the Commission for some time. Did you prepare that also?—Did it go to you through the Secretariat offices? I prepared some memorandum; I did not know what it was for.

13133. Would you mind answering some questions, or have you any statement of a general nature which you wish to make at this stage?—I think it would be better if you would put the questions.

13134. First of all, I do not find, either in your answers to the Questionnaire or in the memorandum to which I have made reference, any very complete statement of your headquarters staff or the staff of the department throughout the districts. I am going to ask you if you can kindly send the Commission a statement showing the various teaching or administrative posts held, with the grade of officer holding them?—I shall do that.

13135. On that point, what would you regard as a sufficient provision of professional officers throughout the Presidency to carry out your policy in the matter of prevention of animal diseases?—The original policy was that we should have a touring man and a dispensary or hospital man in each taluk. That would mean about 480 men; I think there are 240 taluks. In addition to that we will require some 15 to 20 per cent as leave reserve. With that policy in view there was also being developed the superior part of the department and the idea was to have a Chief Superintendent and three Superintendents. Each of these Superintendents would be in charge of about a third of the Presidency. Then, between the Superintendents and the Veterinary Assistants there would be Deputy Superintendents and Inspectors.

13136. To which service would the Inspectors belong?—They would belong to the subordinate service.

13137. That would be the highest rank in the subordinate service?—Yes, that was the idea. As a result of the Retrenchment Committee they abolished the Superintendents and Inspectors and we have now the Veterinary Adviser to the Government who is in charge of the whole of the executive part of the Civil Veterinary Department of the Presidency as well as of the College. He has no Assistant Superintendents or First, Second and Third Superintendents but only has Circle Officers and there are only six of them in the Presidency. These are Provincial Officers and they correspond to the Deputy Superintendents under the old scheme. The Inspectors have been totally abolished so that there is myself, the Head of the department, and six Circle Officers. There are 212 Veterinary Assistants and there is no method of inspection between the Veterinary Assistants and the Circle Officers. The Circle Officers can only visit each touring man's district or his dispensary twice in a year. The result is that the supervision is not sufficient.

13138. Is it your experience that sufficiently active supervision is necessary?—Very necessary, and the reason I put forward to prove it is that I have now got a case of complaint against the subordinates that requires severe dealing with. It is a case of intimidation of the people bringing animals for treatment and wanting to charge them private fees of their own. Where men have been placed in charge of meat inspection, they levy a private fee from the butchers. They put in false touring claims and I believe it is all due to the fact that once they have seen the Circle Officer they feel that they can be free, because for the next six months they know that nobody will be anywhere near them.

13139. What salary do they receive?—They begin on Rs. 60 and can rise up to Rs. 120 in the ordinary grade and to Rs. 175 on selection grade.

13140. Is that sufficient salary in your judgment for them to maintain themselves in decency?—No, I think it is too low.

* In the note prepared by the Madras Government for the Commission. Not printed.

13141. Do you associate these improper practices with the lowness of the salary?—In some cases, I think, that has to do with it. There are other cases where the higher the salary the bigger the illicit money they want to make. Some of the men will be satisfied when you put them on a bigger salary. There are others who, after getting the bigger salary, instead of being satisfied want a still bigger one.

13142. The present is expected to be in proportion to the salary; that is the position, is it?—Yes.

13143. Could you give the Commission any accurate information as to the frequency of the incidence of these cases to which you refer?—At present I have a case where a man asked a Veterinary Assistant in charge of the hospital if he could inoculate his cattle and protect them against rinderpest because he wanted to send two animals to plough his land in a district where there was rinderpest. The Veterinary Assistant said. "Yes, but I want Rs. 1-12 for that." Well, the man was perfectly prepared to pay the sum and he would have done it and we would have heard nothing about it. But the misunderstanding was that he thought Rs. 1-12 was for both animals, but the Veterinary Assistant sent his peon to collect Rs. 3-8. This upset the owner who said "I am not going to pay you Rs. 3-8 because you told me Rs. 1-12" with the result that he reported the matter to me. Had there not been that misunderstanding I would not have known anything about it. Another case is that of a Veterinary Assistant who is doing meat inspection in a certain town union. He gets paid by that union Rs. 15 per month in addition to his pay.

13144. Is that within the rules?—Yes, that is within the rules. In addition to that he was getting Rs. 2 from each of the butchers and there were 13 butchers. I suppose he found that his family required more money and he tried to collect Rs. 4 instead of Rs. 2.

13145. Was the Rs. 2 within the rules?—He had no right at all to accept that; the butchers give it because if they do not do something like that they would find difficulty in getting the meat passed.

13146. Rs. 2 a month or Rs. 2 a year?—Rs. 2 a month. He tried to raise it to Rs. 4 and the butchers in the union struck work for five days, and the President of the union reported it to the Circle Officer, who transferred the man; the case is under inquiry just now. Another case is where a Veterinary Assistant handed over charge of his instruments; the instruments were not checked, and he took away most of the instruments. He also supplied five gallons of lysol to certain people, and that lysol was Government property; he did not only take the five gallons from Government but he did the people out of one gallon. On enquiry he produced a receipt for five gallons and said that he purchased the material in the village, but the enquiry showed that there was no such person in the village. Then, at present there is also a case which is for putting in false travelling claims. I have dismissed one or two for doing that and I have suspended a few. That is the result of cutting down the inspecting staff. There is only myself and six Circle Officers for the whole Presidency. With better supervision the opportunity and the temptation would not occur, and the men would not do it; it is want of supervision, I am sure.

13147. Are you doing what you can to inform the public as to what charges are legitimate?—Except in a few cases, the treatment is free.

13148. Are you informing the public that it is free?—I think it is generally understood.

13149. Evidently not by the man who is prepared to pay?—The unfortunate thing is that people are perfectly ready to pay. The man I was speaking of was a retired Government official and he knew just as well as I do. But you meet so many people who are prepared to encourage that practice and that is the difficulty we are up against.

13150. So that, you do not think you can do anything?—It is not that people are not aware; not at all that; they are aware that they get free treatment.

13151. Do you think that the general effect of this malpractice is to limit the usefulness of the service?—I do not think it interferes much in that way.

It is a matter of discipline in the department, and one tries to maintain as high a standard as possible.

13152. You do not think it prevents ryots from having their animals treated?—It must in a small way. I have had one or two instances where the ryots have taken away their animals and reported it. One case I am thinking of is this: A ryot promised to send so much straw for the Veterinary Assistant's cow; the Veterinary Assistant sent his peon over to the ryot's field, and the ryot sent a fowl instead of the straw. That displeased the Veterinary Assistant, and he made it so unpleasant that the ryot took his animals away and reported the matter. But I do not think that it interferes to any extent. The ryots know it and they will submit to what they consider is a fair amount, but if any of the men try to exceed what they consider is fair, then they complain; but not until then.

13153. I turn now to another subject. I take it from your note that you are quite definitely of opinion that the Veterinary Service throughout the country should be independent of the Agricultural Department?—Yes.

13154. You think that that should apply to Muktesar and to the officers of the Government of India on the one hand, and to all Provinces on the other?—I do, from my personal experience. We have always been *entirely* separate in this Province, and I do not think the Veterinary and Agricultural Departments in other places are on better terms than they are here.

13155. Are you in close personal touch, for instance, with the work that is being carried on at Hosur?—No, except just when I go to inspect the Veterinary Assistant there or to do some testing which, I consider, requires my attention.

13156. Are you of opinion yourself that the duty of improving breeds of cattle is best left to the Agricultural Department?—Well, from my experience I think the greatest success in India has been obtained at Hissar in the Punjab, which has been run for the last quarter of a century by the Veterinary Department in the Punjab. I think that cattle-breeding is so much allied to, and associated with, veterinary work that it might even come under veterinary. I think that cattle-breeding is simply one subject among a host of ten, fifteen or twenty others dealt with by the Agricultural Department, and therefore might not receive from that department the amount of attention and interest necessary. Were cattle-breeding under the Veterinary Department, it might receive, I would not say greater, but better attention.

13157. Now, apart from the influence of heredity upon resistance to disease, what close connection is there between improvement of the constitution and working capacity of the animal, and veterinary science?—I think that what we have got to contend against here is climatic conditions, and we get very good evidence of that if we apply climatic conditions in this country to imported European cattle. Even if they do live out here they deteriorate; and I think that the same climatic conditions affect the Western breeder of cattle in the tropics. We find that deterioration is not only due to mixed breeding, but to climatic conditions as well. We might see whether climate has anything to do with it by taking Indian cows Home and seeing what we can do with the first, second and third crosses under the climatic conditions in England.

13158. I do not quite gather how you reinforce by this particular argument the point as to the desirability of the Veterinary Service controlling cattle improvement?—I beg your pardon. I missed the point.

13159. On the other hand there is very close connection between the working quality of the bullock and the requirements of the agriculturists?—I do not think that the half-bred working bullock, except in hill districts, will stand the work of the Indian bullock. The only place where I have seen them work is Ootacamund, and I must say that they seem to stand the work there, but the impression I gained there was that they were too top-heavy, too big a head with too heavy a body. The Indian working animal is a very well-bred and clean-bodied animal. Your half-bred is too heavy for climatic conditions and for the condition of the soil.

13160. I gather you are not concerned to press very strongly for the placing of the improvement of the animals of the country in the hands of the Veterinary Service?—Not down in these parts.

13161. You are quite content to leave that to the Agricultural Department?—I am quite content to go on as we are going.

13162. But you do insist upon the view that the Veterinary Service should be independent of the Agricultural Department?—Yes, to get the best service from the Veterinary Department.

13163. Now on one or two specific points: on page 383 in reply to question 15 (iii) (e) you say: "Occasionally we run short of serum owing to delay in delivery after it has been ordered from Muktesar. The delay seems to be in the difficulty of transport between Muktesar and Kathgodam railway station." Have you any desire to make serum in the Madras Presidency, or do you think it is better left to Muktesar?—I think it is better left to Muktesar.

13164. It led in certain instances to shortage of serum?—There was delay in getting the supply; there is room for better organisation of transport of serum from Muktesar to Kathgodam.

13165. Did you represent that to the people responsible?—I represented that to the people responsible, and the result of that is that the present contract has another year to run, after which it will be changed.

13166. How is the transport between Muktesar and Kathgodam railway station carried out?—People carry it on their heads. Kathgodam is on the plains; Muktesar is in the hills, about 36 miles away.

13167. How long does the serum keep?—We do not use it if it has been three months out of the refrigerator room.

13168. The creating of a sub-store at the Kathgodam railway station is the obvious way of meeting that difficulty; it is a question of refrigeration?—Yes.

13169. You say on page 383 "Muktesar Institute should be equipped with a research staff which would be free from any routine work responsibility. What do you mean by that?—My experience is that Government expect too much of their officers, and no man can do his day's routine work and then do good research work afterwards. My experience is that all the research that we do is done by officers in addition to the work they are expected to do by way of routine.

13170. But here you are talking about Muktesar?—The same thing applies to Muktesar. They go in for six months' classes and two years' classes; and the men who do the laboratory work have also got to give lectures and prepare students. They are doing the same thing here in the Madras Veterinary College.

13171. Do you say that a man engaged on an important piece of research work should not be asked to give any lectures at all?—He might give one or two lectures a week, but routine work in addition is too much.

13172. Do you think one or two lectures might be of great advantage to him as well as to the class?—Yes, I do.

13173. Because of the contact with the presumably keen minds of the students that such lectures provide?—Presumably, yes.

13174. On the same page you say: "It is very desirable that a Veterinary Adviser to the Government of India should be appointed. He should be an experienced and senior officer of the Indian Veterinary Service with knowledge of Indian conditions and administration of Veterinary Departments. This officer should also be Director of the Muktesar Research Institute. He would be a safeguard against mistakes in the field which have been caused, and which are likely to be caused, by a Director who is merely a Research officer and who does not possess sufficient Indian experience." Would you cite some of those mistakes?—These are mistakes of the Central Government; I have nothing at all to do with them; so, I would ask you to obtain any information on that subject from the Agricultural Adviser to the Government of India. I do not wish to make any statement about that, because it is not in any province.

13175. But you bring in these mistakes that have been made as an argument in support of your statement?—I will give you an instance of a mistake that was made about 10 or 15 years ago: an officer inoculated cattle by the serum-simultaneous method before he understood it.

13176. *Sir James MacKenna*: Was he an officer of Muktesar?—No; the result of that operation was that he killed a very great number of valuable English cattle up in Ootacamund, and Government had to pay a certain amount of damages for that. If there had been proper co-ordination between Muktesar and that man's work done in the south here, the mistake probably would not have occurred.

13177. *The Chairman*: In what service was the officer who made this mistake?—In the Civil Veterinary Department of the Province.

13178. Do you suggest that if a fully trained and experienced veterinary officer at that time had been in the position of an Adviser to the Government of India, this error by a Provincial Officer at Ootacamund would not have occurred?—Yes, that is my opinion.

13179. I understand that you are aiming now at a further year's training in the syllabus of the Madras Veterinary College, making it a 4 years' course?—Yes.

13180. How about the subsidy for students engaged in the 4th year course? Will you have to provide that throughout the course?—Yes.

13181. What is the present subsidy?—At present there are 15 stipends of Rs. 15 and the number of stipends, in my experience, limits the size of the class. Some years ago, before the Retrenchment Committee sat, we were taking in 40 students a year, and each of these 40 had a stipend of Rs. 15. The stipend 15 years ago was only Rs. 10; I got it raised to Rs. 15; Government will have to be prepared to continue the stipends for 4 years in place of 3.

13182. Is it your experience that the class of young man who comes into the College for tuition can make any contribution towards his own living expenses during his period of training?—Some can, but it is a very difficult thing to find out those who can and those who cannot, because, when questioned, they have the same reply that they cannot unless they get the stipend.

13183. Will the addition of another year, making it a 4 years' course, be a serious increase in your budget?—Yes; in order to make it a 4 years' course, we will have to improve the teaching staff very considerably, and where now the lecturers are simply selected Veterinary Assistants in the subordinate grade, they would have to be men of the calibre of the provincial grade; the Professors will have to be men of the Indian Veterinary Service. So Government must be prepared to meet much higher costs.

13184. Is it your view that the officers in the districts fail on the professional side at the moment, through lack of sufficient training?—Some do, some men I am very pleased with indeed; with some others not so pleased.

13185. Is it because of your dissatisfaction with the few, that you have pressed for this extra year's training?—No; there is a general impression throughout the whole of the department in India that we ought to have a more highly trained Veterinary Assistant, and it is the policy of the Government that the teaching in the country should be taken to as high a standard as we can raise it.

13186. Do you subscribe to this view?—Yes.

13187. Do you think it is in the public interest that the expenditure should be incurred, in order to raise the level of efficiency of the service?—I do.

13188. Another point you mentioned in the memorandum was that an officer specially appointed for the work of cattle improvement would be an advantage?—Yes.

13189. Have you got an officer of this nature in the service?—My experience is that the Cattle Specialist will have to give lectures on dairying. I consider that to run a cattle farm successfully and to further the improvement of cattle breeding throughout the Presidency and to keep in touch with the

improvement of cattle, he has got to have his attention fixed there; it is no good expecting him to be a teacher in a dairy class or anything else.

13190. Which farm is it that you refer to?—I am referring to the Hosur farm, because I know Mr. Littlewood has gone Home, and he is going to take certain courses in dairying; they ought to have a man for dairying purposes. If you are going to have a man to run a cattle farm properly, his sole attention should be in that as it is up at Hissar in the Punjab.

13191. I take it you do associate the improvement in the dairying quality of the cow with the bettering of the draught ox?—Yes; there is no reason why a special officer should not also be on the farm; and he should keep all these records and so on; let the man who is responsible for the improvement of the breed do the farming and look after the breeding, and let the dairy specialist be responsible for the milk-recording and the butter-making and looking after similar work; but to put that work on to the man who is going to improve and develop your cattle is only spoiling the ship for the paint.

13192. Would you agree, in your experience, that an improvement in the milk-yielding quality of the cow and an enhancement of the interest the ryot takes in his cow would be a most important contribution to the improvement of agriculture in this Presidency?—Yes, I do.

13193. Am I right in thinking that this Presidency has in force an Animal Diseases Act?—Yes, it has been in force since 1866.

13194. Would you tell the Commission, shortly, what the effect of that Act is?—We can control the movement of cattle; we can enforce compulsory inoculation, we can deal with the carcasses, and can control movement.

13195. You can control movement inside the Presidency?—Yes.

13196. Can you prevent animals from inside the Presidency being taken into districts outside the Presidency?—No, we cannot do it by that Act; when I say that we can control movement, I mean we can try to control movement, but the difficulty of applying it efficiently is a different thing.

13197. Does the Act made it lawful for you to prevent an animal leaving the Presidency?—Yes; we can prevent an animal from leaving a show ring.

13198. What are the conditions that make it impossible to make it effective?—We have not got sufficient veterinary police; we have none at all; we have to depend on the ordinary police; it is very difficult indeed for a policeman to control about 30,000 people and 15,000 heads of cattle at a show.

13199. I expect you know the contribution that the police in Great Britain made to the carrying out or administration of such statutes?—Yes, but the same does not apply to this country; a policeman here, if you give him 4 annas, as a rule will let you do anything; he is like that.

13200. You think that veterinary police would be immune to this temptation?—No, I do not; supervision is required.

13201. Are you putting into force your powers in the matter of inoculation?—Yes, in certain districts, wherever the disease is bad.

13202. Have you ever gone the length of insisting on the serum-simultaneous method?—That is not compulsory; it is only the serum-alone method that is.

13203. What is the percentage of mortality in the case of the serum-simultaneous method, in your experience in this Presidency?—I think there were one or two accidents about 4 years ago; I was at home at the time, and I do not know the details of it; but in the last 3 years, we have not had any at all.

13204. It is a question of technique?—Yes, technique.

13205. The process itself is now perfected?—Yes.

13206. If you owned a bull worth a couple of hundred sovereigns, you would have no hesitation in inoculating it by the serum-simultaneous method?—No; I would pay £5 and have it done; I would insist upon it.

13207. How about carcasses?—That is a very difficult thing again; when an animal dies out in the district, the *Chuklars* are on it at once, and they simply take away the skin.

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13208. It is in their hereditary right that such carcasses should go to them?—Yes; we can only improve these conditions gradually as the department expands and the ryot gets educated to the responsibility of it.

13209. So that, in fact, that section of the Act is more or less a dead letter?—It cannot be applied very thoroughly at all, while it has assisted us. As a matter of fact, I think there were 187 or 188 prosecutions where people refused to have their animals done under this Act; a few of them were prosecuted and small fines inflicted; others were persuaded and that was sufficient.

13210. How about the services of your department and staff in the matter of diseases of animals other than the ox?—Well, of course, the ox is by far the greatest portion of our work, but there are subsidiary interests besides, such as dogs. The horse, down in Southern India, I think is of very little importance; it was of importance at one time, more so in the Salem and Coimbatore districts especially; at one time we had entire horses standing at service there, for the improvement of the breed, but since the motor buses have intersected the country in all directions they have practically wiped out the usefulness of the *jatka* pony, and I do not think we need consider horse-breeding at all. In towns like Madras, Coimbatore and other places, private people have horses for recreation purposes and some for utility purposes, but the veterinary hospital is sufficient to look after them professionally. The difficulty that I now know exists in this part of India is that horses are very scarce, though these horses are required by planters and by private individuals in towns.

13211. How about the relation between the services that your department renders and the question of public health; is there any connection?—Yes, it is again in this way: I had a communication from the Superintendent of the King's Institute at Guindy, pointing out that there was a peculiar form of disease, which they thought simulated small-pox, and they thought it had originated through contact with fowls. He wanted to know if I had known of chicken-pox spreading in that way to human beings, that is, of chicken-pox spreading to man and simulating small-pox in the latter. I informed him that I had recently known of an outbreak of chicken-pox in fowls which were running amongst men, cows and calves and it had not spread to any of them. He said when next they met an instance of the same condition they would ask for my assistance. Then also the Director of Public Health considered the probability of an existing outbreak of botulism on which he consulted me but we decided it was ordinary poisoning from the consumption of large quantities of putrid meat. In such ways there is a connection.

13212. How about rabies?—Of course rabies has a very strong interrelation.

13213. *Professor Gangulee*: Tuberculosis in cattle?—Yes, we work on that at present.

13214. *The Chairman*: There is no system in force here of testing cows, the milk of which is being sold, is there?—None whatever; there is no precaution in that way. I have pointed out to the Medical Officer of Health and the President of the Corporation that they ought to obtain the services of a veterinary officer, and what his work would consist of; but so far they have only obtained the services of a Veterinary Assistant and when they have had him, instead of allowing him to look after the veterinary work, they put him on to checking food supply and such work as that.

13215. Do you know whether the incidence of the recorded tuberculosis is on the increase amongst humans?—Amongst humans, I do not know.

13216. *The Raja of Parlakimedi*: Have you got any scholarships in your institution earmarked for depressed and backward classes?—Yes.

13217. What is their proportion to the actual number?—We now have 15 stipends.

13218. Out of that how many?—Out of that I think either one or two; the number is very small; it is divided up between the different communities. For the last three years we have been admitting students on a communal basis.

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13219. But a certain percentage is earmarked for the backward classes?—Yes.

13220. Then as regards bringing home to the public the free treatment given by the department, besides putting up notices in front of the dispensaries has anything else been done?—No; on that point nothing has been done, because it is thoroughly understood that it is a Government institution and that treatment is free.

13221. But rural people are very uneducated and in certain parts especially they do not know these things. Are your people, I mean to say the departmental people, doing anything in *shandies* and other places?—I think the suggestion to include on the notice boards the fact that treatment is free is quite good; I shall try it.

13222. It does not find a place now?—No.

13223. I think it will be better if it is in the recognised vernacular?—It will be in the vernacular.

13224. And are departmental subordinates made to attend these big periodical *shandies*, cattle *shandies*?—Yes.

13225. If they lie in their jurisdiction?—Oh, yes; they have got to attend to them; they are appointed to them.

13226. And they also take up treatment if possible?—Yes; they have their veterinary medicine chests with them.

13227. That, of course, encourages these rural people to bring in numbers of their cattle to the hospital?—Yes, it is a means of advertising the usefulness of the department.

13228. There is a departmental order to that effect, I suppose?—Yes.

13229. What are the actual restrictions adopted for distribution of stipends?—There are no restrictions; it is left to a Selection Board and the Selection Board settles the point. The stipends are fixed at Rs. 15 per month.

13230. Is it done on any examination? Or what basis do you go upon?—The Secondary School Leaving Certificate.

13231. The selection of the boys for the stipends?—On their technical qualification, on the marks which they obtain at the School Leaving Certificate examination.

13232. And poverty also is taken into consideration, is it?—Only in the backward classes. And suitability; if I had one man of whom I knew that his people were landowners he would make, I would think, a more suitable student for the veterinary course than a boy whose father was perhaps a clerk and had no connection whatever with the land. The more associated they are with animals and land in their family, the more likely they are to make suitable Veterinary Assistants.

13233. Does it bar a student to get a stipend from the Government if he gets some contribution from other sources?—Yes.

13234. In what way?—In this way that if a student were getting a contribution from some other source I should want to give that stipend to another student, because it would be the means of getting another student for the College.

13235. Irrespective of what amount he may get from other sources?—I should put it this way: To the boy I should say 'now you cannot draw two stipends; you may have a Government stipend or you may continue to draw the stipend which you are drawing or the assistance you are getting'; I should advise him to inform his supporter that the ordinary stipend is Rs. 15 a month and as he cannot have his and get the stipend from the College, would he consider the difference and put him on the same footing as the other students; I think that any man who is supporting the boy would probably do it. But I should so represent the case to the student that I would try to get him to obtain the stipend equal to the Government stipend so that I could reserve the Government stipend for another student who was not being supported at all by anyone else.

13236. Has the Agricultural Department or the cattle-breeding department approached you in connection with research work conducted on these different concentrated food materials?—No; they would have to do that themselves on their own estates.

13237. You do not tackle the food problem?—No; simply diseases and education.

13238. *Sir James MacKenna*: What are the educational qualifications for admission to the Veterinary College?—At one time, it was the Preliminary for the University. Now it is the Secondary School Leaving Certificate with 45 per cent of marks in English and 35 per cent of marks in mathematics and a vernacular.

For Mahommedans it is 35 per cent in English and 30 per cent in mathematics. For backward classes, Europeans and Eurasians it is left to the discretion of the Principal.

13239. English is compulsory?—English is compulsory; all teaching is done in English.

13240. What percentage of your students are drawn from the actual cultivating classes? Could you tell me roughly?—I should think only a small proportion.

13241. How do you find these non-agricultural boys in the matter of the actual handling of animals?—It is surprising how they take to it.

13242. That is not a defect you think? You mean it is easily got over?—Yes; we can teach them and they become accustomed and will handle animals quite well.

13243. Is education free?—Yes; it is not only free but they get everything free, their instruments, etc., and they get a stipend as well for attending.

13244. *Sir Henry Lawrence*: Do they all get a stipend?—They all get a stipend.

13245. *Dr. Hyder*: Some of them do not pay tuition fees?—None of them.

13246. *Sir James MacKenna*: Absolutely free?—Absolutely free.

13247. How many stipends have you?—Just now we have about 45.

13248. The Government give them?—Yes.

13249. What do you give at the end of the course, a diploma or a degree?—A diploma.

13250. A diploma of the Madras Veterinary College?—Yes.

13251. Are these stipend-holders all guaranteed posts under Government at the end of the training?—No; there is no guarantee, but they are required to enter into an agreement that they will serve Government for five years if required to do so; they are not in any way guaranteed employment.

13252. Apart from your stipend-holders, have you any private students?—Yes.

13253. What happens to them? Do they go into private practice?—No; they come from the Malay States.

13254. And go back there?—Yes; we have got three or four and they pay Rs. 400 a year.

13255. Have you any private students from your Presidency?—Not from the Presidency. We have had private students in the case of Rajas and zamindars training their own men.

13256. They go back to their own States?—Yes.

13257. What is the number of cattle in the Presidency?—I think it is about 21 millions.

13258. What is your average mortality?—I think last year it was 255,000 from diseases.

13259. A quarter of a million?—That is, reported cases. Of course, there would be many more that were not recorded at all.

13260. The retrenchment axe has been very heavy on your department?—Yes.

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13261. What would a fair figure for the average value of this quarter million of cattle that you have lost from disease be? Even assuming we take it at Rs. 10 a head which of course is ridiculous?—We might take it at Rs. 5 per head.

13262. All right; let us value them at Rs. 5. From that value of a quarter of a million cattle at Rs. 5, could you not argue for the removal of this retrenchment policy with regard to the Veterinary Service in view of the enormous capital saving that would be achieved by the prevention of disease?—I shall argue for that in putting up my scheme for the 4 years' course.

13263. At present, as you told us, research is very scattered all over India and we do not know what is going on anywhere except at Muktesar. Do you think that, with a view to bringing veterinary research together and to give it a fresh impetus, its direction through a Central Advisory Committee would be advisable?—I do.

13264. *Professor Gangulee*: Have you any definite idea in connection with such a Committee, how it would be constituted? What would be the functions of the Committee?—There should be a Central Advisory Committee; on that Advisory Committee there ought to be the Agricultural Adviser to Government, there ought to be a Veterinary Adviser to the Government and he ought to be on that Committee; there ought to be the Director-General of Indian Medical Services and there ought to be Heads of other research institutions, perhaps from the Universities. But there ought to be a Central Advisory Committee and the Central Advisory Committee ought to have a central fund supplied by the Central Government. Then, according to the department to which the research belonged, there would be formed sub-committees; these sub-committees with the assistance of the advisory Head in the various Provinces would decide the work that is required, and in the central institutions such as Pusa and Muktesar the Directors, the Veterinary Adviser and the Agricultural Adviser, can indicate the lines there with the help of their own research men. I am simply putting the scheme roughly.

13265. In the central institutions such as Pusa the Director^s, the Veterinary Adviser and the Agricultural Adviser can carry on researches?—Yes, with the help of their research men.

13266. Would any representative from your own department or from the Provinces sit on the Committee?—Yes, these would come in in the Committee. The Heads of the Veterinary Department in the main Provinces and the main States.

13267. Your Central Advisory Board will be purely advisory with no executive powers?—Purely advisory.

13268. They would allot funds to you?—They would allot funds. These funds would be for the research work at Muktesar and also for research work which may be found necessary in the different Provinces and which might be done at the research laboratories there. I think our laboratory ought to be staffed and equipped to do local research work as well as to assist, if necessary, in any research wanted by the Central Council. In fact, the Central Council could supply us with men to do their work if they wanted to.

13269. Then the Central Board will have no executive power?—No.

13270. You say that in this Presidency there is no lack of co-ordination between the Agricultural and Veterinary Departments?—No.

13271. Will you kindly tell us the points of contact of your department with the Agricultural Department?—Well, if ever they want any assistance at all or any information or advice they ask me, and I am only too glad to give it. We have a veterinary hospital at the Agricultural College. I go and inspect that; the District Agricultural Officer expects that we should do all their inoculation of cattle. If they want my advice as to whether a bull is fit for service or whether it is a suitable bull to buy I give it. When I visit Hosur I go round the stock and if there is any suggestion I can make to Mr. Littlewood I am only too glad to give it him and to improve my own knowledge by what I can get from him.

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13272. This co-ordination you describe is purely on a personal basis?—Yes, but I believe a great deal follows on the fact that we are independent of each other.

13273. Supposing we take the whole cattle question, breeding, feeding, protection from disease, etcetera?—There is more interest taken in cattle in the Veterinary Department, because in the Agricultural Department they deal with cotton, paddy, sugarcane, entomology, chemistry and so on; cattle-breeding is just one of many things, whereas, cattle-breeding would be an essential work of the Veterinary Department.

13274. At the same time you realise that our Agricultural Departments, while they have to concentrate their attention on crops, do now pay more attention to livestock?—Yes; and I think cattle-breeding is a much bigger subject than any of these other subjects.

13275. Would you like to have cattle-breeding under your department?—I would not object to it.

13276. I understand you have nothing to do with the local bodies?—No.

13277. That is not the case in Bengal?—No.

13278. Do you find local bodies anxious to undertake the responsibility of supporting Veterinary Assistants within their jurisdiction?—They do not support them at all. What we found was when they were under the Local Boards there was always difficulty in getting sufficient support; it is far better under Government.

13279. You say that several petitions have come to you from local bodies?—Yes, because it is no expense to the local bodies at all. If I recommend the opening of a hospital, Government pays for it.

13280. Is it on the score of expense that they do not take sufficient interest?—Yes.

13281. The cost of sera and vaccine is a charge on the provincial revenue in this Presidency, is it not?—Yes.

13282. Not on local bodies?—No.

13283. You supply sera and vaccine wherever necessary to local bodies?—Not to local bodies; they have nothing to do with it; it is to our own men working in the districts.

13284. In the event of the outbreak of an epidemic in a certain village, what agencies have you through which you can get this information?—The village *Munsif* reports the outbreak first of all simultaneously to the Tahsildar and to the touring Veterinary Assistant.

13285. Could you give us an idea of the length of time the information takes to reach you, that in a certain village in Salem district, there is an epidemic?—It all depends upon the disease. Each touring Veterinary Assistant probably has 5 or 6 reports of outbreaks at the same time; he has to judge as to the urgency of the case according to whether secondary reports come in on the progress of the disease, the number of deaths, so that, according to conditions one outbreak may have to wait a fortnight because there may be a more urgent outbreak that requires immediate attention. That is left to the discretion of the touring Assistants.

13286. What agencies have you to meet the demands of the villages for ameliorative and preventive measures?—We have simply the Veterinary Assistant Surgeon, a touring man and if there is a severe outbreak I concentrate the reserve men on any one district.

13287. So you have reserve men?—We have a staff of reserve men for concentration wherever service is most required.

13288. *The Chairman*: Do you ever stop leave?—I do stop leave occasionally.

13289. *Professor Gangulee*: With regard to the Madras Cattle Disease Act, in answer to the Chairman, you said that this Act found its place in the Statute Book in 1866?—Yes.

13290. Do you see any effect of that Act, throughout the Presidency?—The only way in which it has been applied has been that when there is

rinderpest in the district and a large cattle fair is going to be held in the district, in order to prevent that disease becoming disseminated round the other districts we get the Government to apply that Act, and stop the cattle fair. Latterly we have been using it to apply serum-simultaneous inoculation against epidemics.

13291. Was this Act amended at any time?—Not amended except for that one thing, serum inoculation.

13292. When was it amended?—It was introduced last year.

13293. You find there is no difficulty in putting this Act in practice?—The experience we had was that a few of the ryots did require to be prosecuted; there were 187 cases; only a few of them were fined at all; it was only the usual opposition to begin with.

13294. When you have a big cattle-show such as at Tiruppur what agencies have you to control the spread of disease. Supposing a man brings diseased cattle, what do you do?—If the disease is found out, I detail a staff of three or four Veterinary Assistants and half a dozen students of the final year class to attend to any outbreaks that may occur.

13295. You make a reference here to the shortage of serum on account of the system of delivering goods from Muktesar to your place. Do you have any arrangement here to keep a stock of serum and vaccine?—Yes, I have arranged with the King Institute, Guindy, to give me accommodation for 60,000 doses. I also have further arrangements with the Pasteur Institute, Coonoor, to give me accommodation for 10,000 doses in refrigerating rooms.

13296. There is always that supply on hand?—It is not always in store. All that is my working supply. According to the demand I place the order with Muktesar.

13297. What is the usual practice in the villages with regard to the dry cattle which fail to give milk?—They simply turn them out and let them graze about in the village.

13298. They do not send them to slaughter houses?—I do not think that is the practice in the villages. The only place they do that is in the city.

13299. I was looking through your curricula and I find that subjects like protozoology, parasitology, entomology, and bacteriology are all taught in the last year. Do you think that is satisfactory?—No, and that is why I am going to introduce a four years' course. They ought to be taught much of that in the third year.

13300. Because you have got to explain the disease?—Yes.

13301. Do you suggest to changing the diploma into a degree course?—Well that again will require very considerable thought. We do not know whether the Veterinary College will be affiliated to the University or not.

13302. Could you give us an idea of the amount of money you are spending on research?—We have done two good pieces of work regarding infectious lymphangitis of cattle and nasal granuloma. All that was done by our men without any allowance.

13303. Are these two diseases you have mentioned quite common here?—Quite common in the districts. By far the most common epidemic is rinderpest. These two diseases are not of so much importance as rinderpest, but all the same they have to be treated.

13304. My point is, has any research been made on important diseases in this Presidency?—The only research we are doing is on bovine tuberculosis. Bovine tuberculosis, we find, is quite common amongst municipal cattle. Last year there were 22 recorded cases.

13305. Have you introduced any tuberculin test?—In order to find out the incidence of the disease I asked for Rs. 1,000 and I got Rs. 900. I asked for Rs. 2,000 in the next budget in order to carry on that and with the intention of doing some experiments for the Pasteur Institute at Coonoor on rabies, but the Financial Department simply wiped that out and passed the

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actuals of the previous year. This work I suggested doing in addition to the college work and for want of support I have had to give it up.

13306. Is bovine tuberculosis common in cattle here?—No, but it is to be found in municipal cattle.

13307. Government do not support you in that?—They gave Rs. 900. For next year I asked for Rs. 2,000 and they gave me Rs. 900.

13308. Besides bovine tuberculosis in the municipal cattle, is there any other disease?—The condition which I want to investigate is the utility of a certain vaccination as a prophylactic inoculation which will protect the dog from rabies for 12 months.

13309. Has that not been done here?—We did two years ago, but the unsatisfactory part of the experiment was that we could not infect the control animals.

13310. We were told yesterday that the hook-worm disease is very common among human beings in the Madras Presidency. Have you found the hook-worm common among dogs?—Yes.

13311. We read that in America they have invented a new method of treatment for ankylostomiasis. Are you aware of that?—Yes, their treatment is oil of chenopodium.

13312. Are you trying that?—Yes.

13313. Now, in regard to indigenous medicines, are they being investigated?—I do not think any special investigation has been made, but the Veterinary Assistants use *neem* oil and various other things which they obtain locally. They obtain various things locally and they supplement their store of medicine with any local medicine which they know is efficacious.

13314. To find out the efficacy of indigenous medicines?—Yes.

13315. *Mr. Calvert*: You are directly under the Minister?—Directly under the Minister.

13316. What is your title?—Veterinary Adviser to Government; I think it is still under correspondence with the Secretary of State whether I should be designated Director or Veterinary Adviser to Government; I do not know which will be decided on.

13317. With reference to the question whether cattle-breeding should be under the Veterinary or Agricultural Department, we have been told that the success in the Punjab is quite an accident, due to a specially qualified member of the Veterinary Service?—I agree with you there in this way, that it would be just a similar accident if it were an agricultural officer who was in charge of it: an agricultural officer might know all about various phases of agriculture and nothing about cattle-breeding. You must have a suitable agricultural man or you must have a suitable veterinary man. It does not matter which, as long as he is a suitable man.

13318. You think the Veterinary Service can produce a suitable man?—Yes; if you get a suitable Veterinary Expert he has got knowledge which no agricultural man has got in the breeding of cattle; it requires minute observation and supervision in cases of disease and so on.

13319. I gather that there are no tuition fees in your college?—No tuition fees, but any private student has to pay Rs. 400 a year.

13320. Your total expenditure is 4½ lakhs?—Not on the college only.

13321. What is the total expenditure of your department?—It is 5½ lakhs.

13322. *Sir Henry Lawrence*: It is 7 lakhs in the last budget?—Yes, 7 lakhs in the last budget.

13323. *Mr. Calvert*: Has anything been done here for horse breeding or mule breeding?—No. The question arose from my remarks in the last report on the Tiruppur cattle show about the pooriness of the animals, and I was asked by Government to make a further report on it. I made an enquiry from the only man who had any animal worth the name, the Pattagar of Palayakottai and he explained he was not breeding horses at all now, because there was no

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use for them and they were not in demand. All the *Jatka* ponies in the districts have been done away with, owing to motor cars intersecting the country in all directions. Even in the two districts of Salem and Coimbatore, where they have made attempts at breeding horses, there is no demand. The only demand is from private people who go in for imported walers and for a few country breeds. There will be a small demand for them, but nothing from a business point of view, I believe.

13324. Is there no scope here for mules as pack animals?—None at all.

13325. *Rao Bahadur Muniswami Nayudu*: Has your department investigated the methods adopted by the people in regard to treatment of diseases?—No; we have made no special investigation. Of course, if any special incident occurred, from a point of interest the Veterinary Assistant would inform me of it.

13326. You know that a very large number of cattle in the country could not be dealt with by your department?—Yes, at present.

13327. And that a number of cattle are being treated by the people by their own native methods?—Yes; they do make an attempt to treat their own cattle.

13328. Do you think it will be advisable to have a special officer deputed to collect information on the methods adopted by the village *vaidyans* in the treatment of cattle diseases?—It might be of interest.

13329. Has your department taken any special steps to do that?—No special steps have been taken. I have noticed that what they do in the case of foot and mouth disease is to stand their animals in clay and water. That is a very good method, but it is very mild in comparison with the treatment we can supply ourselves; it is probably good enough in the absence of others. There may be other cases in which the indigenous treatment may be useful, but we have made no special study of it.

13330. Do you take any steps to deliver lectures to the villagers on diseases of cattle and on the methods of treatment adopted by your department?—Frequently the Veterinary Assistants and the Circle Officers do give such lectures.

13331. Have any of your subordinates or Veterinary Assistants been able to give lectures with the aid of magic lanterns and slides?—No. We have a magic lantern of our own here at the college and lately in the city here we have given lantern lectures on rinderpest.

13332. Do you think that popular lectures with the aid of magic lanterns will have a good effect on educating the people on the principal diseases of cattle and the good work your department is doing in the matter?—I put that up to Government, but I could not put up a good enough case for propaganda work to be carried on by my department. There is so much demand for our Veterinary Assistant that Government say there is no good going into further expenditure on propaganda. The demand for the department is sufficiently great and it takes us all our time to teach the students and to open veterinary dispensaries to satisfy the demand.

13333. Do you publish any leaflets explaining the diseases in the vernaculars?—We publish two or three every year in all vernaculars.

13334. May I know whether, in selecting students for your institution, you see that people from the various language areas are selected?—Yes: I do that. We have a shortage of Telugu men and we give Telugu students preference over Tamilians, because the majority of our qualified men are Tamilians and they dislike being sent to Telugu countries. My object is to level up the proportion and to try and get Telugu men for Telugu countries.

13335. Have you succeeded in that?—Not satisfactorily, but things are improving, and I never miss any opportunity of getting Telugu students if I can.

13336. How many Telugu students were selected this year?—I could not tell you the exact number of Telugu men that we selected this year, but I can find that information for you.

13337. *Sir Ganga Ram*: Is there a book on veterinary science called 'Bazar Medicines'?—Yes, there is such a book.

13338. In English?—Yes, in English.

13339. Where can we get copies of the book?—I could supply you with a book which was issued some 15 years ago; it is called 'Indigenous Medicines.'

13340. Is it for veterinary purposes?—Yes.

13341. Would you send me a copy?—Yes.

13342. If anybody in the rural areas requires the services of a Veterinary Assistant, is there any scale of fees laid down for his attendance?—He must treat them free.

13343. We heard, in Simla I think, that he could charge anything he liked; is that so?—Not for the ryots' cattle; not in the case of the agricultural people. But in a town, if a man wants a Veterinary Assistant to go and to attend to his horse, that is private practice, but in rural areas he is not allowed to do that.

13344. In the case of towns, is there any scale of fees?—There used to be one, but now they have been given freedom of practice, just the same as in the case of the other professional men.

13345. He can charge anything he likes?—He can charge anything he likes; it depends entirely on what the client will pay him.

13346. *Dr. Hyder*: For treatment in the rural areas, would you like a fleet of motor cars equipped with travelling laboratories, so as to cope with the outbreak of any particular disease that may occur?—I think now the supply of motor cars in the rural districts can take our Veterinary Assistants from one place to another quite rapidly. The difficulty I have is in getting men to go direct and by the quickest route. They will, if they can, travel by bullock cart and take 3 to 4 days to get to an outbreak which they could reach in 24 hours. When they do a thing like that, I simply disallow their touring expenses.

13347. *The Chairman*: What is the attraction in doing it?—It wastes time and it pays them better.

13348. *Dr. Hyder*: If there were a travelling dispensary, a motor lorry, whenever there is an outbreak you could despatch them quickly to different centres?—I do not think it is necessary. We could arrive at the outbreak now in quite a reasonable time and take the necessary material with us. I do not think Government would dream of it; they would put it down as an unnecessary luxury.

13349. I was wondering whether your department has made a classification of diseases of animals in this Presidency?—There are many diseases that require investigation; we are not clear on them at all, but the main contagious diseases we have good knowledge of.

13350. I was wondering whether you had such diseases here as, for instance, abortion in cows?—Yes, we have; but very little of it. Our trouble is to distinguish between simple accidental abortion and contagious abortion, but we have not yet discovered contagious abortion in this Presidency. I have tested several animals and sent several blood samples up to Muktesar, and have not yet detected contagious abortion.

13351. Have you come across here what is called Johnes' Disease?—Yes, a little of it, and it has been imported from Bangalore.

13352. Among sheep, have you come across scab?—No, I have only seen that in Scotland.

13353. I was wondering whether there was any investigation carried on here on the relation of grass to diseases of animals?—No, that is a part of work that has yet to be done. Our difficulty is that we have got no research staff at present.

13354. In regard to admission to the Veterinary College, I take it you admit matriculates?—There is no Matriculation in Madras.

13355. Do you admit those who have passed the corresponding examination?—Yes, but if there were to be a course up to 4 years, instead of taking students who have passed the equivalent to the Matriculation we will require the equivalent of the First Arts or the Intermediate.

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13356. Do you not think it would be a good thing to admit students who have already passed the Intermediate Examination?—Yes; we have actually had graduates come to the college; they were graduates in Arts before they entered the college.

13357. Are you aware that the veterinary services and the veterinary institutes in England are under the Ministry of Agriculture?—They are, certainly, but that is a different thing from the Director of Agriculture here. We are both under the Minister of Agriculture (Development) in this Presidency, but it is quite a different proposition being under the Ministry of Agriculture at Home to being under the Director of Agriculture here.

13358. *Dewan Bahadur Raghavayya*: From the Administration Report for 1924-25, I find that the number of cases treated in the 67 hospitals and dispensaries of the Presidency is 96,000 odd. That works out to an average of about 5 cases a day. How do you account for the small extent to which these institutions are taken advantage of? Is that in proportion to the number of hospitals existing now or existing in that year?—67 hospitals and dispensaries were in existence in the year 1924-25. Those 4 or 5 cases that you see are fresh cases attending daily; you may have actually 30 or 40 animals being treated that day. The report says, "The number of cases treated and castrations performed at all the institutions except the Madras Veterinary College Hospital was 96,740, as against 85,089 in the previous year." One case may be treated 20 times, but still it counts as one case; another case may be treated 5 times it counts as one case; you do not count the case over again.

13359. It means 96,000 animals?—Yes.

13360. Even that seems to be a very small number, about 5 animals a day?—Of course, some are dispensaries and some are hospitals. We have divided the institutions into dispensaries and hospitals, the difference being that hospitals can treat in-patients, whereas a dispensary is never so well equipped and never receives in-patients. Some of our hospitals have as many as 60 cases a day. In certain districts where we have opened new dispensaries, they have worked up to 5 and 6 new cases a day in 12 months. That is satisfactory work, and then gradually the use of the dispensary spreads in that district; it is only very, very occasionally, I think I only remember about 2 cases, where advantage was not taken sufficiently to warrant keeping the hospital open.

13361. The local population have not yet become sufficiently alive to the advantages of those institutions?—Some districts are much more adept at accepting the advantages than others.

13362. Does it not mean that these institutions require more advertising and more propaganda work?—In the local areas sometimes it is so. In addition to that the touring men also do the treatment.

13363. I see they had some about 20,000 to 30,000 cases between them?—Yes.

13364. *Sir Thomas Middleton*: The present course is a 3 years' course, and you have been trying to get a 4 years' course for some time; is that correct?—Yes, I was getting out a scheme for a 4 years' course just when the Retrenchment Committee sat, and Government informed me that they could not think of it.

13365. You yourself entirely recognise that the 3 years' course is unsatisfactory?—It is not sufficient.

13366. What is the length of the course in Great Britain?—It is a 4 years' course.

13367. And those who are trained for public appointments in Great Britain do an extra year for the D. V. S. M.?—Yes.

13368. Is the need for skilled veterinary knowledge any the less among the animals of India than among the animals of Britain?—I do not see why it should be so.

13369. Do you see any reason why it should be greater in India, where disease has been less studied?—I do not see why it should be greater, except in contagious diseases; we have far more contagious diseases here than at Home.

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13370. It is not the case that the animal diseases of Britain have been much more fully studied than the diseases that you meet with in India?—Yes; and we have got a large field for further investigation.

13371. And the ordinary practitioner in England, if he is in difficulty over a case, or is in a little doubt himself, has no difficulty in getting further opinion on it?—Exactly.

13372. Therefore, for work in this country you really want a higher training?—Just as high as in England.

13373. And you are only stopped from getting that training for financial reasons?—Yes.

13374. *The Chairman:* Did the recommendations of the so-called Lee Commission affect your service? Are you recruiting for the Provincial Superior Service?—No, the recruiting is stopped. The idea now, I understand, is that as each Imperial department man retires his place will be taken by a Superior Provincial Service man.

13375. Superior?—I have recommended that they should be Superior Provincial Service; it should be equivalent to the present Indian Veterinary Service.

13376. I expected you to say that; my question was directed to discovering whether you had commenced recruiting for that Superior Provincial Service?—No. I have got a man in the ordinary Provincial Service, who is a B.Sc. (Edinburgh) in Veterinary Science, and M.R.C.V.S., and yet the best appointment he can get out here is in the Provincial Service on Rs. 250 a month; his education at Home cost him Rs. 25,000.

(The witness withdrew.)



**Rev. W. S. SUTHERLAND, B.D., United Free Church Mission,
Chingleput, Madras.**

Replies to the Questionnaire.

QUESTION 2.—AGRICULTURAL EDUCATION.—The following replies are based on personal experience as Manager (1) of a middle agricultural school located in a rural area (United Free Church Mission Agricultural School, Melrosapuram, Chingleput) and (2) of a high school located in a mofussil town (United Free Church Mission High School, Chingleput) in which agriculture is taught as an optional subject in the Fifth and Sixth Forms for boys appearing for the Secondary School Leaving Certificate Examination, and as a vocational subject for all boys in the Third and Fourth Forms.

(i) No. I think that there is an almost untouched field of possible development for the teaching of agriculture in middle and high schools. The Agricultural College should aim at turning out teachers of agriculture rather than, as at present, scientific agriculturists. Classes in agricultural pedagogy should be attached either to the Agricultural College or to Educational Training Institutions. Steps should be taken to include agriculture either as an optional or compulsory subject in all high schools in mofussil areas thus creating a demand for teachers of agriculture. A village elementary school teacher with a "live" interest in agriculture, even if he did not teach agriculture as a subject in his school curriculum, would exercise a considerably greater influence in the village community where he is located. At present the village elementary school teacher is out of touch with the interest of the community among whom he lives and works on account of his purely literary education and this reacts on the school to its detriment.

(ii) I consider there is an urgent need for more emphasis being laid on agriculture as related to general education. My experience in high school work would indicate that an ability to appreciate the problems connected with the land is a thing desired by the parents of high-caste boys who are not directly interested in the land. Vakils and others have informed me that they had an indirect interest in ancestral lands in distant villages but through lack of any knowledge of agriculture this interest was restricted to accepting their share of the produce as rent due at harvest time. They hoped that through the elementary training in agriculture being now given to their sons in our high school they would in the future be in a better position to appreciate and guide in the proper development of their lands even though they were for a considerable part of the year "absentee landlords."

(iii) Yes, and not only so, but their educational training should be carried on in an agricultural environment. A lad born in an agricultural community but trained in a purely literary environment in an urban school is a hopeless product. The ideal training would be elementary education in the village school followed up by agricultural vocational middle school training in a school located in a rural area leading on to a high school where agriculture would be taught as an important part of the curriculum.

(iv) I am of opinion that the demand exists but the facilities are not being given. With adequate facilities a considerable number of pupils in secondary schools would take up the study of agriculture.

(v) My opinion is that agriculture should be taught in secondary schools not merely with a view to the possibility of all students who take the subject becoming practical agriculturists in after-life. Agriculture affords a very valuable field for the practical application of those theoretical sciences which constitute a part of the usual curriculum in secondary schools. In the opportunity agriculture affords for practical application of the sciences it should be regarded as of a distinct educative value in itself quite apart from the question of whether all the pupils who study it take up practical farming in after-life.

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(vi) If "agricultural classes" refer only to those who are directly engaged in farming the answer to this question is that they are not mainly drawn from this class. Few of this class have the means for high school education. In middle schools where agriculture is taught they are entirely drawn from the agricultural classes.

(vii) More emphasis should be laid on agricultural teaching in middle and high schools than at present. In high schools it should be co-related with other subjects such as Botany, Physics, Biology, Chemistry, etc.

(viii) (a) Nature study has a distinct educative value in elementary schools.

(b) School plots should be attached to elementary schools to interest the children in the study of plant life.

(c) School farms are necessary for all middle and secondary schools which undertake the teaching of agriculture. Without some lands attached to institutions where agriculture is taught the theoretical training would be of little value.

(ix) This is a question which should not carry weight in such an enquiry. A knowledge of agriculture would be of value to all Government servants—especially revenue officers—as well as to others who may follow a professional career but are nevertheless indirectly interested in the land. Many officials after retirement settle down in their native and ancestral villages where they have a greater or less interest in the land.

(x) My experience is that it does not need to be made more attractive to the secondary school pupil. Fully 50 per cent of the pupils in a rural secondary school would be willing to take up the study of agriculture if the necessary facilities were provided.

(xi) By night schools, occasional lantern lectures and local agricultural shows and exhibitions.

(xiii) The teaching of agriculture should be taken up by the Educational Department so far as middle schools and secondary schools are concerned. Its inspecting officers should be specially trained for such work and liberal grants-in-aid should be given to private schools undertaking to include agriculture in their school curriculum.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(a) I have no means of estimating but probably the total is not more than eight months in the year. He usually does nothing in his slack time unless he is near a centre where he can get cooly work. Some find employment on road repairs. Subsidiary village industries would not furnish a livelihood in themselves but would bring in a small income during the slack seasons and especially in times of famine thus reducing the need for relief work.

(b) *Grass mat-making, weaving, rope-making, basket-making, poultry, etc.*—Such industries should be taught in middle schools and co-related to the agricultural instruction.

(c) *Bee-keeping.*—The Indian bee is difficult to domesticate and yields very little honey as compared with the European bee. Bee-keeping is not likely to prove profitable on the plains but the matter requires further investigation.

Poultry rearing affords considerable opportunity for development and improvement. There is great scope in rural communities for such work provided it is directed into profitable lines and expert advice and help provided. Facilities for marketing would have to be considered.

Fruit growing is rather uncertain on the plains around Madras. Mangoes are extensively grown but is an uncertain crop. With regard to other fruits even if cultivable it would be difficult to compete with the output from places at higher elevation.

Sericulture.—The heat of Madras plains during several months of the year would be an obstacle to its profitable undertaking.

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Pisciculture.—Water is probably not available in sufficient quantity during the dry season.

Rope-making.—This is done on a small scale for private purposes in most villages. With improved methods and introduction of suitable machines it could be developed. Aloes and other fibre yielding plants grow extensively on the plains. The extraction of plantain fibre for ropes and weaving calls for development.

Basket-making.—It is difficult to compete with the professional basket-makers who are in these parts a migratory caste of gypsies. These make the ordinary cooly baskets. If the manufacture of more elaborate fancy articles in this line could be introduced it might afford profitable work in spare-time. There is caste prejudice against doing such work in the area around Madras.

Pottery work, at present confined to a particular caste, might profitably be taken up by village agriculturists.

Oil-pressing could also be adopted by many villagers and they might be encouraged to grow oil yielding crops.

(d) Such work if undertaken by Government would undoubtedly encourage the growing of a greater variety of crops by agriculturists which would not only be profitable in themselves but would give scope for better rotation.

(f) Yes. I think there is much need for such an undertaking.

(h) The civic conscience is practically non-existent in rural life. Education with emphasis on civic responsibilities and propaganda by lantern lectures and pamphlets are the only methods that can be suggested.

QUESTION 22.—Co-OPERATION.—(a) The co-operative movement among the agricultural classes requires much more supervision than is at present given. Intensive and educative work both from Government and non-official sources, where possible, is more important at present than extensive work.

(b) (i) Where these are opened in villages so as to include the caste landholders along with the outcast agricultural labourers, the control of the societies passes into the hands of the caste people who sometimes make it the means of exploiting the labour of the outcasts. Where such mixed societies are formed the outcasts should be given an equal if not a greater representation in the controlling board. Separate societies for agricultural labourers are desired.

(ii)—(ix) These functions where found necessary should be invested in the credit societies. Purely credit societies are too restricted in their functions and once loans are given they come to be regarded with the same attitude as that shown to the troublesome moneylender.

(d) By no means. The members do not know how to utilise them properly and require guidance and help along proper lines.

QUESTION 23.—GENERAL EDUCATION.—(a) The existing system of education is far too literary in its aim. It should be made more practical by introducing agricultural training wherever possible. Agriculture in this connection should not be regarded merely as a preparation for an agricultural career but mainly for the sake of the practical interest which it will afford to the study of all scientific branches of study. It will help to produce a more cultured and resourceful citizen. In Madras Presidency the Agricultural Department restricts the Educational side of its function to Collegiate training and has never shown much concern in relating its educative works to the general school grade. The result would seem to be that the entrants to the Agricultural College are lads who have never had any practical preparation for agricultural studies nor have they had their interest in agriculture quickened during their school career. They have come to a stage in life when they have to choose a career and desiring Government service of some kind they find in the Agricultural College a means of entering such service.

(b) (i) The only means I would suggest is the relating of agriculture to general education as already indicated.

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(ii) Education is not compulsory in any rural areas in the Madras Presidency.

(iii) Among the lower classes it is largely due to their economic condition. Children are sent to herd cattle when they ought to be in school. The herding of cattle ensures at least a meal a day, whereas attendance at school does not. Small children in the homes have to be looked after while both parents go to work and so children are kept from school for this purpose.

Oral Evidence.

13377. *The Chairman:* Rev. Sutherland, you are in charge of the United Free Church Mission, Chingleput?—I have been in charge of it.

13378. You have put in a valuable note, for which my colleagues and I are greatly obliged. Do you wish to say anything in amplification of this note before I proceed to ask you one or two questions?—No, there is nothing that occurs to me to say.

13379. You say in the opening words of your note of evidence that your replies are based on personal experience as manager of a middle agricultural school located in a rural area, namely, the United Free Church Mission Agricultural School, Melrosapuram, in Chingleput; is the teaching there in the vernacular?—It is in the vernacular.

13380. Entirely?—Entirely; English is taught in the school; it is a combined agricultural and general educational school.

13381. But this middle agricultural school is entirely vernacular?—It is entirely vernacular so far as agriculture is concerned; the boys are also being taught the English language.

13382. English is taught there as one of the subjects of the curriculum?—Yes, it is a general education school as well.

13383. You say, “and (2) of a high school located in a mofussil town (United Free Church Mission High School, Chingleput) in which agriculture is taught as an optional subject in the Fifth and Sixth Forms.” There again, I take it, following the usual practice of the country, English is the medium of instruction?—English is the language by which it is taught in the Fifth and Sixth Forms.

13384. Are all subjects of the middle school, other than agriculture, taught in English?—All the boys who study there are from the backward classes, who do not know English.

But certain of these boys after they go through this school, may go on through high school education and we do not want to block the way for them by keeping English back as it were.

13385. Precisely. What proportion of the boys who pass through the middle agricultural school are of the backward classes?—They are all of the backward classes.

13386. Practically all?—Yes; it is a Mission School established principally for our Christian people in those villages and they are drawn largely from the backward classes.

13387. Is there a demand, in your experience, for education of that sort on the part of the agriculturists, that is to say, on the part of parents of boys not members of the depressed classes?—Since the agricultural classes have been started in the high school, the classes have become more popular. It is only four years ago that we began taking up agriculture in the high school. I think in the first year there were one or two out of these who joined the class, the second year there were four, in the next year 18 and this year 22 or 23.

13388. Would you say that the agricultural teaching in the middle school is of a more efficient nature than the agricultural teaching in the high school?—It is more practical. There is a farm attached, whereas in connection with the high school a number of other subjects are prepared for the School Final Examination and agriculture is only an optional subject.

13389. Would you call the first a vocational school?—The first is a purely vocational agricultural school.

13390. The second is definitely not?—It is definitely a high school in which agriculture is an optional subject.

13391. In which agriculture is an optional subject and, when it is taught, it is taught not perhaps so much as a vocation but as a means of education and of turning the boy's mind towards agriculture?—Exactly so.

13392. How many hours a week of practical agriculture do you give in the high school?—As a matter of fact in the high school there is not much time for that. The boy's time table is pretty full up with other things. He has got to study History, English, Mathematics and various other subjects; but we generally try to give them two or three hours a week for practical agriculture. They have the theoretical class every day.

13393. What does that theoretical teaching amount to?—They follow the curriculum drawn up by the Government, which is same as the Secondary School Leaving Certificate curriculum. Agriculture is one of the subjects of that scheme.

13394. Now do you think there is any demand on the part of the cultivating classes for vocational vernacular middle schools among depressed classes?—I think if they realised what it is, there would be. At present they do not realise the need for that type of education, but if the schools were established and they begin to appreciate the object of such schools, there would be.

13395. Do you think it is possible to give that type of teaching in its best form without blocking the road of the boys who go to such a school, i.e., blocking their road to higher education in the University?—Yes, I think so, it is quite possible.

13396. You think it can be done?—It can be done; that is our aim in the middle school. We make the education such that the boys can go right on into the high school.

13397. Can you give us any particulars as to how many have gone?—About two or three go to high school every year.

13398. It is not a bad proportion. Out of how many boys?—We had about 50 boys in the school and you have got to remember that these boys are drawn from the depressed classes whose intellectual capacities are not great and we can send only such boys that show ability for higher education.

13399. How many leave the school every year?—Certain of these boys do not go on to high school; they are taught up to the Second or Third Form, which enables them to practise training as teachers.

13400. But how many boys, altogether, leave the school every year?—About 6 or 7, I should think.

13401. Of which two or three go on to the high school?—Yes.

13402. Do these boys pick up sufficient English early enough in life to take full advantage of teaching in English later on?—It usually means that the boys lose a year after their training through being in the middle school. They cannot enter the high school at the standard they left in the middle school. They are backward in English. They are not able to give much time to English in middle school.

13403. When was this middle school established?—About 50 years ago; it was started as a purely agricultural school and for many years it did not take up general education. It was not a success as a purely agricultural school. About 8 or 9 years ago I stopped that and made it a general educational school and took boys straight in from the villages into the school. Before that it was a case of boys who had gone to the high school and were probably not found fit.

13404. You have got failures?—We have failures and they regard it more or less as a penal settlement for having failed. It was not a success as a purely agricultural school. It is now a general educational school.

13405. When did you make the change?—About 7 or 8 years ago.

13406. So you have had plenty of time to see how it was going to work?—We would like to have more time.

13407. Have any of your boys of the middle school gone on to the University?—No; very few of these have the capacity for University training.

13408. In your experience, would it be possible for a boy of sufficient capacity to lose that year that you have spoken of as a result of learning English late and to get into a University to take his degree? Are the two things compatible?—If you have a boy who is brilliant, he can go straight

on. But you have got to take an average boy and the intellectual abilities are very low.

13409. And the loss of that year would be a tremendous handicap?—I do not think it is very much for the class of boy I am thinking of.

13410. Have you any views about elementary education, other than the general effect of your argument here upon that?—The Mission with which I am connected, in conjunction with other Missions, is seeking to make the village schools more vocational, that is, to teach the boys village industries.

13411. Which do you think ought to be the main objective in elementary education, vocational development or the attainment of literacy?—I think you ought to combine both if possible. The school curriculum should not be drawn up so as to bar any boy having ability from going on for high school and University education. At the same time you want a certain amount of vocational work in order to test the abilities of the boys. Certain boys may not have the ability for high school education, but they may have practical turns which can be observed and the boys may be guided as to what they are to take up in after-life.

13412. Does that mean control in elementary schools or primary schools? How long do you find that the majority of your boys stay in these primary schools?—The infant class is usually a very large class and the next standard is about 50 per cent of it.

13413. Fifty per cent leakage?—50 per cent leakage.

13414. And the next?—The next is probably another 50 per cent. That is, in the village school of 30 boys you would probably have 3 or 4 in the 4th standard, and 5 or 6 in the 3rd standard.

13415. Of every 100 entering the infant class, how many attain literacy?—I am talking of the depressed classes only now. 5 per cent, I think.

13416. 5 per cent attain literacy?—Yes.

13417. And how many retain literacy?—I think 5 per cent.

13418. You do not think they relapse?—No.

13419. Can you give us any figures of classes other than depressed classes?—I am afraid not. We have some schools for caste students; but it is a high school where you have select boys, who are sons of officials and others.

13420. Are you attempting anything in the form of adult education or night classes for adults?—We have night schools in most of the villages, but the adults do not come to them. It is largely children who are not able to attend the school during the day because of their work that come.

13421. Is it good for them to sit up at night? What is their age?—It depends on the village. In certain villages the night schools consist largely of students who ought to be in the day school. In other villages you get bigger lads of 18, 20 or 25.

13422. Can a child's constitution stand up against the work of the day and school at night?—The day work is not much, sitting under the tree and looking after the cattle; it is not hard manual work.

13423. They do not come tired?—Sometimes they are inclined to be sleepy, but I think they are able to follow the lessons and make good progress.

13424. But you have no adult education as such?—No.

13425. Have you ever considered the possibility of any such education?—The night schools are open to adults and, as I say, in certain of these night schools we have lads of 25 reading.

13426. Are they easy or difficult to teach at that age?—You have only two hours in the evening to teach them and you cannot expect them to make as much progress as children of day schools; but what progress they make is good.

13427. They learn to read and write?—Yes.

13428. Does it take the average young man long to do that?—About 3 or 4 years..

13429. 3 or 4 years in a night school before he can read and write?—Yes, if he attends regularly. Our great difficulty with the village school is the irregularity of the children and the adults. For a time it may be popular to attend the night school; after a time they cease to attend. A great deal depends on the teacher and on other attractions.

13430. Is the teaching in English or in the vernacular?—Vernacular entirely.

13431. I see, on page 402 of your written replies, that you express an opinion upon the value of agricultural knowledge in officers of the public services other than the Agricultural Service. Has it ever occurred to you that a degree in rural economy at the University might be helpful in that direction?—I should think it would, but my experience is entirely with the middle school and high school boys. My feeling is that agriculture as a subject is related with all the other subjects and it gives a practical turn to other studies.

13432. Have many of your middle school boys gone back to cultivation as a profession?—Some of them, yes.

13433. Can you give us the proportion who go back to the field?—The proportion that will go back to the field will consist mostly of the boys who are not very bright. The boys who do best have other openings for them. They become teachers in villages and some of them go on to the high school.

13434. So that, even in the case of the depressed classes, the fact stands that the tendency of education is to drain the land of the better brains?—Exactly; I think so.

13435. Have you ever considered the possibility of devising a system of education which would not have that effect?—The vocational school has the effect of giving the boys who attend it some practical training even if they go back to their villages. They can benefit by what they have learnt at school. That is, the boy who is not fit to go on to a high school if he has been at a vocational school has learnt practical things which he can put to use.

13436. But, on your own showing, the greater part of even your middle vernacular vocational school boys find occupation away from the farm?—We as a Mission require a certain number of these boys as teachers in our rural schools and we absorb them as such in the Mission schools. The other Missions also employ our boys.

13437. Have you a system of settling the sons of depressed classes on the land? Have they an opportunity of returning to cultivation?—We have three settlements in the Mission district of which I have been in charge. The land is fully occupied by old settlers who have been there for the last 20 or 30 years. There is no land available for the boys we turn out now.

13438. So that the questions which I put and the answers you gave have got to be read in the light of the fact that these boys from the depressed classes have, for the most part, no opportunity of using their vocational knowledge as tillers of the soil. Is that the position?—The system that prevails in the villages is that the man of the depressed classes is usually the cultivator and not the owner of the land. The boy's parents may be responsible for the cultivation of a certain number of fields which are the property of a caste man, a Brahmin or Mudaliar.

13439. He works as a rule as an agricultural labourer?—No, he gets a share in the harvest, half or one-third, as the case may be.

13440. As remuneration?—Yes, he is responsible for manure, for seed, for supplying everything, and at the harvest time the landowner comes and takes away half the income.

13441. You distinguish between the agricultural labourer who works for a wage and the man who labours on the soil and who is remunerated in kind?—Yes, there is a difference I think. The man who cultivates for a share of the produce has got a hold on the land, a tenure on the land which Government recognises just as much as the landowner.

13442. If that is so, has he anything which he can leave to his son in the way of right?—I think so.

13443. Can you speak as to the details of that fact?—It is quite common in South India. It is the universal practice I think in most of the villages with the caste people on the land. When the caste people own the land they ask one of the depressed class men who has had the *Kudivaram* right as distinguished from the *Melvaram* right to cultivate the land. I do not know if that is communicable from father to son. I think it is.

13444. *Dewan Bahadur Raghavayya*: Is he not a tenant-at-will on the East coast?—He has got a hold on the land. I am subject to correction. I believe that is the position.

13445. You are referring to the zamindari tenants. In the ryotwari tracts there is no hold on the land except in Malabar?—I think it is different here. If he is turned out he can go to court.

13446. *Sir Henry Lawrence*: Which district are you speaking of?—Chingleput.

13447. *The Chairman*: In the case of the district you are familiar with, is the practice to depend upon the total yield or a fixed sum?—Total yield.

13448. *Dewan Bahadur Raghavayya*: So that he has no incentive to increase the total yield?—On the contrary, the system discourages the man from improving his land. If a man manures his soil and spends 30 or 40 rupees on improving the soil he gets an increased output of 60 rupees and the landowner takes away 30; so he is no better off. The owner gets his share of the improvement without putting anything into it.

13449. I gather that you regard your middle vernacular vocational schools mainly as a training ground for teachers?—For teachers and for such boys who may not have the intellectual ability to become teachers. If they go back to their villages they know something of agriculture and they can appreciate the pamphlets of the Agricultural Department in the vernacular and they have an open mind to improve agriculture.

13450. Have you any accurate account of the careers of your boys since you made arrangements for the change in the curriculum of the school?—No, I have not worked them out. But I know from personal knowledge that some of the boys are cultivating their own land.

13451. They have gone to their lands?—Yes.

13452. Are you satisfied that the result of your training has been to improve their own efficiency?—They grow better crops.

13453. You feel no hesitation in saying that?—No.

13454. Do you think that they themselves appreciate the fact that they have benefited from the course at the school?—I think so.

13455. Have you felt any demand from the cultivators or owners for such teaching themselves once they have seen that better crops result from this teaching?—Well, in the case of boys that I am thinking of, they are on Mission lands in some of these settlements. After being in the settlement they have succeeded to their fathers' lands in the settlement. A number of outcasts do own their own lands.

13456. I have some questions on education to put to you. Do you think it possible to do much more than infuse what is called an agricultural bias into the elementary teaching without running the risk, in some degree, of prejudicing the prospects of literacy. Do you think there is time to do more than that?—I think so. I think that the training in agriculture is an education in itself.

13457. I am talking of elementary education?—My experience is based on education in a middle school which has also a boarding home. All the children are living there in the hostel.

13458. What is their age?—They come there at 9 or 10 and continue till 14 or 15. They go to the ordinary village school at about 6. Our method is, the best students in the village schools in the 3rd or 4th standard

who show interest in the lessons are brought to these schools, and continue there for 4 or 5 years and then are sent on to the high school.

13459. In your view the attainment of literacy is the first objective of education in rural areas?—I do not think it is. If he wishes to make a good citizen, he would take an interest in the affairs of the community.

13460. You do not regard literacy as the channel from which these other advantages flow?—It is not the only channel.

13461. Have you had close personal experience of the co-operative movement?—We have several societies in the villages in which I work and in which I have been interested.

13462. What nature of society?—Credit societies.

13463. You are satisfied with the services that they are rendering?—No, I am not satisfied. I do not think they are doing as much as one would like them to do. For one thing, when a society is established in a village it falls into the hands of the caste people. I think I mentioned that in these remarks and I have heard of cases in which outcast men will not get a loan unless they promise to sell their labour to the caste man who is a member of the panchayat, at a lower rate than he can get in the market.

13464. Otherwise they will not get the loan?—Quite so.

13465. What about the annual general meeting? Is there any meeting at all?—I have been at a meeting in which the Director sat on one side of the street and the outcast sat on the other side of the street.

13466. One man one vote, I suppose?—But if he exercised his vote contrary to the wishes of the wealthy members of the panchayat, he would probably get no land to cultivate.

13467. That is to say, he cannot exercise his vote?—He has got to exercise it in favour of the panchayat in his own interest.

13468. Do you think the notion of a co-operative organisation as a means of raising the general tone and outlook of the rural population has been appreciated at all?—I think so. It has been appreciated by the people in the villages from the point of view that they get money at a very much lower interest; but I do not think the supervision is adequate; they simply ask for loans because loans can be got; they do not always use them for useful purposes; they very often loan out themselves to somebody else who pays them higher interest.

13469. And you are convinced that in the present state of progress further expert supervision from outside is required?—I think so.

13470. You do not think that a co-operative credit society which has greater means of placing facile credit is likely to improve in the long run?—I do not think so unless a man is trained how to use his society for his own benefit.

13471. Can you give an idea as to how many credit societies you have been familiar with?—20 or 30. They are all of the depressed classes.

13472. Of those, can you point out a single one which is conducted on a thoroughly satisfactory basis?—No, not one.

13473. Have you any experience of co-operation in rural areas amongst peoples other than the depressed classes?—No, except in certain villages where the co-operative societies serve both the depressed classes of the village and also the higher castes.

13474. Have you experience of co-operative societies designed to undertake the financing of new village sites for depressed classes being settled on Government uncultivated lands?—Some years ago I tried an experiment with regard to one of our settlements. We arranged that the co-operative society should take the whole settlement from the Mission before the land was given to individual cultivators on the *varam* system; that is, they paid us a certain proportion of their harvest. That was very unsatisfactory; they could not pay the money. We did not even get enough to pay the Government tax. Some years ago we organised a co-operative farm society in which the co-operative society paid a fixed rent for the whole of the settlement

to the Mission and they themselves ran the whole settlement. That was arranged through the Co-operative Department and the Agricultural Department. The local officials took an interest in the formation of the society, but unfortunately the officials who were there at the time of the organisation were transferred. I think we made certain mistakes to begin with. The agricultural officer advised the growing of crops which were not suited to the village and that rather discouraged the people.

13475. Do you think there is a considerable body of opinion which holds that one way of advancing the true interests of the rural population is to attempt some revival of the ancient system of communal government, that is, self-government by the panchayats or some such bodies?—Yes.

13476. Do you think that is a feasible proposition?—Yes, to a limited extent.

13477. Do you think that, in the case of education, to which we are addressing ourselves, an attempt to hand over the function of general direction and general administration of educational matters to panchayats will be fraught with success?—What may seem right from a theoretical point of view may not be right from a practical point of view. I do not think from a practical point of view it would be a success, though one would like to see that.

13478. Where do you think the weak spot exists in that scheme?—I do not think that, in the agricultural areas, the standard of education among the village people is sufficient to undertake anything of that sort.

13479. What do you think of the calibre of teachers in the village schools on the average?—They are of rather poor material.

13480. In your experience, are they of the rural population or are they of the urban population?—Rural, largely, in the elementary schools.

13481. A good deal is said about the teaching of nature study; do you think the teaching of nature study to a small class of twenty children is a difficult or an easy thing?—That depends upon the teacher.

13482. Do you think it is easy or difficult?—For a good many teachers it would be difficult; they do it in such a wooden way that it is better for them not to do it at all.

13483. Do you agree with me that it is a good thing?—I think nature study is a very good thing in the elementary schools.

13484. You rather agree with me that you could not have a more complete test of teaching capacity than the capacity to teach nature study?—I agree with you.

13485. What proportion of the rural teachers is fit to take a class out and give half an hour's teaching on nature study?—That would depend upon my standard; if it is to be attempted and done in a fairly satisfactory way I do not think any of them would give a real and proper lesson in nature study.

13486. A man must learn first before he can teach others?—Exactly.

13487. *Sir Henry Lawrence*: Have you any experience of the men of the depressed classes who have gone overseas and come back to this country?—Yes.

13488. Do they improve their intellectual standard or their economic standard by so doing?—Decidedly they do.

13489. Are they better or worse citizens after they return?—Well, I would not like to generalise; some of them are very much improved by going to the hills, and to the tea plantations where they make money. And when they come back they spend their money in educating their children. I know of a case just now where a *kangani* has returned to his village from the tea estates and has given Rs. 300 for building a school in his village, which is half the cost of the building. I find there are others who spend their money on drink and are worthless; they demoralize other young lads of the village. So that, you cannot very well generalise, but I think on the whole it is good.

13490. Have you any such men who have gone overseas to Burma or Ceylon?—There used to be a number of them who came back from Natal; I do not know about Burma; a few have come back from Ceylon also.

13491. In their case, are they better or worse?—I think economically they are better.

13492. Have you any views on emigration elsewhere, for example, to Fiji, Guiana, or other countries? Have you any experience of that?—I always encourage the people in the villages who are very poor to go to the tea estates in the Nilgiris; it is a very good thing; they get very good wages, and they come back better off.

13493. You approve of this sort of seasonal migration?—Yes.

13494. As regards the question of drink you spoke of, have you made any estimate as to the amount that is spent on drink by these classes?—No; I have never made any estimate. The people among whom I work are not officially allowed to drink; but it is an evil we are always up against.

13495. What about people outside your immediate converts?—I do not think it is as great among the depressed classes as is sometimes imagined. It is common among the lower classes, but there are also a number of caste people above the depressed classes among whom drink is prevalent.

13496. Has any inquiry been made to show what proportion of their wages is spent on drink?—No.

13497. *The Chairman*: Are all the boys in the schools you describe Christians?—Not in the high school. In the high school quite a number of boys are sons of officials, *vahils*, lawyers and such like. I got a teacher the other day to make a list of the present boys showing what their composition is. At the present time we have in our Fifth Form 22 boys studying and fully 50 per cent of them have land of their own; one boy's father owns 500 acres.

13498. I asked whether they were Christians?—No; they are not Christians; some of them are Christians but not all of them.

13499. In the middle school they are all Christians?—They are all Christians of the depressed classes.

13500. *Sir Ganga Ram*: Is your institution something like Mr. Higginbottom's?—I merely aim at the high school standard; he aims at a University standard.

13501. Have you any land attached to your Mission?—Attached to our vocational middle school we have got 30 or 40 acres.

13502. Have not Government helped you by the grant of some land for this purpose?—The whole of the land where the school is and the land for the settlement was originally granted by Government about 40 years ago.

13503. Is it dry land or wet land?—It is dry land; we have dug wells and improved the land that was waste jungle.

13504. It is nearly 40 acres?—We got 75 acres at that time from Government and we have retained 30 acres for school purposes and utilised the rest for the settlement.

13505. Do the depressed classes come to the high school?—Yes.

13506. Do the other castes mix with them quite freely?—Yes, quite freely.

13507. There is no caste trouble?—No.

13508. In the Punjab very large areas of good land have been given to the Salvation Army and to Missions for this purpose?—Yes.

13509. You have given a list of the industries suitable for the male population. Do you do anything for the female population?—We have lately begun lace-making.

13510. You do teach them?—Yes.

13511. Anything else?—No, not for girls.

13512. Do you teach them practically?—Yes; they make lace.

13513. On a commercial scale?—Yes.

13514. What amount can they earn?—A good lace-maker can make Rs. 10; Rs. 5 to Rs. 6 is the average.

13515. Do you teach weaving?—We have weaving in the vocational middle school as a sub-industry; we have a couple of looms there.

13516. Do you teach them carpentry?—We teach all our boys to use the chisel.

13517. Not regular furniture-making?—No; we do not.

13518. There will be a great demand for them overseas if you teach them carpentry?—We are working among the agricultural classes; if you take a boy and teach him to weave, he is up against the weaving caste.

13519. I am thinking of emigration; you will help them a great deal if you teach them carpentry which can be learnt in one or two years?—We teach them to use the hammer and the chisel and to prepare their village tools.

13520. The Punjab carpenters are in very great demand; they get very good wages?—I see.

13521. *Sir Thomas Middleton*: Boys from the primary school go to the middle school at the age of ten. When do you begin teaching them agriculture?—They begin rightaway; they go to the fields, sow, reap, water the lands; and do various other jobs. I think a little later they join the agricultural theoretical class.

13522. About the age of 12?—Yes.

13523. And for how long are they in that class?—They go on till they leave the school; a great deal depends upon the stage the boy has reached in his literary education.

13524. He may be in the agricultural class for anything from one to three years?—From one to five years. The boys get scholarships from the Industrial Department for five years; they are generally expected to stay five years.

13525. Some of your boys will leave the middle school at the age of 16?—About that; 16 or 17.

13526. When they enter the agricultural class are they able to read easily in the vernacular?—Yes; I think they are able to read pretty well.

13527. Who teaches them agriculture?—We have the Superintendent of the farm; he was trained at Coimbatore, which is practically a diploma course.

13528. And he takes the theoretical part?—Yes, and he is also responsible for the farm work.

13529. How are they provided with reading material, text-books and so on? Do you use bulletins or leaflets issued by the Agricultural Department?—They are supplied to the farm, but you mean the class books?

13530. Have you any class books?—There is one class book in the vernacular, in Tamil, "*Benson's Indian Agriculture*"; it is very much out of date, still that is the only book which is available at the present time.

13531. Would you agree, then, that there is great need for a more modern and suitable book for the class?—Yes, but the Superintendent knows English very well, and we supply him with a good many books in English.

13532. He translates them?—Yes.

13533. At that age, note taking is a very slow process; without printed material, it must be a slow business getting the boys through any considerable course?—It is not like University lectures.

13534. I know, but how is the teaching done?—It is largely practical work, and the boys are encouraged to study natural history by collecting specimens, and the teacher talks to them about what they bring in.

13535. He would tell them about the crops grown, and what sort of treatment different crops required and so on?—Yes.

13536. And all has got to be done with the help of an old text-book and such notes as the teacher may give them?—Yes.

13537. You agree that even if the boys do not return to the land from the middle school, they could be absorbed as teachers, and that they would be very useful members of the community?—I think so.

13538. The object of your high school training is to interest in agricultural subjects classes who are not actually engaged in agriculture; that is my reading of your memorandum?—That is one of the effects of introducing agricultural classes.

13539. The agricultural class has gone up rather rapidly in numbers, up to 23 in 4 years; what is the percentage of passes? Has it been very satisfactory?—Very satisfactory; taking the marks, the average mark for agriculture is something about 35 or 40. I forget exactly what the figure was, but it is above 50 per cent. It is above the average for the Presidency.

13540. So long as your percentage of passes is satisfactory, you may expect that the class will increase rapidly?—Yes, it is an inducement to the boys.

13541. *Dr. Hyder*: I want to ask you whether, apart from the humane and civilising agency of the Church, there are any other agencies engaged in welfare work among the depressed classes?—In the particular area in which I am working?

13542. In that particular area, or among the depressed classes generally, is there any such agency apart from the Church?—I have not come across any in Chingleput.

13543. Do the members of the depressed classes in the area with which you are familiar complain to you that they do not get their fair share of the water from Government canals?—Not very frequently.

13544. Have they complained to you that they do not get their fair share of the grazing areas which have been placed under the panchayats?—No, I do not think that we have had complaints of that sort.

13545. What is your opinion about the drink evil among the depressed classes? Is it increasing or decreasing?—I think it is increasing, judging by the income that is got from toddy shops.

13546. *Sir Ganga Ram*: How increased?—By the rent paid by the lessees of toddy shops; that is talking of drinking in general, not of the depressed classes; a toddy shop right out in the village will pay Rs. 100 to Rs. 200 a month as rent to Government.

13547. *Dr. Hyder*: Are you aware that the declared policy of the Madras Government is the policy of minimum of consumption with the maximum of revenue?—Yes.

13548. My question referred particularly to the depressed classes. Would you regard it as a sign of prosperity, that they are getting more money and spending more on drink?—I do not know whether it is a sign of prosperity; I suppose it must be. I recently had a petition from a certain hamlet of the outcast; they asked me to take steps to represent to Government to get the toddy shop removed, because they said when they came home in the evening with money in their hands they could not pass this place without spending it on drink. They themselves sent in a petition which I forwarded to the Collector, and the toddy shop was removed from that place.

13549. *The Chairman*: You have given the fact that higher rents are being paid for toddy shops than was the case some time ago. Is it within your knowledge that the number of toddy shops is being reduced as a deliberate policy?—It is not within my knowledge; I have tried to get some shops removed, but I could never get them to do so.

13550. Is their number being reduced at all in the district with which you are familiar?—I do not think so.

13551. Do you not think there are fewer of them than there used to be?—If there are fewer, it is very little less.

13552. If there were fewer of them, it would not surprise you if rents had gone up?—No, I suppose it acts in that way.

13553. *Sir Henry Lawrence*: Was this shop that you referred to closed?—It was removed from that quarter.

13554. *Dewan Bahadur Raghavayya*: Is it within your knowledge that the revenue from toddy is also going down, both under country liquor shops and under tree tax?—I do not know; I have not studied it.

13555. There has been a fall of over 15 lakhs in one year. You say that you are giving vocational agricultural education in the Third and Fourth Forms of the high school at Chingleput?—Yes.

13556. Is it very different from the education which you give in your vernacular middle school at Melrosapuram?—In the Third and Fourth Forms they teach agriculture as required by Government as a vocational subject; that is where the boys are expected to do work with their hands, giving an opportunity for practical work; and in these classes the boys go out to the field and work; there is no theory taught there, but they are taken out by the teacher, and when there is a wet day or for any other reason the class cannot go out to work in the open air, he talks to them; but in the Third and Fourth Forms it is largely practical work.

13557. That is the sort of education given in the vernacular middle school as well?—Yes; in the vernacular school we teach them theory as well; they have a regular class for theory.

13558. Practically, it is the same sort of education?—Yes.

13559. You have had some boys passing through these Third and Fourth Forms in the high school at Chingleput?—Yes.

13560. Have any of them dropped out after the Third Form? Have any of them gone back to the land instead of going on to the Fifth and Sixth Forms?—I cannot tell you; I have not got the statistics.

13561. Can you recollect any such case or cases?—I might explain that I have not been manager of the school for 2 years; I am at other work now and am not at present in touch with the school.

13562. My object in putting that question is this: supposing you come up to the middle school standard, when the boy passes the elementary stage and comes into the First Form and from the First to the Third Form, if you give him practical education in the vernacular in agriculture in the general school, would the extra year, that you refer to as necessary for equipping him with the necessary knowledge to go on to the high school, be a very great handicap to his going on to the University?—I do not think so.

13563. The average age at which a boy passes the school final at a school of general instruction is 16, is it not?—Yes, 16 for a boy who has been at a high school from 6 years of age, but you must remember that the boys I have been dealing with are boys who have been in a village school to begin with, and they probably stayed there longer than they ought to have, because of the conditions of the village schools, and these boys have come on later into the middle school.

13564. That is, boys of the depressed classes?—Yes.

13565. I am referring to boys who do not belong to the depressed classes; they generally come to the school at 6 or 7?—Yes. •

13566. In the case of those boys one year would not matter much.—Those boys will not lose one year; it is only in the case of the boy in the middle school in Melrosapuram coming on to the high school that he would lose one year because of his English.

13567. Even in spite of the fact that they take agriculture as a vocational subject in Forms III and IV, you say they need not have an extra year to get sufficient equipment in English to pass on to the University after matriculation?—No; the vocational training given in the Third and Fourth Forms only amounts to about 2 hours a week, two periods a week in some classes; it does not interfere with their progress in other subjects

13568. Do you think that sort of education is enough to give the student who passes through this school of general instruction an agricultural bias?—No, I do not think that is adequate; it must be taken up more seriously.

13569. Why do you call them vocational classes?—That is the name given to them by Government. The Madras Government, a few years ago, encouraged managers to start vocational classes of all sorts, and I at that time started agriculture in the Third and Fourth Forms. Before that, I had the Fifth and Sixth Form boys studying agriculture as an optional subject, but I took it up in the Third and Fourth Forms when Government asked us to introduce this vocational training.

13570. In your opinion, is this education that you give them in the Third and Fourth Forms a very useful piece of education?—It is slight. It is useful in giving the boys a rest from class studies for one period in the day; they get out into the fields, get fresh air and study plant life, but it is not serious agricultural training.

13571. Does it quicken their interest in agriculture at all?—I think it does; I think it ought to.

13572. Next as to the tenant acquiring the right to cultivate his land. I am not discussing the policy of it. I do not say that it is not desirable to give the tenant the right of permanent occupancy; but are you sure that occupation for 4 or 12 years gives the man an inalienable or inheritable right in the land in these districts?—I understand it does.

13573. Has it been tested in a court of law?—I think so.

13574. It is within your knowledge?—I know that when a landowner wishes to get rid of his cultivator, he tries to move him about from field to field; if he has 2 or 3 fields in his land, he puts the man who is cultivating one plot this year on to the next plot next year, and so keeps him moving, so as to prevent him from getting his tenure.

13575. You are referring to the landowner's apprehension?—The landowner fears that if for 11 years the man is cultivating the same plot, the cultivator gets that right and he cannot turn him off.

13576. It is within your knowledge that it is the policy of Government to reserve lands in every district for assignment to the members of the depressed classes?—Yes.

13577. Has any attempt been made by your Mission to obtain more land in the Chingleput district for your settlers?—Just recently I have applied to Government and they are going to assign some acres of disafforested land; but there has been difficulty in the Chingleput district on account of the *mirasi* rights, which has interfered with Government in assigning the land.

13578. In your written memorandum you say that fruit-growing is rather uncertain on the plains around Madras; that mangoes are extensively grown but it is an uncertain crop. Do you mean to say that the mango is more susceptible to seasonal changes in regard to yield than other fruit trees?—Yes; some years you get a heavy crop of mangoes and other years, without any reason, the mango crops seem to fail.

13579. Does not that apply equally to other crops?—No; I do not think so. We grow jack trees and that is a steady crop; coconuts, too, give a steady income, but you cannot rely on mangoes giving a steady income year by year.

13580. Is it not within your knowledge that in the adjoining district of Chittoor they grow sweet limes and sour limes very extensively?—I think I have heard they do.

13581. Do you think it would be possible to extend the cultivation of those fruits to your district?—I think so; I think it is quite likely they might do very well.

13582. I believe the banana can be grown very successfully?—We grow banana; I did not regard banana as a fruit tree, but I suppose it is.

13583. *Sir Ganga Ram*: Have you any lac cultivation?—No.

13584. *The Raja of Parlakimedi*: What home industries do you teach your boys and girls?—On the farm we teach them weaving, fibre extraction from certain plants; we do plantain fibre extracting, also and coconut fibre; they

make ropes and baskets; they are taught to use the potter's wheel, and we try to introduce any little industry that comes along.

13585. Carpet weaving?—No; ordinary *dhotis* and *saris*, towels and such like things.

13586. Do you encourage any of these coir industries?—No; we make rope only; we have not sufficient time to teach the boys all these things. We give the boys a choice; if a boy shows a gift for weaving we allow him to work longer on the loom; we allow him more time on whatever he shows a gift for. You cannot teach every boy everything.

13587. Do you not encourage sericulture as a subsidiary industry?—I do not think it would do in Madras.

13588. It does well in parts of the Madras Presidency and under the same conditions can you not do it?—Some years ago I enquired into the possibility with regard to Chingleput in particular and I understand the heat in two months of the year is so great that it would actually kill the moths or worms.

13589. Has it ever been experimented on and tried?—I have not heard of anybody trying it; you would have to buy new seeds every year.

13590. In your agricultural training do you include also kitchen-gardening, growing vegetables?—The boys grow vegetables for their own use. It is right out in a village area where there is no market for selling the vegetables.

13591. Have they any extras to sell?—They do sell a little vegetables and ropes to the villagers around; they do not send any to Madras; they get a sale for everything they make on the spot.

13592. How is the money utilised, the money got by selling these things?—That goes for the maintenance of the school. The boys are boarded free and the income that they make by these industries goes towards their board.

13593. Is any encouragement shown, by presents or anything of that sort, to boys showing greater efficiency?—Yes, prizes are given; we encourage them in every possible way. We also make grass mats there; that is another industry we teach.

13594. What do you use the grass mats for?—They are coir mats which are used to sleep on.

13595. Is enough attention paid to the local crops of the district of Chingleput? Do you concentrate upon anything particularly?—We grow various kinds of paddy; we try some of the better varieties. Sugarcane we grow to a certain extent. We began growing Cambodia cotton but gave it up, not entirely because of the trouble with disease but because we could not get it ginned locally. We were the only people locally who were growing it so that we should have to send it down south for ginning. There is not sufficient growing in this area to make it pay an individual ryot to take it up.

13596. So you adopt all the improved methods of cropping, manuring and so on, necessary for each crop, as recommended by the department?—We try to follow their views as far as possible.

13597. Do you hold competitive examinations?—Yes, they go in for the Government technical examinations in agriculture. They are held once a year and we send the boys up for these examinations; they get class prizes for their work.

13598. Is anything set apart separate for the depressed classes? Are they allowed to compete with the higher classes or is a separate class held for them?—I am speaking of this Melrosapuram vocational school which is restricted entirely to depressed classes.

13599. I thought you said you had taken other classes also?—We would take them if they came, but the other classes would not come and live with these boys.

13600. You have no other class except the depressed class?—Not in the village vocational schools, but in the high school we have all classes.

13601. Are competitive examinations held in those high schools?—Yes; the boys go up for the School Final Leaving Certificate examination in agriculture, a public examination.

13602. Are any prizes awarded specially to the depressed classes, or do all compete together?—No; all compete together.

13603. *Professor Gangulee*: Would you call the type of middle school that you proposed vocational?—The type of middle school that I at present run?

13604. Yes?—Well, for want of a better name I call it vocational.

13605. Or would you call it pre-vocational?—I really do not know what distinction there is between the two. The word has been used again and again and nobody seems to be able clearly to define vocational training.

13606. My difficulty is this: can you teach agriculture at that stage?—I think so; you cannot teach agriculture as it is taught at Coimbatore at that stage, but as suited for children. If you can teach any other subject, such as Botany, to children at that age you can surely teach agriculture.

13607. For instance, would a boy of that age understand the composition of the soil?—When he goes to the high school he would.

13608. In your vocational middle school?—No, I do not think so at that stage. What he is taught there is that certain ingredients are required for plant life. He is told what the soil is deficient in and he is led to understand that certain manures help. He learns that in a general way, not scientifically.

13609. For the supply of teachers which is of course very important, you look to the Agricultural College, do you?—We have only one teacher who is trained in agriculture, the Superintendent who is responsible for the middle school; in the high school our teacher is a Coimbatore College man. In the middle school we have a man trained at Coimbatore.

13610. You say here that the Agricultural College should aim at turning out teachers. Is that for these schools that you propose?—Yes.

13611. What salary would you offer a teacher in an agricultural middle school?—He would be given probably the same salary as a graduate in Botany or in any other subject in the high school, who begins at about Rs. 80 and goes up to about Rs. 200.

13612. So that if you have agricultural middle schools of the type that you propose, you have to have a teacher whose salary would be about Rs. 80 a month?—No, not in the middle school. The teaching of agriculture in the middle school would be of a lower standard. I should say that a man who has been in the high school, who has taken the school leaving examination, taking agriculture as an optional subject, and then had a course of teacher training, would be fit to hold a post in the middle school. But for high school work we should want a graduate who has also been trained as a teacher.

13613. Do you make any distinction between the teacher in agriculture and a scientific agriculturist?—Yes. What I mean by a scientific agriculturist is the type of man that Coimbatore is turning out just now.

13614. You do not think that Coimbatore is turning out teachers?—To teach as a profession requires special training. If you are going to get one of these men to become a teacher in agriculture in the high school it would be necessary to train him in teaching methods.

13615. Can one describe your agricultural middle school at Melrosapuram as a community centre?—No, I do not think it has yet developed into that.

13616. What is the attitude of the village folk towards your school?—Well, the average village person does not approve of anything in the nature of manual labour; when you take a boy away from his village and take him to the school the idea is that he is ever after going to study books and that it is rather degrading for him to go back to his village and take any share in agricultural work. When I changed the Melrosapuram school some years ago from being a purely agricultural school to a vocational agricultural

school, I sent about 20 or 30 boys from a boarding school in Chingleput to this rural school. Out of those 20 or 30 not one arrived there; they refused to come to a place where they had to do agricultural work. So we had to close down the school, and for several months we had no school. Gradually they came back one by one and I told them they must go through this school if they were to go on to high school education.

13617. In this school of yours, do you have occasional meetings, lantern lectures, and so on?—Occasionally, yes.

13618. Do the villagers attend?—Yes.

13619. Other than the Christian community?—Once a year we have a great gathering there for two days.

13620. And the villagers attend?—Yes; the villagers attend; we have ploughing matches and agricultural demonstrations open to all the Christians in all the villages.

13621. Can you tell us why the rural schools are not being developed into community centres? Do you come in touch with schools other than your own, other elementary schools than those run by missionaries?—I have a little to do with municipal schools; I am a member of the Municipal Council in Chingleput; but they are of course in the municipal area.

13622. So you have had occasion to study these rural schools in different parts of the Presidency?—I cannot say I have studied it.

13623. I should like to know from you, as an experienced educationalist and social worker, why these rural schools are not being developed into community centres? What is lacking?—I am talking of the depressed classes. The average villager sends his boy to school with the idea that he should go out from the village and make a living by teaching or by some other means. He does not recognise the value of knowledge for its own sake, or as being anything that would be of use to him in the village itself.

13624. What are your views on the teaching of agriculture at Moga in the Punjab?—I have never been there; it seems to be very successful; it is a line on which our Mission has tried to work in training its teachers down here.

13625. Was your curriculum drawn up by the Mission or did you have some official expert advice?—In the middle school or the high school?

13626. In both?—In the high school the curriculum was prescribed by the Government for the Secondary School Leaving Certificate. For the middle school we used to follow the syllabus prescribed for the Government technical examinations in agriculture. A few years ago the agricultural examination was done away with in the technical examinations. We follow a syllabus of our own now.

13627. On page 402, you say that a knowledge of agriculture would be of value to all Government servants and specially to revenue officers. Do you have occasions to come in contact with revenue officers?—I meet them occasionally.

13628. You felt that if these officers had some training in agriculture they would be more useful to the people?—A great deal of their work consists of appraising of crops in the villages. They have got to deal with the ryot and his income from this and other sources. My idea of agriculture is that it is an educational subject in itself, quite apart from the fact whether a boy becomes an agriculturist in after-life or not. It is a help to the teaching of all the sciences; it includes a certain amount of botany, some science and some biology.

13629. We see that from your note. Has the Director of Agriculture visited these interesting experiments that you are carrying on in Chingleput and Melrosapuram?—I think he has.

13630. Have you ever invited Agricultural Demonstrators to entertain your boys by showing the agricultural work in the Presidency by lantern

slides?—Yes, but I have had much more help from the Industrial Department than from the Agricultural Department. They have recognised our schools; they give scholarships and help in the matter of finance. The agricultural officials inspect us occasionally, but have never done anything to help us in any way.

13631. *Mr. Calvert*: What standard are you aiming at in this vocational middle school? Are you teaching them up to what the father knows or a little more than that?—Beyond what the father knows because the father knows nothing. He is entirely illiterate.

13632. He has the practical empirical knowledge of agriculture?—Yes; we are aiming to give him something more than his father's knowledge.

13633. Do they get any better terms as cultivators or labourers than boys who have not had this teaching?—I do not think so.

13634. Under the system you describe, the share system, if these boys get better outturns the landlords will get a better share?—Yes.

13635. Does the landlord take any interest at all in your school?—A great many of the landlords are professional men. They live in Madras or distant places; they do not know anything about the land. As a matter of fact, I think I pointed out that in Chingleput some of the lawyers come to me and say, "we own lands away in our village; we go for our shares in the harvest time; we know absolutely nothing about agriculture; when our sons grow up and become lawyers they will go out occasionally and will be able to guide the cultivator and see that he is making the best of his land, because he will be trained vocationally."

13636. The fact that you are trying to train up a better class of cultivator does not apparently meet with any response from the landlords in any way?—No, I do not know in what way they could encourage them really. I think they are appreciating the education we are giving their sons in the high school.

13637. I was thinking of the middle school?—In the middle schools we are dealing with the depressed classes entirely.

13638. In a school like your middle school as there is no standard is there not always the danger that a bad teacher may teach worse agriculture?—I suppose there is the danger, but it is not a very great danger. Of course there is that risk if you teach any subject badly; you can teach bad science.

13639. Teaching bad science does not necessarily reduce your earnings, but teaching bad agriculture might?—Yes.

13640. Are the co-operative societies which you know personally self-managing?—Yes, they are all self-managing.

13641. Do you find that the spirit of self-help is really making headway?—I do not think so.

13642. As a result of the co-operative system in your neighbourhood has such a spirit of mutual help sprung up which would lead society A to offer help to society B if society B were in lack of funds?—I do not think so, unless it were done officially through the Government officers. They can pretty well order a society to do as they wish them to do.

13643. *The Chairman*: Do they ever interfere in the matter of giving credit to a particular person?—The officials?

13644. Yes; do they ever bring pressure to bear on the local committee?—I have never heard of it being done.

13645. *Mr. Calvert*: Is any attempt made in the societies within your experience to teach these people village economics?—No.

13646. The principle of economics as applied to village life?—No, I do not think so.

13647. Do your societies know that they own the central banks?—No, I think the individual member of the society regards the co-operative society

in the same light as he regards the moneylender as somebody to whom he can go to get a loan when he is having any special expense in connection with marriages and so on; their interest ends there.

13648. There has not been such a marked increase in the spirit of mutual trust and confidence as might lead them to agree to the consolidation of fragmented holdings?—I hardly think so.

13649. Adult education, I gather, has not been very encouraging. Has any serious persistent propaganda been carried on to encourage adult education?—I do not know of any.

13650. In adult schools the teacher has to attract the pupils to the school?—Yes.

13651. Whereas in regard to children's education the fathers send them to school?—Yes.

13652. Do the teachers really try to attract the adults to the schools?—I think some of them do occasionally.

13653. Adult education is almost more a matter of the personality of the teacher than is the education of children?—Very much so.

13654. You require a very much more sympathetic teacher?—Yes.

13655. For adult education have you not had special readers?—No. There was an attempt some years ago to bring out a simplified script. It was thought that the Tamil vernacular alphabet was rather difficult for the adult to pick up; but I do not think it has come to anything. A book has been published by the Christian Literature Society giving a special script which they say can be picked up in three weeks, so that a man can learn to read in 3 weeks.

13656. *The Chairman*: Do you believe that is possible?—I have not seen it worked out, or tried out.

13657. *Mr. Calvert*: When we started adult schools with the ordinary children's primers and the farmer started reading "a cow has four legs, two behind and two in front," his idea of the value of education slumped. Do you experience any difficulty like that?—No.

13658. *Mr. Kamat*: You told the Chairman just now that very few of your boys go back to the fields?—Yes.

13659. Do you know of any exceptional cases of boys trained in your schools going back to the fields and making a success of farming?—My experience has been limited to the last few years. I do not think many of our high school boys return to the land though I think a few of them do; but then we have only been working on agriculture in the high school for four years.

13660. So that in effect what your schools are now doing, apart from the civilising influence which of course I recognise, is that they are turning out teachers?—Yes, largely.

13661. So that these agricultural schools are in effect training schools for turning out teachers?—Yes, and teachers who when placed in a village will be interested in the agriculture of the village; that is our aim.

13662. But taking only an academic interest in it?—Hitherto our teachers had been purely academic men who teach the three R's in school and take no further interest in it; but if they had a training in agriculture in the high school or even at the vocational school they could go out among the parents, help them, advise them and discuss matters with them.

13663. Do you realise that the general effect of turning out teachers from such schools would be to create an impression among the parents that you are attempting to wean the son from the influence of the father?—Yes, that is because there are so few of these schools; we require the teachers at present; there is a tremendous demand for teachers at the present time

with the extension of education; we must set teachers and we naturally take boys who have been through our own school and are better qualified; but with the multiplication of these schools there will not be the same number of openings for the boys who go out from the teaching schools.

13664. You told us you taught spare time occupations to your boys?—Yes.

13665. Have you tried the experiment of teaching adults these crafts and small industries?—No, it would be very difficult to teach adults; it would mean putting teachers in all the village communities.

13666. So that rope-making and basket-making and such things which appeal to the boys are confined only to juveniles and are not taught to the adults?—Yes, but these boys will be the adults a few years hence.

13667. If these boys grow up they contribute their knowledge of these arts and turn them to practical purposes?—Some of them do.

13668. In what manner? Do you mean that in addition to being teachers they turn their knowledge of these arts to practical purposes and make additional money?—My point is this. In every school you get the boys shed off in every stage. In our vocational system we shall have a certain number of boys who go right through. Other boys will leave at an earlier stage and go back to their villages: parents take them away from school for some reason.

13669. Do they retain their knowledge of basket-making and rope-making and can they turn their arts to practical purpose by making additional money when they are grown up?—I think they can but they will not make a living out of these subsidiary village industries.

13670. So even there your teaching of these men is practical?—It will occupy their spare time and feed them probably during those months without drawing on their savings.

13671. Is there illicit distillation of liquor in the district to which you belong?—I do not know of any.

13672. You have no knowledge?—No knowledge.

13673. You have no reason to believe there is any?—No reason. One hears of places where toddy is drawn without the *chunam* being put into it.

13674. You hear of such things?—Occasionally.

13675. So that mere statistics showing that the drink habit is lessening or showing that illicit distillation has gone down would not be conclusive evidence that the drinking habit is diminishing?—Yes; but I do not think that illicit distillation is any more common now than it has been all these years. There is a palmyra tree; a man can take his pot and get the juice at any time if he knows he would not be caught.

13676. *The Chairman*: I do not know local conditions; but assuming you yourself do not engage in illicit distillation, would you know if there was any increase in that practice? Would it come to your notice?—I do not think so. I have no knowledge.

13677. *Mr. Kamat*: As regards emigration from your district to Burma and other places, are those people who emigrate from your place landless labourers or have they small patches of land?—They are usually landless, or almost landless. A certain number of the depressed classes have half an acre or a quarter of an acre; they are not altogether landless; they are just on the margin.

13678. They are just on the margin. Do they come back to agriculture when they return?—Sometimes they invest their money in cultivation; but once having got a taste of going to the hills they go away again and again.

13679. *Sir Ganga Ram*: It appears from the list that your district is very well situated, and has got 500 to 600 acres of land irrigated; is the irrigation from canals?—The irrigation is from tanks or reservoirs.

13680. Is your land very far from the reservoirs?—Not very far.

13681. Can you not pump water from the reservoirs?—We pump it up from wells; all our irrigation is done by wells.

13682. How much can a well command?—We have several wells; it depends upon the well. I have knowledge of pumping in one of our wells; our difficulty is that it exhausts the well after a run of a few hours.

13683. What is the power of the engine?— $3\frac{1}{2}$ Horse Power; it is the first time that an engine of that type has been used; it is experimental. Government have published one or two bulletins about it.

I will make an appointment with you to come and see it. I myself am running a $3\frac{1}{2}$ Horse Power Petter Oil Engine; I will give you the best advice.

(The witness withdrew.)

**Mr. M. T. SUBRAMANYA MUDALIYAR, Proprietor of
Uttamapalayam, Madras.**

Replies to the Questionnaire.

QUESTION 1.—RESEARCH.—(a) (i) Agricultural research is costly; moreover, for the benefit of all India, it should be administered and financed by the Government of India. Suitable centres should be selected for conducting various researches, having regard to climatic conditions required for the particular researches. Indians may be sent abroad to receive proper training; and when European experts are employed here, Indians should be trained under them, so that, in course of time, Indians may be able to conduct researches themselves. As far as possible, the selection of Indians may be regulated by the requirements of linguistic areas: *i.e.*, so many for the Tamil districts, so many for the Telugu districts and so on. In course of time, all publications relating to the researches should be in the vernaculars.

After success is attained in any branch, the result should be published in the vernaculars and the same demonstrated to cultivators by the expert or his assistants in important agricultural centres. This may be done at the expense of the Provincial Government.

(ii) The above observations apply more or less to Veterinary research also.

QUESTION 2.—AGRICULTURAL EDUCATION.—(i) The supply of teachers and institutions is not sufficient.

(ii) There is an urgent need for extension of teaching facilities in the districts of Tanjore, Trichinopoly, Madura and Ramnad known to me personally.

(iii) Teachers in rural areas should be drawn, as far as possible, from the agricultural classes.

(iv) To my knowledge there are no institutions outside Coimbatore to attract students from the agricultural classes; and in the College at Coimbatore students are generally from non-agricultural classes and most of them undergo training not for the purpose of improving any estate but only for securing appointments in Government service.

In elementary and middle schools agriculture should be included in the curriculum of studies and a small farm attached to each school; besides there should be demonstration farms in important centres in the district.

(v) At present boys go to the Coimbatore Agricultural College mainly to secure appointments in Government service.

(vi) In the Coimbatore College pupils are not mainly drawn from the agricultural classes.

(vii) Majority of students who have studied agriculture take to Government service.

(viii) Middle class youths from agricultural classes may be given scholarships, on their undertaking to serve as teachers in agricultural institutions or as managers of agricultural farms.

(x) Adult education in rural tracts may be popularised by means of demonstration farms.

(xiii) Of the institutions mentioned under (iv), elementary schools may be maintained or aided and administered by the Local Boards and middle schools and demonstration farms may be administered and financed by the Provincial Government.

QUESTION 3.—DEMONSTRATION AND PROPAGANDA.—(a) In the matter of application of manure, oil-cakes, fish manure and night-soil and the planting of single seedlings, I have demonstrated the advantages in my farms at Solavandan and Varichiyur in the Madura district; and now cultivators near

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my farms are following my example and those near Madura are using night-soil freely for manuring their fields.

(b) Except my own field demonstration as stated above, I know of no other demonstration in my district of Madura.

(c) Cultivators may be induced to adopt expert advice chiefly by actual demonstration of the advantages of the improved system.

Besides establishing demonstration farms in important centres in the district, Government may also lend the services of a Demonstrator free to landholders who are prepared to make experiments or to start model farms in their own estates.

Government chemists should go round the country and after a personal inspection and analysis of soil and water, where necessary, advise cultivators as to the suitability of particular soil for particular crops, the application of suitable manures to soils for particular crops, the suitability of particular water for cultivation of tobacco or other crops, etc. Until the system becomes quite popular, no fee should be charged for such advice.

(d) In my Varichiyur farm, for some single crop lands, I used fertilisers for three years until last year, side by side with cattle manure, green manure, oil-cake, fish manure and night-soil. The experiment was a failure and I gave up the use of fertilisers in that farm this year. I, however, tried the experiment this year in some double crop lands in my farm at Solavandan and the first crop yield is satisfactory. I cannot give reasons for the failure of the experiment in Varichiyur farm or for the success of the experiment, so far, in Solavandan farm.

QUESTION 4.—ADMINISTRATION.—(a) All expenses connected with research work should be borne by the India Government and the expenses connected with demonstration and propaganda should be met out of a special grant by that Government to the Provincial Government, until the provincial contribution is done away with.

(b) *Vide* answer to 1. (a).

(c) (i) I am satisfied with the Agricultural Service, so far as the selection and distribution of seeds and manure and the encouragement of planting of single seedlings are concerned.

As regards Veterinary Services, the methods adopted for the prevention of the spreading of contagious diseases have been successful to a very limited extent; otherwise the services are not satisfactory. Further they are too costly even for well-to-do ryots.

(ii) *Steamers do not serve agriculturists to any appreciable extent. As regards the railways, the freight for carrying cattle-food including straw and manures (including green manures) should be reduced and waggons supplied promptly.

(iii) The village roads are inadequate and ill kept. Although ryots pay cess to Local Boards for the maintenance of roads, at a high rate, they are obliged to pay besides, heavy toll amounting to Rs. 5 for carting manure for one acre of land in the Madura district. No toll should be levied for carting manure by a ryot or even by a trader; as, in the latter case also, the toll, if levied, would fall ultimately on the ryot who purchases the manure.

QUESTION 5.—FINANCE.—(a) There should be an agricultural bank or a co-operative society, with a godown, for each village or group of villages of 500 or more houses. The bank or society should lend money to cultivators on easy terms, for the purchase of manure and seeds or the maintenance of the cultivators' family; and at the time of the harvest, it should receive a portion of the produce in kind, store it in the godown, sell it in a favourable season, and out of the sale-proceeds pay itself its dues, returning the balance, if any, to the cultivator.

* In stations which export a large quantity of manure and fodder, the Government should supply a machine for pressing the manure and fodder and thus reducing the volume as far as practicable.

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It should similarly lend money to cultivators for purchase of agricultural implements and cattle and recover the loan in instalments in the course of two or three years.

In the case of loans for improvement of land, sinking or repairing wells, or digging or repairing tanks, the term may be ten years.

(b) Cultivators may be induced to make fuller use of the Government system of *taccavi*, if the loans are granted by the Government through the village agricultural bank or co-operative society.

• QUESTION 6.—AGRICULTURAL INDEBTEDNESS.—(a) (i) The main causes of borrowing are:—

Poor yield of lands on account of ryot's inability to improve and manure his fields,

failure of crops on account of bad seasons,

loss of cattle by disease,

increase of cultivation expenses and increase in the cost of living, and want of employment during non-cultivation season.

(ii) Cultivators are generally unable to get loans on easy terms and they are obliged to borrow money of usurers on exorbitant terms—the rate of interest, especially where the loan is repayable in grains, being as high as 150 per cent. in the case of cultivators who have no tangible property.

(iii) In the case of cultivators without tangible property or petty ryots, their income is hardly sufficient for the maintenance of their families and they are unable to repay loans generally contracted in lean years. The very causes which compel them to go in for loans prevent them from repaying the loans.

(b) For wiping off the existing debts, loans should be granted by the Government through agricultural banks or co-operative societies, the same being repayable with a moderate rate of interest—not exceeding 6 per cent. in easy instalments, in the course of 30 years or so.

In the case of an agriculturist, the rate of interest on loans should not exceed 12 per cent. per annum and he should be exempt from arrest for civil debts.

QUESTION 7.—FRAGMENTATION OF HOLDINGS.—Prevention of fragmentation of holdings by legislature is impracticable.

QUESTION 8.—IRRIGATION.—(a) In my district of Madura, I advocate the adoption of the following schemes.

(1) Supplementing the Periyar Reservoir by damming, and forming a reservoir across the Pambaiyar and a Hydro-electric scheme at the Periyar lake.

(2) Widening the existing Periyar tunnel.

(3) Excavating a right side canal from above the Peranai Regulator for irrigating lands in Tirumangalam taluk.

(4) Cardamom Hills Reservoir Project with a combined Hydro-electric scheme at Kambam.

I have inspected the scenes of these projects and taken a personal interest in them.

The above projects when completed will bring under wet cultivation a large extent of lands in Tirumangalam taluk which contains a large Kallar population. This will give profitable employment to Kallars and largely help their reclamation which is now being attempted by the Government in other ways, but without appreciable success. I may here mention that in the Melur and Madura taluks, the Kallars, who were formerly as bad as the Kallars of Tirumangalam taluk, have now become respectable citizens after their lands were brought under wet cultivation under the Periyar scheme of 1895.

Improvements in the existing systems or methods of irrigation:—At present minor irrigation works are in a neglected condition, owing chiefly to the indifference and want of co-operation of ryots and the indifference of the

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authorities who are bound to see the works properly carried out. Government should take steps and see that the ryots carry out their responsibilities and that the works are properly attended to. The defaulters should be made to pay for their neglect, by a legislative enactment, if necessary.

Even irrigation works under the control of the Department of Public Works are at present neglected to the great detriment of ryots.

Wells:—In places, where there are no other sources of irrigation, Government should give facilities to ryots for sinking wells, by grant of loans on favourable terms, and by loan of machinery, etc. Although this is done at present to some extent it is not on an adequate scale.

In the Tanjore district, the drainage under the Nandalar is very defective, as, in times of flood, the water of the river overflows the banks and inundates the fields on both sides of the river. The Cauvery Committee has recommended that the necessary improvement to the water-way of the river, wherever it is narrow, and the strengthening of banks should be carried out with as little delay as possible. This work is an urgent one and I would advocate action being taken without delay.

QUESTION 10.—FERTILISERS.—(a) Except cattle and sheep manure, all other animal manure, such as human excreta and urine, is now practically wasted. Municipalities and Unions should arrange for the collection of all such manure as is now wasted, and store it at some place away from the village and water-sources, and subsequently sell it as field manure. This system would help not only agriculture but also sanitation.

Cultivation of crops for green manure may be encouraged by the supply of seeds at a cheap rate through village co-operative societies and also by demonstrations.

As natural manures available are quite inadequate, fertilisers will have to be used on a large scale, if every land is to be properly manured; but they are now very costly and therefore beyond the means of ordinary ryots. Some attempt should be made to bring down the price of fertilisers, as far as possible. Government itself may manufacture fertilisers or it should give facilities to co-operative societies to manufacture the same, so that fertilisers may be available even to ordinary ryots at a moderate cost.

The export of all manures including bones and oil-cakes should be prohibited. As oil-cakes, which contain some oil, are not good manure, Government should give facilities to co-operative societies to purchase a machine for extracting oil completely from oil-seeds or for recrushing oil-cakes and extracting the oil therefrom.

(c) Demonstration will popularise new and improved fertilisers.

(f) In villages, the practice of strangers picking up cowdung from fields for the purpose of using it as fuel, should be prohibited, as it causes considerable loss to the field by diminishing its yielding capacity. As it would be difficult to find out from whose field or fields the dung was removed especially where the village consists of small holdings, the removal of cowdung from any field, except by the owner and for agricultural purposes, should be made a penal offence.

People are now tempted to use cowdung as fuel, for want of other cheap fuel. To remove this temptation, fuel trees should be grown on Government lands and fuel supplied at a cheap rate to villagers.

QUESTION 11.—CROPS.—(a) (iii) The recent distribution of selected seeds by Government agricultural farms appears to be good; but there are not yet sufficient data for estimating the increase, if any, in the yield, on account of these seeds.

QUESTION 14.—IMPLEMENTS.—(b) The advantages of the use of improved implements should be demonstrated to cultivators by experts and the implements supplied to them by the Government at moderate prices.

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QUESTION 15.—VETERINARY.—(a) The Civil Veterinary Department should also be under the Director of Agriculture.

(b) (ii) In the Madura district, the existing veterinary institutions do not serve any useful purpose and there is therefore no need for their expansion.

(c) (i) Agriculturists made little use of the veterinary dispensaries in the Madura district. The services are so costly that even well-to-do ryots avoid sending their cattle to veterinary dispensaries for treatment.

There is an indigenous cheap system of veterinary treatment, and it ought to be scientifically investigated and put on a workable basis, as it is more suited to a poor country like India, than the costly Western system. As far as possible, every big village should have a veterinary physician trained in the indigenous system, as it would not be practicable to send cattle to distant places for treatment.

(ii) I do not know of any touring dispensary in the Madura district.

(d) I would advocate legislation dealing with notification, segregation—but within the village itself—disposal of diseased carcasses, compulsory inoculation of contacts and prohibition of the movement of animals exposed to infection—but all at the cost of the Government. Veterinary officers should, however, enforce this more by advice and other persuasive methods than by penalising ignorant ryots. The penalty for non-observance of the rules should be very light—say, a fine of one rupee or so, for each offence.

(g) I consider that provision of further facilities for research into animal disease is desirable.

(i) I would not recommend the appointment of a Superior Veterinary Officer with the Government of India.

QUESTION 16.—ANIMAL HUSBANDRY.—(a) (i) Bulls of superior breed should be allowed to serve as stud bulls and bulls of inferior breed castrated.

(b) (i) Common pastures are wholly inadequate and the poor condition of cattle is chiefly due to want of sufficient pasture lands in villages.

(ii) Betterment of the dairying industry is possible in places like Cantamanayakanur in the Madura district, where there are extensive pasture lands.

Good dairies are badly wanted especially for cities and towns. Government should give special facilities, by granting loans at concession rates of interest and otherwise, to individuals or societies who offer sufficient guarantee and undertake to start dairies and conduct them on proper lines.

(c) In the district of Madura, there is fodder shortage in the months of July and August and again in November and December, i.e., one or two months before the first and second harvests. The scarcity of fodder exists for about eight weeks on each occasion, i.e., for about 16 weeks in all in the year.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(a) The number of days of work done by an average cultivator on his holding during the year depends upon the nature of the holding:—

In the case of garden land practically throughout the year.

In the case of single crop wet land, 7 months.

In the case of double crop wet land, 9 months.

During the slack season cultivators who live near towns and hill plantations find cool work, while others are practically without employment.

(b) Wherever it is possible a cultivator may sink wells in his dry lands and convert it into garden land, so that he may find occupation throughout the year and increase the yield of his holding. His women and children may engage themselves in spinning by *charka*.

(c) Such industries as beekeeping, poultry rearing, fruit-growing, etc., may become more popular if the advantages of the industries are demonstrated to cultivators and if they are given small advances for starting the industries.

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(d) Government should do more to establish the industries under this head and they should encourage individuals and societies to start such industries by manufacturing cheap small machines, which could be worked by manual labour and supplying them to villagers on easy terms.

(e) Yes. By encouraging industrial concerns to move to rural areas, congestion in towns may be relieved to some extent and the labourers may lead more healthy lives and further have a principal occupation as well as a subsidiary occupation, in villages. Agriculture will also be benefited by the increase in the number of labourers in the village, as they would be available for agricultural work in the busy season.

One method of encouraging industrial concerns to move to rural areas appears to be to limit the number of licences to industrial concerns in towns.

QUESTION 19.—FORESTS.—(b) The supply of firewood in rural areas may be increased by the growing of fuel trees on Government lands.

(c) Deterioration of forests has led to soil erosion. To reduce erosion and damage from floods, trees should be cut only after they become old and new trees planted in the place of old ones.

(e) There is no opening for schemes of afforestation in the neighbourhood of villages in the Madura district.

(f) Forests are not suffering deterioration from excessive grazing.

QUESTION 22.—CO-OPERATION.—(b) In the Madura district, there are some credit societies only and no other societies mentioned under this head. Such societies, however, are needed and the Government should give facilities to start them and they should also supervise and control them.

(c) Yes. I think legislation should be introduced for the purpose referred to under this head.

(d) I know that the credit society at Solavandan is doing good work by lending money to ryots for agricultural purposes.

QUESTION 23.—GENERAL EDUCATION.—(a) The existing systems of general education have not touched the agricultural efficiency of the people. Agriculture should be included in the curriculum of studies, at least as an optional subject, in all schools and colleges, wherever facilities exist for the attachment of a farm to the school or college.

(b) (i) As already indicated, rural education should include agriculture, at least as an optional subject.

QUESTION 24.—ATTRACTING CAPITAL.—(a) Agriculture, as it is at present, is not paying. Unless, by demonstration of new and improved methods, it is proved to be a profitable concern, men of capital and enterprise are not likely to take to agriculture.

(b) The factors tending to discourage owners of agricultural land from carrying out improvements are chiefly (i) want of funds (ii) the apprehension that improvements will also be taxed at the next revision of assessment.

QUESTION 25.—WELFARE OF RURAL POPULATION.—(a) For improving hygiene in rural areas, lessons on hygiene and village sanitation should be given to boys and girls in schools and to adults in public places and during non-working hours. The lessons should be illustrated by demonstrations with the help of lenses and apparatus.

(b) Yes, Government may conduct economic surveys in typical villages and collect information on, *inter alia*, the following points:—

What is the condition of ryots who depend entirely on agriculture?

If it has deteriorated, what are the causes?

If the causes are avoidable, what steps should be taken to ameliorate the condition of the ryots?

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Before concluding, I wish to make a suggestion as regards administration. Ryots are now put to considerable difficulty in having to seek relief in matters connected with agriculture from several departments, and in being referred from department to department. In all matters affecting agriculture, the District Collector should be the highest authority in the district and officers of other departments should act only in co-ordination with the Collector. Ryots should look only to the Collector for redress of their grievances. Although the Collector will have in several cases to act only in consultation with or to get things done by other departments, especially in matters requiring technical knowledge, the decision must rest with the Collector; and appeals against his decision will, of course, lie to the Revenue Board and finally to the Government.

Oral Evidence.

13684. *The Chairman* : Mr. Subramanya Mudaliyar, you are a member of the Committee which made certain preliminary preparations for the provincial evidence?—Yes.

13685. We are greatly obliged to you for your share of that and also for your written evidence which is very clear. You have directed your attention to those points which interest you, and I have only one or two questions to ask you. But before I ask you those questions, would you like to make a statement of a general character?—As soon as your questions are over, I shall make a general statement.

13686. I see you are quite clear in your mind that the Government of India ought to pay for research. Do you think the Government of India ought to pay for all agricultural research?—Yes.

13687. And you think that the Government of India ought to have complete charge of all research institutions?—Yes.

13688. In cases where research institutions are being carried on in conjunction with teaching of agricultural subjects, how would you divide the responsibility between the Provincial Government and the Government of India?—I say as far as research is concerned, the Government of India ought to pay.

13689. Where research is combined with education?—Education is a Provincial Subject, and therefore the Provincial Government will have to make a contribution.

13690. On page 425 of your note you are talking about village roads in relation to the local taxes paid by ryots to the Local Boards. In your wide experience have the roads in the charge of Local Boards deteriorated recently in this Presidency?—Yes, because the funds are not sufficient to maintain them.

13691. The local authority is not in funds?—They are increasing the number of roads, and the funds are not sufficient to maintain them.

13692. I rather gather from your evidence that your contribution towards the difficulty is to still further reduce the fund. Do the Local Boards enjoy any part of the toll?—Yes.

13693. They do enjoy the toll. Have you any suggestions to give more funds to the Local Boards?—Yes. As far as the ryot is concerned the roads are more important to him.

13694. Than anything else?—Except agricultural demonstration. The road is very important to get manures and to export the produce.

13695. Would you devote provincial funds to the upkeep of the roads at present in charge of Local Boards?—Yes.

13696. On page 426, you put forward certain suggestions designed to extend irrigation facilities in your own district. Would you tell the Commission whether these are your own personal ideas or whether you have the authority of any engineer. Perhaps you are an engineer yourself?—No. I have personally seen these projects; they are very near Madura.

13697. Have you worked out the cost of these projects at all?—No; I am not an expert at all. In this connection I would like to state that the most important projects will be the Tungabhadra and Kistna projects. For the last 150 years these areas have been suffering from famine. Those projects will cost 30 crores, and they will irrigate 2 million acres and benefit those tracts which are known as famine tracts.

13698. Those schemes, if adopted, would make a contribution towards the solution of the famine problem in those districts?—Yes.

13699. *Sir Henry Lawrence* : How many crores would they cost?—I have got the opinion of an expert engineer; he says they will cost 30 crores, and will irrigate 2 million acres.

13700. *The Chairman* : Sir Ganga Ram will ask questions about them. On page 428, under the heading Veterinary, why is it that you desire that the

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Civil Veterinary Department should be placed under the Director of Agriculture?—Because veterinary aid is connected with agriculture.

13701. Can you point to any concrete example of the disadvantages following from the present arrangement?—I cannot see any disadvantage, but the expense of running the departments will be less.

13702. You say on page 429, "Agriculture, as it is at present, is not paying." What type of agriculture are you referring to there?—I think wet cultivation, dry cultivation, all those things.

13703. All forms of cultivation?—Yes.

13704. Is it your view that agriculture is economically worse now than it was when you first knew it?—Yes. There were more facilities then for manuring; the soil was more fertile. Soil fertility has now gone down because they are carrying on cultivation without an adequate supply of manure. The ryot is not able to manure because there is scarcity of manure owing to shortage of cattle; there is not enough farm yard manure, and that is the only manure which the people can use without difficulty.

13705. How long have you known the district with which you are most familiar?—For the last 33 years.

13706. Are you quite sure that the yield per acre has gone down in these 33 years?—Yes.

13707. How much?—I think the best yield per acre 20 years ago was nearly 20 *kalam*s; 72 measures make one *kalam*.

13708. *Sir Ganga Ram* : Yield of paddy?—Yes.

13709. How much in tons or maunds?—I think one Madras measure is said to be 2½ lbs. But actual weight is 2¾ lbs. 72 measures will therefore be nearly 200 lbs. or 2½ maunds.

13710. *The Chairman* : Twenty *kalam*s is one crop?—Yes, the first crop.

13711. That was twenty years ago; what would be the yield now?—It is only ten *kalam*s.

13712. Gone down by 50 per cent.?—Yes. They are not able to manure their fields, there was enough of cattle manure in those days.

13713. Is it typical of the whole area to which you refer, or is it just an instance from one field?—Not typical. I think very near the forests, where they used to get enough of cattle manure before, they are not able to get enough now. Near the towns they are able to collect town rubbish and manure their fields; also lands near villages get some manure. In other parts the yield is poorer now.

13714. You think the average yield per acre throughout the Presidency has gone down 50 per cent.?—At any rate, as regards the Periyar area in my district.

13715. *The Raja of Parlakimedi* : On page 425, you say that you have tried some of these manures and they have proved a failure in comparison with cowdung manure?—I have tried them side by side with cowdung. I have taken 50 cents of land for each manure. I think the fertiliser gives the poorest yield. Night-soil comes first; then comes cowdung; green manure, oil-cakes, and fertilisers in order of merit.

13716. Have you followed the departmental advice as to how these manures should be applied to each crop and so on, or do you have your own method?—It is my own method.

13717. Of course, to get effective results, you must mix these manures with different other things?—I did not mix; I applied each manure separately; I wanted to know which would be the best, and my results are these.

13718. Was the soil of the same standard?—All the land is in the same village, and the fields are near to each other; it will be the same.

13719. Did it get all the facilities of irrigation equally?—It was the same irrigation for all the fields in the village where I have nearly 50 acres.

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13720. You know sometimes the fields lie in different levels?—Not very different.

13721. Did you examine it thoroughly to prove that these manures were ineffective in comparison with farm-yard manure; did you actually watch the experiments sufficiently closely to justify you in making such a statement?—The cultivation was carried out by a servant, but I used to examine it myself often.

13722. For green manure what plant do you actually use?—I made use of *kolinji*.

13723. It has been suggested that there are other plants which have a better effect, for instance, *daincha*?—I used to apply *daincha*, but not for these particular experiments.

13724. On what crop did you try those experiments?—On paddy.

13725. For paddy *daincha* is very suitable if you mix it with bonemeal. You say that night-soil has a very good effect?—Yes; it is the cheapest manure of all. In my experiments I applied manure worth Rs. 20 per acre; the value was the same for all the manures; that was the system on which I tested it.

13726. Price depends on the locality also, does it not?—Yes.

13727. You cannot make a general statement that this manure is cheaper and that manure is not, and so on?—That is the only way I could think of the value. Suppose you have an unlimited quantity, it will give more yield up to a point but from an economic point of view the money standard alone is the test.

13728. Of course, you say that according to situations the values of things vary?—Yes.

13729. Was this night-soil applied to any particular crop or soil?—It was applied in all the experiments as far as paddy was concerned.

13730. *Professor Gangulee* : Do you farm yourself?—Yes.

13731. How many acres?—I have my own method of cultivation. Nearly 60 acres.

13732. What do you mean by your own method?—It is the ordinary method of cultivation by the village people.

13733. Have you any other extraordinary method?—This year I have experimented in another farm at Solavandan with the aid of the Demonstrator, the agricultural expert, and side by side I have tried my own method of cultivation. One is the ordinary village cultivation, and the other is under expert advice; it is only this year that I have tried it.

13734. You have a large number of farm labourers, I suppose?—Yes.

13735. Do you pay them cash wages?—That depends; sometimes we pay cash, sometimes we pay probably by yield, and sometimes we pay in kind.

13736. How many farm labourers do you employ?—I employ about 10 men.

13737. You are familiar with the rural conditions of your district, are you not?—Yes, I know a little about it.

13738. Do you go about?—Yes.

13739. You make a statement that the results of the experiments should be published in the vernacular; do you think that such publication would in any way benefit the illiterate cultivator?—I think, if you publish them, the literate cultivator may be able to explain them to the illiterate.

13740. You felt the necessity that some of the results of the experiments in Coimbatore or in any other experimental station ought to be published in the vernacular?—Yes.

13741. Did you translate any of these publications into the vernacular? Did you do it yourself?—I did not regularly translate it; I used to explain all about it to my agricultural agents and the farmers who are there.

13742. You requested them to follow the improved methods?—I explained it to them.

13743. You did not do the translation yourself?—I did not translate the leaflets, but I used to talk to them about it.

13744. With regard to the Veterinary Services, you say that the methods adopted for the prevention of the spreading of contagious diseases have been successful to a very limited extent?—Yes.

13745. Have you any data to substantiate this statement? Which contagious disease have you particularly in mind when you say that they have been successful to a very limited extent?—Rinderpest.

13746. Then you think that the department is not successful in controlling that particular disease?—Not controlling; it is not able to help wherever there is an attack of this disease.

13747. Did you bring that to the notice of the department?—No.

13748. Further on you say that they are too costly?—Yes.

13749. What do you actually mean by that?—In Madura town there is only one veterinary dispensary and then in the district there is only one dispensary. Suppose a bull is attacked by any disease, it is not possible for it to be taken to a distance of 10 or 12 miles and to keep it there. If the man were to remain there, it would cost him daily 8 annas, and if the man had to stay there for 10 days it would cost the owner of the bull Rs. 5.

13750. The cost to the cultivator is Rs. 5?—Yes, because he will have to send a man with the animal, and the man will have to remain in the town and the cultivator will have to pay for his expenses.

13751. You say it is too costly even when no charge is made by the Department?—Even if there is no charge, it is not possible for the ryot to keep his cattle in the Veterinary hospital.

13752. No charges have to be paid for the treatment?—Recently they have abolished the charges, but before that there used to be a charge.

13753. Are you a member of any co-operative society?—I am not.

13754. *Mr. Calvert* : Has the value of agricultural land declined or increased in the last 20 years?—The value of the land has increased.

13755. Has it increased very largely?—Not very largely.

13756. This reduction of outturn is not so very serious; it has no effect on the price of the land?—No, but now the value of paddy is higher, and, therefore, although the return from the land is poorer, the value of the land is higher.

The Commission then adjourned till 10 a.m. on Monday, the 22nd November 1926.

Monday, November 22nd, 1926.

MADRAS.

PRESENT :

The MARQUESS OF LINLITHGOW, D.L. (*Chairman*).

Sir HENRY STAVELEY LAWRENCE,
K.C.S.I., I.C.S.
Sir THOMAS MIDDLETON, K.B.E.,
C.B.
Rai Bahadur Sir GANGA RAM, KT.,
C.I.E., M.V.O.
Sir JAMES MACKENNA, KT., C.I.E.,
I.C.S.

Mr. H. CALVERT, C.I.E., I.C.S.
Raja Sri KRISHNA CHANDRA GAJAPATI
NARAYANA DEO of Parlakimedi.
Professor N. GANGULEE.
Dr. L. K. HYDER.
Mr. B. S. KAMAT.

Dewan Bahadur T. RAGHAVAYYA PANTULU GARU.	} (<i>Co-opted Members.</i>)
Rao Bahadur B. MUNISWAMI NAYUDU GARU.	
Mr. J. A. MADAN, I.C.S.	} (<i>Joint Secretaries.</i>)
Mr. F. W. H. SMITH.	

Mr. M. T. SUBRAMANYA MUDALIYAR.

Further Oral Evidence.

13757. *Mr. Calvert:* In your written evidence, you recommend that Government should advance money to help in the repayment of rural debt. Have you ever made any estimate of the total of rural debt?—I have not.

13758. Have you any idea of what sum you would recommend Government to advance?—All possible amount that the Government can spare must be lent. I have not taken any statistics as to what is the debt of a whole village or any district.

13759. You would probably find about 70 crores is quite a safe guess for the rural debt of the Madras Presidency. What amount do you recommend the Madras Government to advance?—I have not calculated that. But I know almost all the villages and especially the small holders are in debt.

13760. On the question of co-operative societies, you say that Government should grant facilities?—Yes.

13761. Have you any suggestions to make as to the kind of facilities?—Especially as far as the audit is concerned and probably advising the villagers to join the co-operative societies and showing them the advantage of it.

13762. Would you recommend that Government should pay for, say, a staff to educate the people in co-operative principles?—Yes, educate, because now the audit of the societies is not facilitated.

13763. The audit now is non-official?—Yes. I say that because there will be a sort of control if the audit is done by Government paid officials. If it is non-official, it is only done through love of duty.

13764. You recommend that Government should pay for the audit?—Yes.

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13765. And also for a staff to educate the people?—Yes, and the advantage of it.

13766. *Sir Henry Lawrence*: Can you give me any idea of the ordinary rental that landlords obtain from paddy lands in your district, the rental that they receive from their tenants? That is, non-cultivating ryots?—There are two kinds of lands, double crop and single crop lands. In single crop lands the income will be only 5 to 6 *kalam*s.

13767. What is the money value of that?—Rs. 45 to Rs. 70 an acre according to the market price.

13768. That is on the total crop of the land?—It is on the single crop land. On double crop lands, it will be 10 *kalam*s or Rs. 90 to Rs. 120.

13769. That is the net income that the landlord receives?—Yes, net income.

13770. Does he pay the assessment?—Yes, he will have to pay the assessment, and for the land improvement.

13771. And does he pay any of the cost of cultivation?—No.

13772. All that is on the tenant?—Yes, all that is on the tenant.

13773. It is Rs. 45 to Rs. 70 in a single crop land?—Yes.

13774. *Sir Ganga Ram*: Irrigated land?—Protected by a perennial river.

13775. *Sir Henry Lawrence*: Who pays the water rate?—The landlord, not the cultivator.

13776. The landlord out of that Rs. 50 or Rs. 70 pays the assessment and what else?—Water rates.

13777. And what would approximately be the average land assessment and the average water rate?—I think that depends upon the locality. In certain places, the water rates range from Rs. 5 to Rs. 20; then they will have to pay a cess of nearly $1\frac{1}{2}$ annas in every rupee.

13778. That is for the Local Board?—Yes.

13779. And the land assessment?—It goes to the Government.

13780. How much is the land assessment?—Re. 1 per acre.

13781. Is that on garden cultivation?—If it be in the dry land, there is only dry tax which is Re. 1. There would not be any water rate for crops cultivated on dry fields.

13782. No water rate?—Wells, in the dry fields irrigate the lands. They are not irrigated by any channels.

13783. Are there no garden lands which take water from a canal?—Their number is very small; I do not think there is a single instance in my district where garden land is cultivated by canal water.

13784. *Sir Ganga Ram*: You are not a lawyer?—No.

13785. You are living on the produce of your land?—Yes.

13786. How much land have you got?—Nearly 700 acres.

13787. All irrigated?—Nearly 600 acres are irrigated.

13788. How much of it is in the delta?—Almost all my lands are in the delta.

13789. From whom did you receive the inspiration of these projects? Is it your own idea?—Yes, because I live near them.

13790. Has any engineer given you these figures?—As far as Tungabadhra and other things are concerned, the engineers have given figures.

13791. Can you give me, with regard to these five projects, some idea as to their cost and the area they will irrigate?—I have no idea of that. I have an idea of the Tungabadhra and Kistna projects which cost about 30 crores of rupees and which can irrigate nearly 2 million acres.

13792. Which number is it?—I have not mentioned it here. I have referred to them in my oral evidence.

13793. How much do you say?—2 million acres can be irrigated by the Tungabadhra and Kistna projects taken together.

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13794. What will be their cost?—30 crores.

13795. 2 million acres for 30 crores? What is your idea of productive and protective works? How much do you expect on a productive work, 6 per cent?—I think if it is 6 per cent for the Government, it is a very favourable rate.

13796. If Government should get 6 per cent after deducting working expenses?—Yes.

13797. How much do you think a zamindar or a landholder can pay at the very most?—That depends upon the locality and the soil, I think.

13798. When you say 30 crores at 6 per cent the interest will be 1 crore and 80 lakhs or nearly 2 crores; 2 crores divided by 2 millions will be nearly Rs. 10. You think people will pay Rs. 10 on the average? Then of course you must add also 25 per cent working expenses?—I have no idea of those places.

13799. I only ask your general opinion. I ask you whether landholders can pay Rs. 12-8 per acre? How much can they pay?—As far as my district is concerned, I think the people will be able to pay even Rs. 15.

13800. For water-rate?—Yes. They pay Re. 1 for dry land.

13801. Now they will be called upon to pay Rs. 14 for water rate and land settlement and everything else extra?—There are only two classes of land; one is dry and the other is wet. If it be settlement land there would not be a separate water tax.

13802. Altogether how much will be the burden on the land?—In my district they will be called upon to pay Rs. 15 per acre for double crop land.

13803. And this project which you are talking of will irrigate 2 million acres of that land?—Not that project. It is quite different. I have no idea of the Tungabadhra and Kistna projects or what the ryots there actually will be called on to pay.

13804. Unless Government is assured that it will pay, how can you expect them to spend 30 crores?—But these districts are often affected by famine. During the last 150 years famine has affected those districts very often and if Government take at that rate and keep only that consideration in view it will be an enormous benefit as far as human beings and cattle are concerned. So whether it is profitable or not, the ryots there will be in a better condition. Even if Government do not have any profit I think it is the sacred duty of the Government to protect against famine; and on that ground alone Government will have to take up these projects. In all these districts, Bellary, Cuddapah, Kistna and other places, there is famine; there are statistics and Government can learn. It is the most sacred duty of Government to protect from famine and anyhow the Government will have to undertake such a project.

13805. When did you have the last famine?—Even two years ago there was a famine in those places.

13806. What was the mortality in that famine?—I cannot say.

13807. Can you reduce all these ideas into figures? That is to say, how much should Government forego on account of famine, how much is due to human beings, how much to cattle and so on?—No, I cannot.

13808. Then we cannot arrive at how much Government is going to lose in recommending any project of that kind?—I think Government can appoint a special Statistical Committee and find out; I am ignorant of that.

13809. What is your notion of Government? In your evidence, in many places, you say Government should do this, Government should do that. Have Government any resources which they can place at your disposal for these losses? Now that the Reforms have put all the revenue and everything else at the disposal of the Provincial Governments, from what sources can they bear these losses?—Government can find the money if they want to. I do not ask anything to be given as a present. It is only as a loan that I want it. Government can recover it.

Sir Ganga Ram: But they must pay interest on the loans.

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13810. *Sir Thomas Middleton* : On page 424 of your memorandum you have told us that you have been conducting experiments in two of your own farms?—Yes.

13811. When you started making these experiments did you consult the Agricultural Department, or did you arrange the experiments yourself?—I myself have undergone a course in the year 1895 in the Agricultural College at Saidapet. I have a little knowledge, and with that knowledge I tried these experiments for 9 years in my farm.

13812. You have been making use of the information you gained at Saidapet and conducting experiments in your own land?—Yes.

13813. You refer to using fertilisers in conjunction with cattle manure; I suppose you mean artificial manures?—Yes.

13814. What were they? Do you remember? I only want to know whether you were trying superphosphates or potash manures?—Superphosphates.

13815. Something which was new in your district?—Yes.

13816. You told us it failed and you could not give an explanation. At that stage did you go to the Agricultural Department and ask them whether they could explain it?—I did not ask them.

13817. Do you not think it would be advisable to consult them when you find you are in difficulty?—I have two farms. In a different farm at Solavandan, I am conducting another experiment under the guidance of an expert.

13818. There you are finding it successful?—I harvested there only a month ago; there is more to be harvested, therefore, I cannot say whether it is successful or not.

13819. It is known to you that in your district you require phosphates?—It is impossible to have natural manure; the cultivation has increased and there is a diminution of the sources of animal and green manure; therefore it is not possible to enrich the soil except by artificial manure.

13820. You say it is impossible; is it as the result of your own experience you have come to that conclusion, or is it as a result of what you learnt when you were at Saidapet?—It is the result not only of what I learnt at Saidapet, but of my experience in my village and other villages in the district. There is not enough of cattle manure. The only possible solution is to have artificial manure; without it it is not possible to enrich the soil; and without manure we cannot carry on intensive cultivation.

13821. And you yourself intend to continue those experiments until you are successful?—Yes.

13822. You suggest there ought to be some prohibition or some export duty on the export of oil cakes. Why do you make that suggestion?—Because in India we do not have facilities to get artificial manure; such being the case to export all available manure to outside countries is a great loss to the country.

13823. What particular class of land wants that oil-cake manure; are you thinking of paddy land?—Oil-cake and bonemeal can be used for all crops.

13824. Were you not thinking of your paddy cultivation?—No, but it is better for paddy cultivation.

13825. Assuming that were done, what would happen to the people who grow oil-seeds?—I also suggest that machines should be introduced to extract all the oil. In the absence of proper machinery, there is a wastage of 3 or 4 per cent of oil; they will get value for that oil. I want to extract all the oil in India and use the oil-cake.

13826. I can see that; but do you not think that the profits from the growing of oil-seeds will be reduced if you adopt that policy of prohibition of exports?—We have to find manure for the soil, and by these steps I propose to do it. Unless we manure the soil it will be exhausted, and you cannot get any income. Even if you lose a little by not exporting manures to outside countries, in the long run by keeping this manure in the country there will be intensive cultivation and by intensive cultivation the ryot will be profited.

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13827. What you suggest is this; the ryots who use the oil-cakes (in your case the growers of paddy) will gain a little; but who will pay for the loss to the growers of ground-nut?—If there be proper machinery to crush the oil-seeds properly, the people who grow the oil-seeds will not be losers as they would then get a proper price for their seeds which will give 3 or 4 per cent more of oil; also the oil-cake will be used in the country for manure.

13828. And you are quite satisfied that the paddy growers would have a profit, and the ground-nut growers would have no loss?—There will be no loss; they will be gainers; they can get a price for their manure. Of course to a little extent they may lose. But when it is not possible to supply natural manure, we will have to obtain manures; oil-cake is one of them, and to keep the cake in the country we must have some restriction on export.

13829. *Dr. Hyder*: To take the last point; which policy would you favour, absolute prohibition or a tax on the export of oil-cakes?—I think in the case of bonemeal there should be absolute prohibition; but in the case of oil-seeds, until we find out a machinery to extract all the oil, there should be a duty only and not total prohibition.

13830. *Sir Ganga Ram*: What machinery?—Machinery to crush the oil-seeds.

13831. *Dr. Hyder*: Take the question of the export of bones. Do you think that if we absolutely prohibit the export of bones the ryots will reduce the bones into bonemeal?—Yes, because the cost will be cheaper.

13832. You do not think the bones will be rotting in the fields?—I do not think so; bone is an essential manure and people know it.

13833. You think the ryots will produce it?—Yes.

13834. *Devan Bahadur Raghavayya*: You say that the village roads are inadequate and ill-kept, and you say that the ryots pay a cess to the Local Board for the maintenance of these roads. You are aware, I believe, that this cess is earmarked for the maintenance and construction of these roads?—Is all the cess paid by the ryots earmarked?

13835. The road cess is?—I do not think so, because they have to subscribe to sanitation and hospitals from this cess.

13836. Not from the road cess?—Then, I am wrong.

13837. Have you been on any Local Board?—I am not now on any Local Board; I was on the District Board twenty years ago.

13838. Has any systematic attempt been made by your District Board to raise revenue from avenues to increase the yield from avenues?—Yes; they are trying.

13839. Are they systematically planting fruit-yielding avenue trees?—No: they are planting shade trees.

13840. Shade trees the revenue from which is not very much?—Yes.

13841. Did you think of planting fruit-yielding trees, like the coconut or tamarind, to increase the revenue from avenues to a material extent?—To grow coconut trees there must be enough of water, and therefore it is only possible in deltaic or irrigated tracts; of course it would be more profitable. As regards tamarind, it will take a long time to grow, I do not have any idea as to what the cost of growing it will be and what will be the income. If we plant coconut trees in deltaic tracts it will be more profitable.

13842. Where the roads pass through deltaic tracts, if advantage is taken of the water to plant coconut trees on the roadside, it will be profitable?—It will be very profitable.

13843. That is not taken advantage of to the fullest extent now?—There are some trees at present; to a certain extent it is taken advantage of.

13844. You think such plantation should be increased?—Yes; I think it will be profitable.

13845. You said that the least amount from wet land for a single crop was Rs. 45 to Rs. 70?—Rs. 45 is for single crop; for double crop Rs. 90 to Rs. 120.

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13846. You refer to crops in the delta of the Periyar?—Yes; that is my experience.

13847. What will be the yield in wet lands of the upland taluks where lands are irrigated from precarious sources?—From precarious sources it will be very low.

13848. How much?—If the season is favourable it will be even more than in perennially irrigated tracts; if the season is not favourable it will not be more than Rs. 20. If the season is unfavourable cultivation fails and all the available manure is preserved for the favourable season, with the result that in the favourable season the yield is very good. On the average it will be less.

13849. What will be the average?—It will be from Rs. 20 to Rs. 30 per acre.

13850. That is on lands outside the deltaic tracts?—On lands not irrigated by the perennial sources, i.e., where there is only a supply for three or four months.

13851. You said that the land assessment on wet land was Re. 1 per acre?—Not on wet land, but on dry land.

13852. The average assessment on dry land is Re. 1. What is the assessment on wet land where the assessment is a consolidated one?—It is Rs. 15 including the water rate.

13853. If you want to take water to land which is not entitled to water, what is the water rate?—It is Rs. 16 now.

13854. For how many crops?—For two crops. When they take water, in some places they will have to pay even more; but Rs. 16 is the lowest; I am speaking about the Periyar area.

13855. Is it not Rs. 6 for the first crop and Rs. 3 for the second crop?—Rs. 6 for the first crop and Rs. 3 for the second crop is the rate on permanently-settled wet lands. The tax ranges according to the soil. In permanently-settled tracts they have a consolidated amount, from Rs. 6 to Rs. 13. In some places Rs. 19. There it is not possible to divide, because under a permanent settlement there is no separate water rate; they include all the rates in one.

13856. But for the water rate alone, if Periyar water is taken to dry land, you will have to pay Rs. 16?—Yes, for double crop.

13857. If Periyar water is taken to zamindari land, what is the water rate that is paid?—Only Rs. 5 for single crop and Rs. 8 for double crop.

13858. You say the ryots would be willing to pay a higher rate than Rs. 5 and Rs. 8?—Yes.

13859. I suppose you are aware of the fact that under the Cauvery-Mettur project, the ryots have agreed generally to pay a water rate of Rs. 15 an acre?—Yes.

13860. You say on page 427 of your note that night-soil and urine, which are now wasted should be collected. Do you think in the villages the people would favour such a scheme?—They can be made to do it only by education. My important point is that there are two matters concerned here; one is that the collection of night-soil and urine will be a source of manure, and the other is that it will preserve the sanitation of the village. I have seen that in villages where the people are not careful enough to remove this filth, they get all sorts of diseases; preserving sanitation of the place and getting a source of manure are the important points.

13861. In your district, the District Board has allotted a sum of about Rs. 30,000 for building latrines in villages and for collecting night-soil and urine; that is what I read. Do you know if the experiment has actually been started?—I think that in the present condition of the latrines in the villages, it is impossible for any decent people to make use of them; unless they are cleaned more often they are not in a fit condition to be used; so the people go to the topes and the river banks.

13862. Has the experiment been actually tried in any place?—In every union village there is a latrine, but it is not used properly.

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13863. That is with regard to union villages; what about non-union villages?—I have not seen it there.

13864. You say on page 428 of the note that common pastures are wholly inadequate; is it your experience that these common pastures yield good grazing?—Not now; unless they are improved it is not possible.

13865. Are they conserved anywhere in your own district?—No.

13866. Do you grow fodder crops in your district or on your lands?—My lands are mostly wet lands, and there is no necessity of growing fodder crops because I have enough of straw but in places where it is garden land and dry land, people grow *cholam* as a fodder.

13867. Is that a much better cattle food than grass obtained from common pastures?—Yes, *cholam* fodder is very good.

13868. You refer to famine; I suppose you mean scarcity of rain and consequent poor crops?—Yes.

13869. Actually, no relief works were started within recent years?—No.

13870. You mean failure of rain and the consequent poor yield of crops; is that what you mean?—That is for non-productive areas.

13871. In the non-productive areas?—Yes.

13872. *Sir Ganga Ram*: About bones, you say that the people will use them but bones are of no use to the field, unless they are crushed down to the fineness of bone-meal?—Yes; there are industrial concerns in Southern India where they prepare it by machines.

13873. That is what you mean; they cannot use bones as they are?—No.

13874. Do you give oil-cakes to cattle for food?—Yes, we do.

13875. Which oil-cake do you give?—We give the oil-cake pressed in the ordinary country mills, not that which is pressed in the press. If it is oil-cake made in the press, it is not possible to use it as cattle food.

13876. In the country mills there is a lot of oil left in the cake?—Yes; in the press, they use gunny bags to press the oil, the gunny bag threads get mixed up with the cake, and it is not possible to use it as cattle food.

13877. What is the yield per acre of ground-nut; what is the money value of it?—I think, with a good yield, it will be Rs. 50 to Rs. 70 per acre.

13878. Have you not got a fluctuating water rate? Supposing the land does not grow anything owing to some misfortune or through any other cause, do you mean to say that the combined rate of Rs. 15 will be charged?—I think there is a remission, but it is only nominal; it does not actually benefit the ryot; the rule is very strict; the remission is only on paper, it is nominal.

13879. It does not fluctuate; water rate is always charged on our side on the actual area grown, but here you say it is a combined rate, it is one fixed rate?—Is the settlement rate a fixed rate?

13880. That includes the water rate?—Yes.

13881. Whether any crops are grown or not?—Suppose there are 2 crops, the first crop and the second crop, Government consolidate the rate for the two crops and the ryots will have to pay it even if there is a failure, they are bound to pay that tax.

13882. Bound to pay? I can understand they are bound to pay the land rate?—They are bound to pay even the water rate.

13883. Even the water rate?—Whether they do or do not grow anything, they are bound to pay the settlement land tax. Every 30 years there is a settlement, and if the land is settled as wet land, they will have to pay.

13884. A charge of Rs. 15?—Rs. 15 or according to the rates.

13885. *Professor Gangulee*: As you are a practical farmer, I want to ask you one or two practical questions. Can you give us an idea of the cost of paddy cultivation per acre?—If it is properly manured, they will have to use manure worth Rs. 20 for one crop.

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13886. I am not talking about the manure; what is the consolidated cost of paddy cultivation per acre?—Rs. 70.

13887. And the total yield per acre?—The total yield including the tenant's and the ryot's share?

13888. Yes, the total yield, how many Madras measures will it be?—It will be from 10 *kalam*s to 15 *kalam*s of 72 measures each.

13889. You depend chiefly on the income derived from your ryots?—Yes.

13890. And you are a ryotwari landholder?—Yes.

13891. I suppose the arrangement with your tenant is based on a crop share system?—Yes, in some places.

13892. What is your arrangement?—In some places I get a fixed rent, and in some places I get a crop share.

13893. What is your crop share?—In some cases, it is two-thirds, in others it is half.

13894. Two-thirds of the gross produce?—Yes, of the gross produce, and in some cases 50 per cent goes to the tenant and I get 50 per cent.

13895. Do I understand that the cost of cultivation, except the water rate, is deducted from the tenant's share?—Yes.

13896. Under this crop share system, of course, it is to the interest both of the tenant and of the landholder that the production per acre should be increased?—Yes.

13897. Suppose a tenant does not give you satisfaction, are you able to eject him?—Yes, I can eject him at my will.

13898. Supposing he has improved the fertility of the land, you say you can eject him at your will?—Yes.

13899. Do you give him any compensation for the improvement that he has made in the land?—If he gets more yield, he will not leave the land; he will keep it to himself.

13900. But supposing you are not getting on well with him?—I can eject him, but if he is a good tenant, I will not do it.

13901. But you can eject him?—Yes.

13902. Without giving him any compensation for the improvements?—Yes.

13903. Or, suppose that the tenant finds you exacting in your demands, is he free to leave you?—Yes.

13904. You advance money?—Yes.

13905. How is the loan realised?—I will take it from him as soon as the harvest is over; if he is able to sell the grain at the market rate he will do so and return the money to me, or he will give me grain to the value of the amount, according to the price of the market.

13906. When the harvest time is over, you get two-thirds of the crop, and out of the one-third, you take the cost of cultivation, and from what little is left you hope to get back your loan; is that the position?—Yes.

13907. In the event of loss of plough cattle, who replaces the loss?—Everything is his.

13908. You do not replace his loss?—No, unless I replace it in a philanthropic spirit; there is no condition.

13909. The cost of manure comes from him?—Yes.

13910. And the cost of bonemeal?—He has to pay the cost of everything; whatever improvement he does will be at his cost.

13911. You mentioned superphosphate. Do you apply it?—Yes, on my own farm; he is not able to purchase and use it, but on my own farm I use it.

13912. *The Chairman*: Are those not elements in the cost of cultivation and coming within your general answer that the cost of cultivation is paid for entirely by the tenant?—Yes; except the water rate; in dry land the tenant pays for every improvement.

Mr. M. T. Subramanya Mudaliyar.

Professor Gangulee: I wanted to be quite clear; when you suggested new manures like bonemeal and superphosphate, whether you encouraged their introduction by paying for it yourself.

13913. *Sir Henry Lawrence*: This proportion of two-thirds of the produce which you obtain, is that the ordinary practice in your district?—It is not two-thirds throughout; there are good lands where it will be two-thirds for the owner and one-third for the tenant, but in some cases it is 50 per cent or half to the tenant and half to the owner; that is the general practice.

13914. I thought it was two-thirds throughout?—For the best lands it is two-thirds, for inferior lands it is half and half.

13915. In good lands your share is 66 per cent and in inferior lands 33 per cent?—Yes.

13916. Is that fixed by custom? Has it always been so?—Yes.

13917. Even since you remember, has your share been 66 or 50 per cent?—Yes.

13918. Never less?—Never less; it is not less than 50 per cent. in any part of my district.

13919. *Dewan Bahadur Raghavayya*: In areas where the water supply is precarious it is not so?—Even there, it will not be less than 50 per cent.

13920. In your district?—Yes, in my district.

13921. In some parts does not the landlord also contribute towards the cost of cultivation?—Only in so far as they may advance the money without interest.

13922. He does not share it?—No; but the landholder will improve the land in the way of levelling and bunding.

13923. Is it within your knowledge that in some districts the landowner shares the cost of cultivation and in other places, he gets a third of the produce as his share?—I think in Tanjore there are not enough cultivators; so there may be a less proportion there. There are big *mirasidars*.

13924. What is the value of your land, the land which pays two-thirds and the land which pays half?—The one which pays two-thirds is Rs. 3,000 per acre and the other Rs. 1,000 to Rs. 2,000.

13925. *Sir Ganga Ram*: For Rs. 3,000 you only get Rs. 66? That means only 2 per cent?—We do not get even that in some places.

13926. *Mr. Kamat*: Will you tell me generally whether, although the tenants are theoretically tenants at will, is it or is it not the case that they remain as occupants for a number of years continuously?—Yes, they do.

13927. Now amongst your tenants, tenants-at-will as you call them, how many do you change often or every year?—Practically we do not change a tenant unless we find that he is a lazy tenant.

13928. So that although theoretically they are tenants-at-will, the practice of the country is that they remain as the occupants of the lands for a number of years continuously?—Yes.

Professor Gangulee: There is no other alternative perhaps.

13929. *Mr. Kamat*: I want to ask you one or two questions about the causes of borrowing which you give on page 426. You say the causes of borrowing are the failure of crops on account of bad seasons, loss of cattle by disease, increase of cultivation expenses and so on. Are you quite definite that the causes of borrowing are physical or beyond the power of the agriculturists as a whole?—Yes.

13930. Are you quite definite about that?—Yes.

13931. And that they are not moral causes such as drinking or lack of thrift or extravagance?—It may be so to some extent. Nowadays living also is costly.

13932. In any case those causes are not moral causes?—They may be in some instances to a small extent. Drinking may be the cause in the case of some tenants; not in the case of all.

Mr. M. T. Subramanya Mudaliyar.

13933. Now can you tell me from your experience as a practical farmer and from your acquaintance with the country and districts, whether you think that taking for instance five years on an average, the cultivator has some saving after meeting his family expense from the yield of his land?—Yes.

13934. There is a saving?—Yes. There is one advantage here. I think every tenant in the two crop areas has got enough of straw. He may get some money out of the straw. Suppose he has one pair of cattle for ploughing his land; he will have more straw than his cattle require and he will also get some value for the extra. The whole of the straw goes to the tenant.

13935. So there is a surplus to him?—Yes; only in places where there is good river like the Periyar; but not in other parts.

13936. In the irrigated parts?—Irrigated parts are also protective, because there is a reservoir and if the department want, they can irrigate; it is under the control of the department. Only in such lands is the tenant in a very good condition.

13937. If there is no such source of water, do you mean to suggest that there is no surplus or saving left to him?—Practically there will not be any saving to him, because whatever he spends in the field, he is not able to earn.

13938. In cases where there is no surplus left to him, I want to know how your scheme either of agricultural banks or land mortgage banks will succeed? Now you wish that the agricultural bank should give loans to agriculturists, say, at 6 per cent or whatever the rate may be. They ought to be able to pay that rate of interest, whatever may be the instalment, from the surplus?—Yes.

13939. Now in cases in which you say there is no surplus, how is the agricultural bank to function?—I say it in the next point; unless he manures his field, unless by means of intensive cultivation, he will not be able to save much. If he spends much money in unprotected areas there will be a good crop in alternate years, and his income will be very high in those years if he uses better manures. Then he may be able to have some saving.

13940. Leaving the protected areas out of consideration?—Even in unprotected areas in a favourable season, he may have a good yield.

13941. But you said that in such areas on an average he will be left with no surplus?—Yes.

13942. In such areas, where they are needed most how will agricultural banks or land mortgage banks succeed?—Without intensive cultivation he may not be able to gain much in a favourable season. I did not say there would be failure throughout. At least in a season of good rain he will get more yield. If he takes up intensive cultivation, by this and by other facilities he can expect more yield.

13943. Now I want to know how you reconcile these two statements. In one paragraph you suggest that the rate of interest which agricultural banks or co-operative societies should charge the cultivator should be 6 per cent and in the subsequent paragraph you suggest that it should not exceed 12 per cent. Should it be 6 per cent or something near 12 per cent?—I say that because the small tenants who have no status or very little property are not able to borrow money. In such cases they are paying interest in kind. This interest goes up to 100 or 150 per cent. Such being the case, a 12 per cent rate of interest is a great boon to the ryot. Government are satisfied with 6 per cent. interest; they will not be losers. For the small tenant paying 100 or 150 per cent, is it not a great boon for him to pay 12 per cent?

13944. Will you also explain what you mean by saying that agriculturists should be exempt from arrest for civil debts? Do you refer to money borrowed from moneylenders or from co-operative societies?—Whatever it may be, he should not be harassed like that.

13945. As long as he is an agriculturist he should be free from the penalty of the civil law?—Yes, that is my opinion.

13946. *The Chairman:* Do you think that that would encourage lenders to lend?—In a way it may not encourage moneylenders to give the money.

Mr. M. T. Subramanya Mudaliyar.

13947. *Mr. Kamat*: When 70 per cent of the population are so privileged do you think the moneylender will be able to live?—My point is that the cultivator is now paying 100 or 150 per cent interest.

13948. *The Chairman*: In answer to a question put by myself you estimated the return in the yield of the land with which you are familiar during, I think, the past thirty years, as having decreased by 50 per cent?—Yes, 50 per cent.

13949. The average yield of paddy in pounds per acre estimated in the published Season and Crop Report for Madura district during the last 20 years is as follows:—

From 1905—10	.	.	.	.	1,000 lbs. average yield.
1911—17	.	.	.	.	2,000 „ „ „
1918 to date	.	.	.	.	1,950 „ „ „

Are you familiar with those figures?—I am only going on my own experience and my own impression. No doubt after the Periyar project the income might be a little higher, and even then the yield will not be very high; but there will not be any failure of crops.

13950. Do you know the results of the crop cutting test in your district, *i.e.*, tests carried out by the Revenue Department, and which are now discontinued?—I do not know these results actually, but they select the best part of the crop and then it is a question of mathematical calculation; they will base an experiment even on an area of one or two cents; I do not think it will be very accurate. They select the best portions of the crops.

13951. *Dewan Bahadur Raghavayya*: Is it not the rule that a typical plot will be selected and not the best nor the worst, but typical for the whole tract?—Even with the typical crop they take, they will take the best plot for calculation.

13952. *The Chairman*: I do not quite see how a crop can be typical and at the same time the best?—I think the mathematical calculation which they make on one or two cents will not be quite accurate.

13953. I only wanted to know whether in the face of these figures of which you have now been reminded you desire to leave on the notes your statement, as you are an experienced agriculturist and a responsible person, that the outturn has gone down by 50 per cent per acre in the last 50 years on the average?—Yes.

13954. You wish that statement to be left on the notes?—I still say that from my experience.

(The witness withdrew.)

**KHAN BAHADUR M. BAZL-UL-LAH SAHIB BAHADUR, C.I.E.,
O.B.E., Director of Industries, Madras.**

Replies to the Questionnaire.

QUESTION 8.—IRRIGATION.—(a) (iii) There is ample scope and very great need for the extension of well-irrigation in most districts of the Presidency. The methods adopted by the department in furthering the extension of well-irrigation are—

- (a) selection of boring sites with reference to local conditions,
- (b) putting down borings with a view to determine the existence of sub-artesian water currents and their capacity,
- (c) helping the ryots to sink wells with the aid of pumping plants,
- (d) deepening wells in hard strata with special drills (this is a proposed measure and the plant required is on order and is expected before the end of the current official year),
- (e) demonstrating to the ryots the advantages of power pumping, overbalancing by *picotta* or *mhote*,
- (f) helping ryots with loans to sink or deepen wells and for the purchase of pumping plants,
- (g) erecting and maintaining such plants in working order.

The chief obstacle to the extension of irrigation by wells in this Presidency is the poverty of the ryot which prevents him in many cases from availing himself of the assistance offered by the Department of Industries.

A detailed account of the pumping and boring operations conducted by the department is given below:—

Pumping and Boring operations in the Madras Presidency.

Historical.—In 1903, Mr. (now Sir) Alfred Chatterton proposed that a number of pumping installations should be set up with the object of demonstrating the advantages of modern machinery in agricultural operations. Some work had already been done in this direction, and Mr. (now Sir) Chatterton himself and the Public Works Department had both experimented with pumping by machinery. But these experiments had furnished evidence merely as to the value of lift irrigation on a comparatively large scale, and much scepticism still prevailed as to whether comparatively small areas of land could be profitably irrigated by small engines and pumps. One small installation had already been put up at Melrosapuram in the Chingleput district, and in 1904 permission was obtained to open four other pumping stations where experiments were begun with engines varying in horse power from $3\frac{1}{2}$ to 6 and with 3 and 4 inch pumps. From the first, the progress made was encouraging, and by March 1905 so many applications for assistance had been received that Government agreed to advances being made under the Land Improvements Loans Act for the purchase of oil-engines and pumps, and provided Mr. (now Sir) Chatterton with the nucleus of a staff to assist those wishing to put up installations with advice and supervision. A class for training oil-engine drivers was also opened at the School of Arts. It soon became evident, however, that very few of the wells in the Presidency could furnish enough water to justify the putting up of an engine and pump, and that, in order to bring pumping installations into more extended use, it would be necessary to deepen the existing wells or to sink new ones so as to tap the subterranean reservoirs which were suspected to exist at no very great depth in certain districts of the Presidency. These results had been anticipated from the very beginning, and in 1904 a set of boring tools had been purchased with which experimental borings had been put down in various places. This led to the discovery of

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sub-artesian water both in the Chingleput and South Arcot districts, and it became evident that it was desirable greatly to extend the scale of operations. Accordingly, in 1906, the boring branch of the department was inaugurated by the deputation of a special party to the Chingleput district, partly to develop well-irrigation by the expeditious disposal of applications for loans and partly to prevent waste of money by putting down trial borings before wells were sunk. Later on, the operations of the party were extended to the improvement of the existing wells and from this time forward progress was rapid until the outbreak of the war operated as a check. A number of oil-engines were also installed under the advice and with the aid of the department in rice mills and other small industrial concerns for the preparation of agricultural produce for the market; and, in the course of a few years, numerous rice hullers, oil mills, and other forms of industrial machinery were installed. A very large number of rice hullers were put down in the Tanjore district. In the year 1910, there were only some four to five mills worked by power and nearly the whole of the paddy of the district was husked by hand. In that year, however, the Department of Industries installed a small rice-milling plant driven by an oil-engine at Tirukattupalli and the success of that installation induced other people to start similar mills in various parts of the delta. In the following year, 19 similar installations were fitted up and the demand for them increased from year to year until in 1918 there were 215 mills in the Tanjore district representing an aggregate Horse-Power of 5,360.

Transfer of the operations to the Department of Agriculture.—In March 1916, Government decided to add an Agricultural Engineer to the staff of the Agricultural Department and as a corollary to the creation of this appointment they resolved to transfer to that department the pumping and boring operations which until then had been carried on under the control of the Director of Industries. The transfer was effected on the 1st August 1916, the *advisory and inspection work in connection with industrial plants, such as rice hullers, cotton gins, and ground-nut decorticators remaining with the Director of Industries*. This arrangement was adversely criticised by the Indian Industrial Commission in paragraph 307 of their report. The Commission considered that where a well-equipped Industrial Department was in existence, it was a waste of control to have one department installing power plant for agricultural purposes and another for small industries side by side in the same district, that such work was of a totally different character from that which properly belonged to the Department of Agriculture, and that valuable adaptations and improvements were not likely to be forthcoming except from a technical department which commands the services of industrial specialists. The Government in 1920, accepted the Commission's recommendations and directed that the Pumping and Boring Department with the workshop attached to it should be re-transferred from the Department of Agriculture to the Department of Industries. This transfer was given effect to on 9th September 1920. Up to 31st March 1926, 7,862 borings had been put down, the percentage of success being about 60, and approximately 591 pumping and 398 industrial plants had been set up, while a sum of Rs. 6,11,406 had been advanced under the provisions of the Land Improvements Loans Act to 173 persons for the purchase of oil-engines and pumps. The chief difficulties in the way of development since the war have been (a) the high price of machinery (which, however, has recently come down considerably) and (b) the very high cost of liquid fuel.

Staff and organisation.—The staff of the Engineering Branch now consists of an Industrial Engineer, who is stationed at Madras, four Assistant Industrial Engineers with headquarters at Madras, Tanjore, Coimbatore and Bezwada respectively, 18 supervisors, 40 mechanics, 80 boring maistris and drivers and 16 apprentice boring maistris. The work of this branch consists mainly of the investigation of new engineering projects, of the erection of new installations, the maintenance of pumping installations and industrial machinery already at work, the conduct of boring operations, the supply, erection and maintenance of pumps for erection and the investigation of loan applications under the Agriculturists' Loans Act.

Information and advice.—General information and advice on engineering questions are given free, provided no local inspection is involved and a considerable number of such inquiries are dealt with during the course of a year. In cases where a local inspection is necessary, a fee of Rs. 15 is payable, in return for which advice is given in regard to the selection of a suitable site for a mill, factory or installation and as to the most suitable type of machinery for the purpose. Advice is also given to Government departments and co-operative societies, from time to time, on a variety of engineering matters. During the year ended 31st March 1926, 159 applications of this kind were disposed of.

System of compounding fees.—In the circumstances of Southern India, it was necessary to provide for the supervision and periodical inspection of the engines, pumps and industrial machinery installed. Under this system, for a fixed fee of Rs. 15 per annum, owners of private installations are entitled to have their plants inspected and overhauled three times a year, and also at other times if special requisitions are received for which, however, extra fees are charged. Furthermore, compounded installation owners are entitled to utilise the departmental workshops for the carrying out of repairs and renewals of component parts of their engines, pumps, or industrial machinery, and the facilities offered by the workshops for the quick, economical and efficient conduct of repairs are greatly appreciated by the ryots and small industrialists, and in fact have helped not a little to popularise the work of the engineering branch of the department. In addition to assisting owners to maintain their plant in good condition, an essential service in a country where there is such a dearth of skilled artisans, this system has the further advantage of enabling the department to suggest improvements and to encourage the industrialist or the ryot to extend and develop his operations. That this service continues to be appreciated is evident from the fact that the number of plants under maintenance during the year 1925-26 was 414 as against 371 in the previous year.

Erection of machinery and plant.—The erection of machinery and plant is undertaken for a nominal fee of 2½ per cent on the capital cost of the machinery installed. This service, while enabling the ryot or small factory owner, to have his engine and pump or industrial machinery erected at the minimum cost, also ensures the engine being set up under proper technical supervision. The number of plants erected during the year 1925-26 was 81.

Loans under the Agriculturists' Loans Act.—As already stated, loans under the Agriculturists' Loans Act are granted by Government on favourable conditions to ryots for the installation of pumping machinery in cases where there is a reasonable prospect that by means of such loans the lands of the ryot will be improved and his income increased. It is frequently found that an applicant proposes to put a power pump in a well which has not enough water to keep a pump going for more than an hour or so. In such cases, the applicant is advised to try to increase the water supply by deepening his well, and if it is found that an adequate supply cannot be provided, a loan is refused in the ryot's own interests, for obviously it is uneconomical to instal an expensive power pump which can work only an hour or so a day. The loans disbursed during the last three years have been as follows:—

	Rs.
1923-24	74,000
1924-25	97,300
1925-26	42,506

The decrease in the number of loan applications sanctioned during the last official year as compared with the preceding year is mainly attributable to the fact that owing to heavy rains in the Coimbatore division in the months of October, November and December the wells were full and no satisfactory and conclusive test of their capacity could be conducted till about the end of March with the result that several applications had to be kept

in abeyance. Every effort has been made during the last few years to speed up the enquiries preliminary to the grant or refusal of a loan. The department, as already shown, grants loans only on satisfactory proof that the supply of water is adequate, that the water can be used profitably for irrigation and that the borrower can give adequate security while it has also to be ascertained that the Irrigation Department has no objection to urge investigation on these lines necessarily takes time, but under the existing arrangements avoidable delays are rare and the period of the enquiry has been shortened from years in some cases to a few months.

Boring.—Water in greater or less quantity is an absolute necessity under any agricultural conditions. Water may be secured in rivers or canals or by storage in tanks and much of it actually is obtained in this way. In many cases, however, direct supplies of this kind are not available, and then the ryot has to think of some other way of securing water. The obvious thing to do is to sink a well. A large number of wells have already been sunk in this Presidency, but the number is still inadequate. When a ryot sinks a well, he does so more or less in the dark. He cannot tell whether he is going to strike water until the well is nearly completed, when if his well proves a failure, he finds that his expenditure of, perhaps, several hundred rupees has been fruitless. It is here that the boring section of the department is of assistance, by enabling the ryot to explore for water more expeditiously and chiefly by employing a boring set than by sinking a well. If the boring fails to tap water, another trial may be made somewhere else; if water is discovered, a well can then be put down in the ordinary way. The cost of well sinking is so great that ryots rarely go beyond 30 feet, but it has been found that sweet water has been met with very much further down and the use of boring tools enables us to explore for these deeper supplies also. The department having put down several thousand borings all over the Presidency is often able to give ryots some sort of idea as to whether they are likely to find water or not.

The department has now in operation 9 power drills and 57 hand drills. The drills employed by the department are of two kinds: hand and power. A hand drill is used where borings are shallow and the soil is soft. For boring in hard or rocky strata, or in cases where it is necessary to bore to a considerable depth, a power drill is necessary. The power drills in use during the last few years having proved quite insufficient to meet the needs of the public and other departments of Government arrangements were made for the purchase of additional drills. It was considered advisable, however, that before entering into contracts for the supply of these, the subject of modern boring practice in Great Britain and the United States should be first studied by the Industrial Engineer with a view to obtain the types of drills which are best suited to the conditions in the Madras Presidency, and to carry out an investigation into boring conditions and methods of operation. Drills for use in the Madras Presidency must be capable of being managed by the class of labour which is available to work them, while the relative spheres of usefulness of the hand and power drill also required investigation. There were many other problems, in connection with boring operations in respect of which the knowledge of the department was admittedly imperfect and which required investigation in the light of the latest practice. For instance, much more information was required in regard to the efficient operation of drills under varying conditions of strata which are ordinarily met with. The question of keeping the bore hole clear during the drilling operation required study, while another point for investigation was that of the size of the bore-hole. In short, it was considered vitally necessary that the department should bring its knowledge of modern boring practice up-to-date, and that before entering into contracts for the supply of the requisite power drills, the Industrial Engineer should be deputed to visit the United States where both oil and water drilling are highly developed, to study the latest American practice. The great importance of developing agricultural and boring operations in the interests of the economic development of the Presidency appeared to fully warrant the deputation of an officer

for the purpose. Accordingly Government sanctioned the deputation of the Industrial Engineer to Great Britain and America and he returned therefrom in April 1925. Arrangements were subsequently made to obtain from America three power drills in accordance with the Industrial Engineer's recommendation and these have been assembled in the departmental workshops and have undergone preliminary trials. One of the new drills was set to work in Tondiarpet, Madras, and the daily outturn of work obtained from the drill compared very favourably with that of the old drills, 7 to 8 feet of hard rock having been bored through in a day of 8 hours, whereas with the old departmental drills only from 6 to 24 inches could be drilled in rocky strata per day and slightly more in soft rock. The Industrial Engineer, on his return from deputation, submitted a comprehensive report on the subject of modern drilling practice which contains a great deal of valuable and interesting information and it is anticipated that a gradual and progressive development in drilling operations in this Presidency will result from the Industrial Engineer's investigation. The total depth bored during the last official year was 27,087 feet, the average depth of a boring working out to about 53·3 feet.

Pumping sets.—Well-irrigation in the ordinary way is expensive, and about 25 years ago, the department proved that for lifting water it was often both possible and advantageous to substitute mechanical for animal power. It is often a very paying proposition to put down an engine and pump, but in every case, a very careful preliminary investigation is requisite and this the department is always pleased to conduct. The department maintains a number of pumping plants comprising oil-engines and pumps. These are of two kinds, one of which is used for pumping water for irrigation purposes, and the other for baling purposes in connection with the sinking of wells. The former, which comprises crude oil-engines and pumps, is maintained for the purpose of (1) demonstrating to the ryots the advantage of lifting water by mechanical power and (2) watering crops to save them from withering pending the repair of an existing installation. The second type of plant, which consists of kerosene oil-engines and pumps, is utilised in connection with the construction and sinking of wells. For several years it has not been found possible to comply with more than a small proportion of the applications received for assistance, and accordingly Government have sanctioned the purchase of 12 new pumping sets at a cost not exceeding Rs. 42,000 an indent for the supply of which has been placed with the High Commissioner for India.

Torpedoing.—The torpedoing sets possessed by the department are used for blasting boreholes in rocks in the hope of exposing water sources in the fissures caused by the explosion. Torpedoing is tried as a last resort when a bore through a rock fails to find water. Twenty applications for torpedoing sets were disposed of during the last official year.

Rules for the levy of fees.—A copy of the rules for the levy of fees in connection with the pumping and boring activities of the department is attached* for the information of the members of the Commission. The main object of these operations is to increase the agricultural wealth of the country and as such the fees charged are only nominal. The cost of the district staff, of their travelling, and of the transport of plant renders it impossible, without restricting the value of the work that is now being carried on, to make the engineering branch self-supporting, but with the increasing popularity of the services rendered, and the considerable reductions effected during the last few years in the departmental workshops and in other directions, the net cost of this branch of the department has been materially reduced and there can be no doubt that the public is getting good value for the expenditure incurred.

Industrial Engineering Workshops.—In the departmental workshops at Washermanpet, the machinery employed by the Pumping and Boring and other branches of this department is maintained and repaired. A considerable and increasing volume of repair work is also executed for private individuals who have compounded installations and for other Government

* Not printed.

and *quasi*-Government departments. Experimental work is also conducted and tests are carried out of new boring tools and departmental plant, both of the Engineering and other branches of the department, manufactured or repaired at the workshops. Further, the workshops provide the necessary training facilities in the assembling and operation of drills and departmental machinery as well as of improved tools and appliances designed by the department, for such of the subordinates of the engineering branch of the department as are newly recruited or require special training. The workshops have been organised with reference to the particular needs of the department and are capable of turning out the work required of it both economically and rapidly. The latter is obviously an important consideration since it is necessary for the departmental repairs to be carried out expeditiously as, if delay occurred in the repair or replacement of an important part of a pumping or drilling plant, not only would the department lose the hire of the machinery but what is perhaps more important, the ryot would often lose a considerable part of his crop.

QUESTION 17.—AGRICULTURAL INDUSTRIES.—(b) The question of organising and developing cottage or rural industries with special reference to those industries which are suitable as subsidiary occupations for the agriculturists during the slack season is at present engaging the attention of the Department of Industries. As a preliminary it has been decided that a survey of cottage industries in the Presidency—existing and potential—should first be made, and that the task of developing and organising them and introducing new industries should then be taken in hand. Until the results of the survey are available, and I have had an opportunity of studying the question further, I am unable to make definite suggestions in regard to the adoption of subsidiary industries.

(c) *Fruit-growing.*—The Department of Industries has been concerned only with fruit-growing on the Nilgiris in connection with the Fruit Preserving Institute at Coonoor. The object of starting this Institute was to create an organised fruit-preserving industry on the Nilgiris and incidentally to develop fruit culture to supply the requirements of the factory as well as the public needs and to benefit fruit-growers, actual or prospective. The factory building was completed and the requisite plant and fittings were installed during the year 1922-23 and experiments were made with the following among other fruits for the manufacture of jams and jellies; bananas, hill guavas, pineapples, mangoes, oranges, ordinary guavas, peaches, pears, pomelos, raspberries, strawberries, sweet limes, tree tomatoes, and tomatoes. It was demonstrated that jams of fairly good quality could be manufactured, but it was not found possible to displace from the market the imported brands of jams which are already well-known to consumers. Further even if the whole of the present import trade in jams and jellies could be captured, the sales of the factory would not have amounted to a figure representing an economic output. Jam in the case of Indians is more or less an acquired taste and the conclusion arrived at was that the consumption of jams and jellies was not likely in the reasonably near future to increase to a point at which the factory would pay, or in other words, the demand for the products of the factory within the area which it served or could ever hope to serve appeared to be insufficient to absorb an economic output. Government accordingly decided last year that the Fruit Preserving Institute should be closed. Prior to the establishment of the factory a considerable quantity of the fruit grown on the hills was apparently allowed to go to waste owing to the absence of a steady market for it and the establishment of the factory had the effect of stimulating the cultivation of fruit on the Nilgiris. There is a good demand for fruit during the hill season, but during the remaining part of the year, the demand is considerably smaller. It may be expected therefore that the closure of the factory will result in a decrease in fruit cultivation on the Nilgiris or at least will restrict its extension.

Sericulture.—The Government are already taking active steps to expand sericultural operations in the Madras Presidency. There is only one portion

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of the Presidency in which sericulture forms an important industry at present, and that is the Kollegal taluk of the Coimbatore district where there are 11,000 acres of land under mulberry cultivation and sericulture forms the main occupation in many villages. The magnitude of the industry may be gauged from the fact that in the Kollegal taluk Rs. 30 lakhs worth of raw silk are manufactured annually. Investigations which have been carried out with a view to determining in which other parts of the Madras Presidency suitable climatic and other conditions requisite for sericultural operations obtain indicate that a number of tracts in various parts of the Presidency either fulfil the necessary climatic conditions or offer other facilities requisite for worm propagation in the cooler months and that the Mysore worm which is the species best adapted for the climatic conditions prevailing in the plains of this Presidency can be successfully reared in many parts where the atmospheric temperature ranges from 75° to 80° F. with 50 to 70 per cent of humidity at least during some portions of the year, and that the bush mulberry which forms its food may be grown over a wide range of soil and in climates possessing an annual rainfall of 45 inches or otherwise possessing irrigation facilities. New tracts have been brought under mulberry cultivation in several districts, the total acreage amounting at present to 80 acres and 90 cents.

The following are the sericultural activities of the department:—

- (1) A peripatetic rearing party tours the villages of the Kollegal taluk and instructs the rearers how to carry out the testing of moths and the handling of the worms.
- (2) The silk farm at Coonoor has been constituted into a central distributing station for eggs or seeds and into a research institute for cross breeding of worms of different species. For this purpose the mulberry plantation at Coonoor has been extended by the addition of a further 10 acres of land and the construction of a rearing house has been decided upon.
- (3) A Silk Superintendent has been deputed to the various selected localities outside the Kollegal taluk to assist private persons in the choice of suitable land for the planting of mulberry and for pruning, weeding and eradicating pests which attack the plant. During the rearing season the duty of the Superintendent is to rear one or two crops with the help of the weaving *maistris* at the respective stations. The silk farm was located at Coonoor partly because worms reared at a high altitude are more vigorous than those bred in the plains, and partly because the seeds are more free from disease and the worms produced from them spin good cocoons and yield a greater remuneration to the rearers. Moreover the climate of Coonoor is best suited for conducting research in cross breeding. The Coonoor seeds sold to Kollegal rearers yield superior and healthier cocoons from which the rearers secure a good crop. Unfortunately the mulberry planted at Coonoor has recently been attacked by a virulent powdery fungus disease and the Government Mycologist is now carrying out experiments with a view to its eradication. Pending the result of these experiments the construction of a rearing house for the station has had to be deferred. During the last official year 10,510 layings of seed were supplied from the Coonoor farm to Kollegal and 2,845 layings to the newly-started sericultural areas in other districts of the Presidency. The proportion of the Kollegal requirements of seed, which can be supplied from the sericultural station at Coonoor, is at present relatively small, the total requirements amounting to about 75 lakhs of laying per annum. Even when the operations at Coonoor are fully developed, it is not anticipated that it will be possible to produce more than 3 lakhs of laying per annum for distribution to the rearers in Kollegal. Obviously therefore the bulk of the rearers will still have to depend upon Mysore for supplies, and hence efforts are being made by the department to

educate the rearers to test their own moths. It is with this object that the use of the microscope is demonstrated by the peripatetic rearing party. The industry has been so long established in Kollegal that the ryots of that area possess already a knowledge of mulberry growing, of rearing of worms, and of the production of silk. The one difficulty with which they are faced is the prevalence of "pebrine," a disease with which a large proportion of the moths is infected, and which results in the death of the silk worm at the very time when the rearing operations are almost over and the worm is ready to spin. Much of the disease results from ignorance, neglect and unsuitable rearing houses and, as silk worm rearing is purely a cottage industry, the peripatetic rearing party is obviously the most effective agency for demonstrating the importance of pure air, space, cleanliness, regular feeding, etc., to the rearers in their own homes. The rearers are gradually becoming convinced of the superior qualities of tested seed and the greatly improved prospects of raising crops by the use of such seeds.

(d) In connection with the development of industries the policy of Government has been—

- (i) to start pioneer industries with a view to ascertaining the commercial possibility of manufacturing articles not produced in the Presidency, and
- (ii) to grant State aid under the provisions of the Madras State Aid to Industries Act to private enterprise for starting new industries.

In view of the facilities offered by the State Aid to Industries Act, Government consider that the experimental work of the Department of Industries should not ordinarily go beyond the laboratory or preliminary investigation stage and pioneer manufacture on a commercial scale should be left mainly, if not entirely, to private enterprise.

As Madras is primarily an agricultural Province, the development of industries is likely to be chiefly in the direction of converting and working up into manufactured or semi-manufactured form the agricultural and forest products of the Province. I doubt, however, whether, generally speaking, it is necessary for Government to take an active part in the establishment of industries connected with the preparation of agricultural produce for export or consumption. Many of these have already been developed considerably by private enterprise and financial assistance for the establishment of new or nascent industries is afforded by the State Aid to Industries Act. For example, the Kallakkurichi Co-operative Agricultural and Industrial Society has been granted a loan of Rs. 18,600. The main activities of this Society, whose factory is well situated in the centre of a large agricultural area, consist of the milling of rice and the decortication of ground-nuts. The crushing of sugarcane and the manufacture of jaggery have also been undertaken. There is undoubted scope for the establishment of many similar factories in other areas for the utilisation and working up into manufactured form of the agricultural products of the Province, and it is perhaps in the direction of assisting financially industrial co-operative societies of this kind that the Act will find its greatest scope and usefulness.

There is another direction in which the Department of Industries can assist in regard to the development of agricultural industries and that is in experimenting with a view to the evolution of improved machinery for the preparation of agricultural produce, *e.g.*, a ground-nut decorticator. The trade in ground-nuts is of great economic importance to Madras, the exports in the last three years having averaged about 850 lakhs of rupees or an average of slightly over 22 per cent of the total export trade of the Presidency. The condition in which the kernels are shipped, however, leaves much to be desired and if an improvement in this respect could be effected, the economic benefit which would accrue to the Presidency would be very great. Ground-nuts from

the Coromandel Coast and also to a lesser extent from other parts of the Presidency, arrive at Marseilles in a heated condition and this is ascribable to the fact that the kernels are often damped before shelling and are not subsequently properly dried with the result that in the voyage, they very often heat, sometimes so badly as to become charred. The solution to this problem is the evolution of a more satisfactory machine decorticator. Two methods of decorticating ground-nuts are followed in Madras, hand and machine shelling. In the former case, the shells are almost invariably damped to facilitate the removal of the kernels with the result that the kernels become black and rancid during the voyage and frequently arrive at Marseilles in a heated condition. The oil produced from such kernels is rancid and bitter and being inedible is used chiefly in the manufacturing of soap. In the case of machine shelled nuts, the shells are not damped at least to anything like the same extent and in consequence arrive in a better condition and command a higher price since they are utilised for the production of edible oils. In the process of shelling by machinery fewer kernels are also broken. The producer thus gets a better price for his produce and the export merchant secures kernels which are not so badly damaged and at the same time are dry and comparatively free from stone and dirt. In the Ceded Districts, the ground-nut crop is decorticated mainly by machinery and a number of decorticating machines have also been installed in Vizagapatam, Tanjore, Trichinopoly, Salem, Coimbatore and North Arcot. On the other hand the crop in South Arcot and Chingleput is shelled almost entirely by hand.

The machines which are in general use for decorticating ground-nuts are not satisfactory as the breakage of kernels is considerable. A high percentage of broken kernels is a serious defect as rancidity often spreads from the broken parts during the voyage. The problem of evolving a machine capable of shelling dry nuts with a minimum amount of breakage and which can be supplied at a price within the reach of the ryot or small factory owner is therefore one of great importance. If a satisfactory decorticator could be evolved, and if export firms placed, as they no doubt would, a premium on the price of undamaged whole nuts, shipments of Madras ground-nuts would arrive at Marseilles in a much better condition and would realise an appreciably higher price than at present.

Cotton-ginning.—There are already a considerable number of cotton ginneries in the several cotton tracts of the Presidency and there is no necessity for Government to set up ginning factories in any district.

Rice-hulling.—There is no necessity for Government to demonstrate or pioneer the hulling of rice by machinery as the industry is already highly developed in the rice-producing districts.

(f) In my answer to question 17 (b), I have referred to the projected survey of cottage industries. It is hoped by this survey to collect detailed information regarding the existence of cottage and rural industries, the methods in force, tools and appliances used, and the number of persons employed in them, as also with reference to such questions as the availability of the requisite raw materials and markets for finished products. It is hoped that the result of this survey, when available, will afford a basis for the extension of rural industries on an economic footing, and for the organisation on an increased scale of subsidiary occupations for the agriculturists. The problem is, however, rendered difficult by the fact that cottage industries, unless resorted to as subsidiary occupations, are for the most part uneconomical. The remedy in such cases is the formation of co-operative societies.

Oral Evidence.

13955. *The Chairman: Khan Bahadur Bazl-ul-lah Sahib Bahadur, you are Director of Industries under the Government of the Madras Presidency?—Yes.*

13956. You have provided the Commission with a note of the evidence which you desire to give. I should like to know whether at this stage you wish to make any statement in amplification of that statement or whether you would like me to proceed at once to ask you one or two questions?—I am an administrative officer, not a technical officer. I have taken over charge quite recently, three or four months ago. I do not think I shall be able to make any useful statement.

13957. I understand that these notes of evidence which you have provided us with are to be read in conjunction with the Memorandum on Subsidiary Occupations which has been in the hands of the Commission for some time. Are you familiar with that note?—I have not seen the note; beyond the Questionnaire I have not been furnished with anything.

13958. Then I should like to take you to the text of your written answers to our Questionnaire, and to ask you questions on them. On page 446 in answer to our question 8 (a) (iii) you say, "helping ryots with loans to sink or deepen wells and for the purchase of pumping plants." How are you going to help the ryots to do that?—Pumping plants are used to pump out the water when it prevents further operations of boring. I have brought my Industrial Engineer, Mr. L. S. Pinto, with me.

13959. Would you like him to sit by you?—Yes.

13960. There is no reason why he should not answer the technical questions himself; I shall take it unless you say otherwise that you agree with everything he says?—I will correct him where necessary.

(At this stage Mr. L. S. Pinto, Industrial Engineer, was called in).

13961. How do you go about helping the ryot with loans to sink or deepen wells and for the purchase of pumping plants?—*Mr. Pinto:* First of all, we put down a bore for him; if he decides there is enough water there, he sinks the well. Generally water is found in coastal districts close to the surface. When he digs deeper down so much water comes in that he cannot dig any further because the diggers cannot go down; so we pump out the water for him; we pump with high speed engines for about 15 minutes; this gives him time to dig further down; the water collects again, and again it has to be pumped out.

13962. Who pays for the pumping?—The ryot pays.

13963. There is no question of giving him anything for nothing?—Absolutely not. In this connection, I may say that in the interests of the Agricultural population, it is advisable to reduce the fees that are levied at present if they cannot be abolished altogether. At present the fees are high, and I think they prevent the ryot from taking full advantage of the service.

13964. Are the fees charged more than paying the cost of the work?—No, but I think it will be a great advantage to the ryots if we reduce them. It will tend to develop agriculture.

13965. You think it will be in the interest of the country if the ryot is helped to that extent at the expense of the general taxpayer?—Yes.

13966. You say, "Deepening wells in hard strata with special drills." In this Presidency, is the subsoil water table sinking?—*Mr. Pinto:* Not that I know of, except perhaps in certain tracts of Coimbatore where the water is derived from rocky strata.

13967. This is a matter of deepening wells which ought to have been made deeper in the original instance?—In the case of wells sunk by ryots (I am speaking of wells in rocky strata) the wells are generally dug over a very large area, say 100 ft. by 100 ft. He goes down to 20 ft. and finds a certain amount of water by percolation through fissures or cracks

in the rock; the percolation is very slow through hard strata, and the water he gets overnight is not enough to last for the day. If he deepens that and enlarges the percolation area he will get a larger quantity of water and naturally he irrigates more land. That is the object in deepening wells.

13968. Before we proceed any further, Khan Bahadur, may I know the extent of your responsibility in the matter of irrigation; do you go outside well-irrigation at all?—No.

13969. Not at all?—Not at all; we provide facilities for pumping water from wells, but we do not proceed beyond well-irrigation.

13970. Do you not proceed beyond well-irrigation to the point of lifting water from channels?—No; but in certain cases the ryots ask us, and we simply arrange for their plant; they work it and maintain it; we help them in that way.

13971. That is pumping from channels or from rivers?—Also from the rivers, provided they get permission from revenue authorities.

13972. So, if I correct my original question and say that the scope of your responsibility does not extend beyond power-lifting of water, that would cover the whole thing?—Yes; it does not extend beyond power-lifting.

13973. You have been good enough to give a very interesting and a complete annexure* containing an account of the pumping and boring operations in the Presidency. That, I think, speaks for itself. May I ask you to take page 451 of your note; you are answering our question 17 (b) about Agricultural Industries; perhaps we had better call these spare-time occupations?—Yes.

13974. You say, "The question of organising and developing cottage or rural industries with special reference to those industries which are suitable as subsidiary occupations for the agriculturists during the slack season is at present engaging the attention of the Department of Industries." As a preliminary you have decided to conduct a survey of the spare-time occupations amongst the rural population in the Presidency. Will you tell the Commission how exactly you are conducting that survey?—We have not initiated the survey yet. I have asked for the services of a special officer to start the survey and I have not heard from Government. The lines on which I propose to make the survey are to collect information regarding the history of each industry showing when it was started, where it is carried on, how many people are employed in it, whether they are full time workers, or part time workers and if the latter, how long they work and what other work they do.

13975. Have you formed any view yourself as to which spare-time occupations are likely to afford the best hope of useful employment for the cultivators?—I think spare-time occupations should chiefly be in the way of converting and working up into manufactured form the agricultural and the forest products of the country.

13976. Forest products?—As well as agricultural products.

13977. Do you think there is advantage in the ryot working up his own raw material rather than having to purchase partly manufactured goods or raw material from other sources?—Yes, for his own needs and for the needs of the locality.

13978. I take it that is really all the information you have to give the Commission on that point since your survey has not yet been initiated?—Yes. In regard to that, I consider that although we have got here an Act, called State Aid to Industries Act, which provides for State aid to these spare-time industries, so far as the spare-time industries are concerned the Act has remained a dead letter because the Act, I think, is not simple enough nor is it liberal enough, to enable these spare-time industries to avail themselves of its provisions. The Act requires a certain amount of security to be furnished and these spare-time industrialists will not be able to furnish that security.

* Not printed.

13979. Have you considered the possibility of getting over that difficulty by interposing a co-operative organisation?—I have not looked into it in great detail, but I think the Act will have to be suitably amended, or a new Act will have to be framed to meet the case of these cottage industries.

13980. Have you considered the possibility of interposing a co-operative organisation between the department and the cultivators in employing that Act?—Yes. In fact, that is one of my ideas. I think these loans ought to be advanced to co-operative societies who would be able to advance the loans on the personal security of the individual industrialists.

13981. May I turn to page 451, "Agricultural Industries—Fruit-growing." I do not know whether you would agree with me that the story of the fruit-preserving experiment seems to be a very sad one?—It is a very sad one; I agree with you, because although I am satisfied that it was want of a market that brought about the collapse of the concern, I personally think that if proper investigations had been made in other directions, for instance in the way of preserves, syrups, and things of that sort, possibly there would have been a market. Jams and jellies, as I have said in my note, are more or less an acquired taste among Indians and even if we could have captured the whole of the export trade, we probably would not have had a satisfactory market. But syrups and preserves and things of that sort have not been tried and I am glad to find that Sir Frederick Nicholson has taken over a portion of the machinery with a view to trying it on preserves and syrups. If he meets with success, he might start a small industry. At present, as I have said in my note, on account of the closure of the factory, fruit cultivation in the Nilgiris is likely to be a great deal restricted.

13982. You will probably agree with me that the one and only consolation in a failure is to try and make use of the failure as a lesson for the future?—Yes.

13983. With that in mind, I want to ask you whether you can tell the Commission, whether some preliminary commercial survey, as distinct from a technical survey, was made before this venture was launched?—I think the venture was launched at the instance of Sir Frederick Nicholson who I am sure, must have made some preliminary survey, but I am not sure whether any preliminary survey was actually made.

13984. You know that in the choice of management there are always two considerations, technical experience and commercial experience and management?—Yes.

13985. You probably agree with me that by far the most difficult to discover and by far the most important is the commercial experience and management?—I entirely agree with you.

13986. Can you tell the Commission who was in charge of the commercial side of this venture?—The venture is now closed.

13987. I asked who was in charge?—I think it was some European gentleman, Captain Bryant.

13988. Do you happen to know what his experience has been on the commercial side?—I do not know much about it, but I do not think he had much commercial experience; I personally think that his management of the concern was not a success.

13989. Do you think I have hit the weak spot?—I think so.

13990. You point to the fact that jams and jellies in the case of Indians is more or less an acquired taste. Do you know the figures of import into this Presidency of jams and preserves?—No; I cannot give it off-hand, but will supply later.*

* Imports of jams and jellies into the Madras Presidency:—

Years.	Quantity.	Value.
	Cwt.	Rs.
1922-23	1,067	74,553
1923-24	1,584	95,707
1924-25	1,737	98,517

13991. Is it very considerable?—I think it is fairly considerable.

13992. Is it mainly on account of the demand by Europeans, or is it also on account of an important demand by Indians?—Mostly from Europeans; very little from Indians.

13993. But there is such a thing as creating a demand by adequate advertising?—We tried it; I do not think it was possible to do it; it was not possible to displace the imported jams which have already found favour with the public, and it was difficult to compete with them.

13994. Did you try by advertisement to expand the demand among Indians?—I think attempts were made by having some sort of travelling agents, but they were not successful. My point was they did not extend the operations to other things like preserves and syrups.

13995. Do you happen to know how much capital was involved, and what is the story of the losses from year to year?—I am afraid I have not got the figures.

13996. Perhaps you could let us have those figures?—Yes.*

13997. How long was this experiment persisted in?—I think for 3 years; it was started in 1922-23, and it was closed a few months ago.

13998. Were you yourself in favour of closing it down?—I was not here; the orders were passed before I took over charge.

13999. Would you be in favour of closing it yourself?—I should not; until further experiments were made.

14000. Two years is not so long a period?—No.

14001. Do you know whether any technical experiments or experiments in technique were being made at the factory?—I do not know; probably they were being made; they must have been made because Sir Frederick Nicholson was connected with the factory, he was supervising it, and he would certainly have insisted on the technique being studied.

14002. There was no private capital involved?—No.

14003. Would you agree that where technical experiments and demonstrations are being carried on, it is sometimes more difficult to make a profit in the commercial sense than it would be if commercial considerations alone held the field?—I agree.

14004. *Mr. Kamat*: Did you advertise for private enterprise to come and take up this concern?—Yes.

14005. Nobody came forward?—Nobody.

14006. Did you disclose the cost of production?—Yes we disclosed everything but the prices offered were so low that we did not think it was worth while accepting them.

14007. *The Chairman*: I have read your notes on sericulture on pages 451 to 453 with much interest, as I am sure my colleagues have. In the matter of this fungus which is attacking the food plant, the mulberry, do you know whether that fungus has been giving trouble in Mysore?—I do not know; I do not think it has appeared in Mysore at all, because if it had appeared in Mysore, the Mycologist would have known how to deal with it. At present he does not know how to deal with it, and he is trying his best to devise means for stopping its spread.

14008. Who would be responsible in the administrative sense for seeing that the experience of Mysore was sought: your own department or the Agricultural Department? Are you entirely responsible?—I think we are entirely responsible.

14009. You find in Mysore administration a very friendly neighbour, do you not?—Yes; they are only too willing to help wherever possible; I personally think that enquiries were made, I cannot vouch for it, and it was found that there was no such disease in Mysore.

* See Appendix I.

14010. You talk about the use of the microscope being demonstrated by peripatetic parties; is it suggested that the ryot should buy and himself use a microscope?—Yes; the ryots or a small co-operative society can do it; a microscope costs about Rs. 200 to Rs. 300, it is not much; a few ryots can join together, or the whole village may do so, and they will be able to test their own moths, provided they know how to use it.

14011. Could you give the Commission a statement of the volume of the silk trade in the Presidency and its value? If you cannot do it now, you could let us have it?—I will let you have it.*

14012. On page 453 you mention the Madras State Aid to Industries Act, in your answer to our sub-section (ii), section (d), of question 17, I should like to ask you a general statement of the provision of that Act; you have said something about it already?—Yes.

14013. Can you tell us a little more about it? With regard to the applicability, as regards the details of its provisions, it empowers you, I understand, to place the general funds of the Presidency at the disposal of industries on certain conditions?—With regard to new or nascent industries or industries which have not been developed in a particular area and cottage industries; these are the industries which are eligible for State aid.

14014. Established industries have no claim?—No.

14015. You told us, I think, that security must be available?—The whole of the assets of the concern is to be the security.

14016. In the form of real estate or in any form?—In any form but no loan should be made exceeding the value of 50 per cent. of the net assets.

14017. Is any interest charged?—Yes, it is now $6\frac{1}{2}$ per cent.

14018. Is the rate of repayment fixed?—Yes.

14019. Is it the same in every case?—It varies according to the terms of the grant.

14020. What is the period of the loan, as a rule?—It is 20 years.

14021. It is all long-term?—Yes.

14022. *Mr. Kamat*: Is there no limit to the amount advanced?—No.

14023. *The Chairman*: If you would like to reserve any of these points, you may let us hear about them afterwards; one does not carry all the details in one's head?—Yes.

14024. You said quite definitely that in your view the Act, as at present framed, does not enable you to do what you would like to do for spare-time occupations amongst the rural population?—It does not; the Act requires and insists upon a proper system of accounts being kept and the accounts being audited by a Government auditor, and the property has to be insured. All these things are not applicable to a cottage industry, because the cottage industrialist will not take the trouble to maintain accounts on the scale required by the Act, and he would not incur the expense of insuring the property.

14025. You say, "the experimental work of the Department of Industries should not ordinarily go beyond the laboratory or preliminary investigation stage and pioneer manufacture on a commercial scale should be left mainly, if not entirely, to private enterprise." So that your department, under the terms of this Act, does undertake a certain amount of preliminary scientific investigation?—It does.

14026. At the request of the manufacturer?—Yes; we start the thing as a pioneer factory, make the investigation, and then hand it over to private enterprise.

14027. You finance those preliminary investigations, do you?—Yes, we do.

* See Appendix II.

14028. Have you ever undertaken investigations at the request and at the expense of established industries?—There have been no cases where such applications have been made.

14029. Would you consider them favourably?—Yes.

14030. What machinery for research is at your disposal?—We have got a laboratory in connection with the Textile Institute, and we have got a similar laboratory for sericulture in Coonoor. We have got the industrial workshop. The laboratory in the Textile Institute is used in connection with the Leather Trade Institute also.

14031. The point I notice and which will interest the Commission is in the middle of page 453. There you talk about the Kallakkurichi Co-operative Agricultural and Industrial Society having been granted a loan of Rs. 18,600?—Yes.

14032. Is that an old established co-operative society?—Yes.

14033. Are there many such societies in the Presidency?—Not many, unfortunately; I wish there were more.

14034. Do you happen to know when it was established?—I cannot give you the year, I think it was established about 8 years ago.

14035. And it has proved a success?—Yes.

14036. It is working under the Co-operative Department?—No, the Co-operative Department exercises supervision over it, but it is more an agricultural and industrial society on a co-operative basis.

14037. Have you had applications from any other co-operative organisations for assistance?—No.

14038. Then you are talking about the necessity of improving the ground-nut decorticator?—Yes.

14039. I observe from your note that you are familiar with the complaints of the market, that ground-nuts are very often reduced in value by the manner of decortication in the Presidency?—Yes; in fact, I have asked the Industrial Engineer to devise some sort of cheap and simple ground-nut decorticator.

14040. Has your department issued anything in the nature of a leaflet to the public, explaining the position and pointing out the loss in value which this practice involves?—I think we have issued a leaflet.

14041. Is it in the vernacular or in English or both?—I think I saw it in English; I am not sure if it is in the vernacular.

14042. Perhaps you would let us know?—Yes.

14043. Perhaps you would let us have copies of that?—Yes.

14044. Has your department considered the advisability of extending the use of the wind-mill as a source of power for agricultural purpose?—*Mr. Pinto*: There are very few wind-mills in this Presidency and the capacity of a wind-mill to pump for irrigation is limited; it wants a certain velocity of wind, which is absent in most of our districts.

14045. Does that include the sea coast?—Including the sea coast; in Madras a wind-mill was actually tried, but it was not found to be economic: it did not give enough water at the existing rates of the velocity of wind prevalent in Madras.

14046. The public think that the question is very simple, but as a matter of fact it is not so simple. Am I not right in saying that it is a technical and difficult subject?—It is.

14047. Are you satisfied that sufficient experiments have been carried out by sufficiently skilled persons to establish the fact that the wind-mill can make no contribution towards the agriculturist's problem?—I cannot say that; the only experience I have is of a certain party in a certain district who asked me if we could put up a wind-mill to pump the water from his well, for irrigation purposes. I asked the wind-mill manufacturers in Great Britain and America and sent them the average velocity of the wind prevalent in the district.

14048. *Professor Gangulee*: Which district is it?—Cuddalore; and they told me that the velocity was not sufficient to give a sufficient outturn. I forwarded the correspondence to the party, and there the matter rests.

14049. *The Chairman*: I should like to have, if possible, a statement as to whether you are satisfied that the persons in charge of that experiment were qualified?—The experiment was made by Sir Alfred Chatterton about 10 or 15 years ago.

14050. Are you referring to the experiment made in 1920?—No, not the 1920 experiment.

14051. Do you know anything about the experiment made in 1920?—No.

14052. *Sir Ganga Ram*: Are you a Civil Engineer?—I am a Mechanical Engineer.

14053. Where were you trained?—In England.

14054. Where?—In Armstrong College, Newcastle-on-Tyne.

14055. Are you a Member of the Institute of Mechanical Engineers?—Yes.

14056. Do you know that the minimum velocity of wind which is required to work a wind-mill is 20 miles an hour?—Probably; I cannot tell you.

14057. What is the shape of wells generally in this Presidency; do they make rectangular wells or circular wells?—They are both rectangular and circular.

14058. Do they sink wells?—Yes, in connection with pumping plant.

14059. Rectangular wells are generally made in hard strata?—In Coimbatore all the wells are rectangular; and in soft soils where water is obtained from sandy strata, the wells are generally circular.

14060. How far have you taken the borings?—Up to 500 feet.

14061. Have you any section of a boring?—I may have a section.

14062. Will you send me a section of a boring?—Certainly.

14063. What kind of rock do you bore, stratified rock?—All kinds of rock.

14064. There must be a different strata. Is it stratified?—We might have stratified rock.

14065. Have you tried this torpedoing method?—We generally try it in granite.

14066. It is rather applicable to stratified rock?—It is, if you have hard stuff with fissures in it.

14067. You may take it from me that it is really applicable to stratified rock so that you can put the dynamite or powder; it will shatter it and cause more fissures for water to come in?—Yes.

14068. When you find scarcity of water in trap rock you bore it?—Yes.

14069. When you find scarcity in the other wells, what do you do?—We bore them also.

14070. How far do you bore?—That depends on the financial capacity of the ryot, how far he wants us to go.

14071. But you must go down to the sand level?—No; if he has not got the money we cannot go on.

14072. Then that boring is of no use?—Boring is no use unless you find water.

14073. But you must find water-bearing stratum?—Yes, but if the man has no money we cannot work on credit or free of charge.

14074. And if any person wants you to advise him as to the size of the engine are you able to do so?—Yes.

14075. Perhaps you have read the book written by Mr. Chatterton on Lift Irrigation?—I believe I read it some years ago.

14076. He says that one of his pet wells earns Rs. 2,000 an acre; is that right?—I cannot remember.

14077. Can you give me any idea of the cost of raising water from the wells?—The cost of raising water depends upon the depth, on the total lift.

14078. But how much is it per foot of lift per acre; can you tell me?—I cannot tell you off-hand.

14079. Will you calculate it and give me the figure?—Yes.

14080. The cost of lifting water per foot of lift per acre, or if it is a sliding scale then give me the formula?—Yes.

14081. Are you aware of this new system of combining wells and pumping from one station by compressed air?—Yes.

14082. Have you tried it anywhere?—I have not tried it here.

14083. *Sir Thomas Middleton*: Has it come to your knowledge that there have been great improvements in the designing of wind-mills in the last 6 or 8 years?—Yes; I know there have been considerable improvements.

14084. Have you heard of the systematic tests conducted by the Agricultural Engineering Department at Oxford University in 1923-24?—No.

14085. I am going to suggest that you might apply for the report on these tests, you can get it if you address the Ministry of Agriculture, London?—Thank you.

14086. A large amount of research work has been done and I think you will find that former ideas as to the wind-velocity required will have to be revised?—Yes.

14087. Are there any districts in the Presidency in which you have made a sufficient number of deep borings to suggest that there may be large supplies of untapped water at depths of 200 or 300 ft?—We have not made a sufficient number of deep borings in any district.

14088. I see you refer to the fact that your tools will now bore to 350 ft?—We have got drills now that can bore to 1,000 feet.

14089. What number of deep borings exceeding 300 feet have you been able to make so far with your new tools?—Three.

14090. And from that you can form no estimate?—No estimate at all.

14091. *Dr. Hyder*: What is the cost of a decorticating machine?—If they are made in India they cost about Rs. 300.

14092. Do Kirloskar Brothers supply you with these machines?—Yes; they also make decorticators.

14093. Do you prefer step-wells to draw-wells? I find in your Presidency that you have got to go down by means of steps to fetch water from the wells. Is that preferable to the other system of draw-wells, that is to say, circular wells?—We are only concerned with wells for irrigation; with wells for irrigation you do not go down at all to fetch water by hand. Either you use the bulls, or a *picotta* worked by man, or an engine. We are not concerned with water for drinking purposes.

14094. By these *picotta* you are referring to that device of a long beam of wood?—Yes.

14095. But they are open, are not they a sort of reservoir?—They are wells; they pump their wells where the lift is very low; they may be open pits.

14096. *Dewan Bahadur Raghavayya*: A special officer was appointed to collect exhibits for the Wembley Exhibition?—(Khan Bahadur Bazl-ul-lah Sahib Bahadur). Yes.

14097. Has he left any information which would enable you to form an idea as to which cottage industries are most prevalent in the country?—He has only left a list of exhibits at the Exhibition.

14098. He has left no literature on the subject regarding the extent to which these industries are practised?—No.

14099. *The Raja of Parlakimedi*: Do you get frequent applications for well-boring sets?—Yes.

K. B. M. Bazl-ul-lah Sahib Bahadur.

14100. What are the factors you take into consideration before you comply with such requests?—The only factors are whether we can spare a boring set and whether the man can afford to pay the fees in advance. These are the two factors which are taken into consideration.

14101. Do you not take into consideration the area also?—Area of what?

14102. The locality. Suppose there is a demand from a dry area and also a simultaneous demand from a wet area, do you not give preference to the latter?—No; we do not.

14103. You simply follow the order of receipt of the applications?—Yes; also suppose there is a boring set working in any particular locality, if we get an application from near that locality, at the time we apply it there in preference to some other boring applications which were made previously in a different locality further away, so as to enable us to carry the set easily to that place; otherwise it will mean heavy transport charges.

14104. But if the ryot is prepared to pay that of course you comply?—We charge a fixed transport charge whether it is next door or 100 miles away; the transport charges are fixed.

14105. You mention in the note that you have 40 in number; is that sufficient?—It is not sufficient; we could have more.

14106. So there is a greater demand for such things than you can afford to supply?—Yes.

14107. What is the official formality the applicant has to go through to get a set of borings?—No formality at all. He simply applies either to the local Supervisor or to the local Assistant Industrial Engineer or to the Director of Industries. He simply says, 'I wish to have a boring set in my land at such and such a place' and if we have a boring set free anywhere near we send it to him, or we tell him, 'all right we have registered your application and will send you one as soon as one is free'. When we have a number of applications registered in the locality we simply say 'you will have to wait and take your chance after the others have been satisfied'.

14108. You mention in your note that Rs. 15 is fixed as fees for lending machinery for different purposes?—That is only for the inspection.

14109. Do you not think that some smaller rate should be charged if the application is entirely for the benefit of agriculture?—I have already said it should be reduced.

14110. *Sir James MacKenna*: You have twice said, once in reply to the Chairman and once in reply to the Raja Sahib, that you regard the fees as high. Would you like them to be reduced, if not abolished?—Yes.

14111. At present I suppose the fact of the matter is that this well-boring proceeding is quite outside the scope of a small cultivator. He must be a successful cultivator and well-to-do before he could take the question up?—Yes.

14112. Then I take it it would be possible to instal a pumping set which would benefit a collection of small lands belonging to a group of smaller holders?—Yes.

14113. Do you think it would be justifiable to suggest that in a case like that the scheme should be financed by a grant-in-aid from Government to the extent of half the cost of installation, the other half being met by the group of cultivators concerned?—That is a good idea provided you have a group of cultivators, or a co-operative society. You cannot do it otherwise.

14114. What will be best?—Yes.

14115. Once that grant-in-aid has been given the maintenance should be carried out by the group?—Yes.

14116. You think that scheme is worth following up with a view to getting at the smaller cultivator?—Yes.

14117. One or two questions about your State Aid to Industries Act. You told us that you finance up to 50 per cent. of the scheme?—Yes. 50 per cent of the value of the net assets.

14118. Have you had any applications approximating to 10 lakhs?—We have given a loan of Rs. 4,50,000 to the Carnatic Paper Mills.

14119. Before you give a grant of that extent what examination of the proposal do you make? On whose authority is the grant made?—The Board of Industries have to pass the application. The Director of Industries is the Chairman, and with the advice of the Board he sends the application on to the Government recommending it to the Government and after being satisfied that the assets are sufficient security, Government sanction the loan.

14120. And the feasibility of the project is also examined?—Yes.

14121. In a case like that you take the opinion of an expert paper manufacturer?—Yes.

14122. On Saturday a witness stated that if Government show the way the public will take up a scheme; is that your experience in Madras?—What scheme?

14123. He did not mention any scheme; he made a general statement that if Government show the way the public will take it up. That was largely in reference to a pioneer industry?—It is a very general statement.

14124. I think it is. Probably you would rather not express an opinion. I was going to quote one particular case we all know of a soap factory which has been a success but nobody would take it up?—It has been a success.

14125. Has nobody taken it up?—No. We have not decided to hand it over to private enterprise yet.

14126. *Professor Gangulee*: In reply to Sir James MacKenna you referred to the Board of Industries; I think you probably referred to the Board under the State Aid to Industries Act?—Yes.

14127. What is the exact relation of your department with that Board?—All the applications for loans have to be placed before the Board of Industries who scrutinise them. The Director of Industries is the Chairman of the Board; the Finance Secretary is a member and the Deputy Director is the Secretary of the Board; and a number of non-official gentlemen with commercial experience sit on the Board.

14128. And this State Aid to Industries Act was originally meant for cottage industries?—I do not think so; that is only one of the classes of industries which could be helped by Government; there are three classes of industries eligible for aid.

14129. The main object was not definitely for cottage industries?—I do not think so.

14130. You stated here that a loan of Rs. 4½ lakhs was made to the Carnatic Paper Mills. In that particular year did you give any loans to small industries?—You mean cottage industries?

14131. Yes.—There was no application from the cottage industries. That is what I said. The Act does not lend itself to helping cottage industries.

14132. Do you think that the public is fully aware of the advantages they might get under this Act?—I think so.

14133. In your department how many experts have you?—We have a Textile Expert; we have an Industrial Engineer; we have a Leather Expert; we have a Sericultural Assistant, a Soap Expert; and there are others called Supervisors.

14134. One for soap, one for silk, one for engineering purposes, one for textiles, one for tanning, these are the technical officers. Are these men all trained?—Yes.

14135. And they are under your administration?—Yes.

14136. With regard to the fruit industry, you are going to give us a statement, are you not?—Yes.

14137. Will you kindly include in that statement* the method of preserving?—Yes. We have not investigated the method yet.

* Not supplied.

14138. The actual method you adopted in the factory in making the jam?—Yes; whether it was a vacuum process or what process?

14139. And then the cost of production?—Yes.

14140. And the total output of jam and jellies?—For what period?

14141. From year to year. I find from the Administration Report that your loss last year was something like Rs. 20,000 for one year?—Yes.

14142. Do you know of any other industrial establishment in this Presidency which is worked at a loss?—In fact the other institutions are all instructional institutions; and they are bound to work at a loss; the Textile Institute and the Leather School work at a loss.

14143. What about the soap factory?—Last year it worked at a loss; in previous years it was working at a profit.

14144. It worked at a loss only last year. In the previous years there was a clear profit?—Yes.

14145. With regard to Sericulture. The Kollegal taluk borders on the Mysore State?—Yes.

14146. You say that the particular disease (you are probably referring to pebrine) is very serious in that taluk?—No. Pebrine is a disease which attacks the worms. I refer to the powdery fungus disease which attacks the mulberry plant. Pebrine is a disease which attacks the moth just at the time which it begins to spin the cocoons.

14147. Who are the sericulturists? Are they agriculturists also?—Most of them are silk weavers.

14148. And there are some people who are agriculturists?—They are few. In Kollegal the weavers are the sericulturists. The idea is to make sericulture a subsidiary industry.

14149. You say the rearers are gradually becoming convinced of the superior quality of the tested seed. Who tests the seed?—They can test it themselves. There is a microscope provided and they can be taught to use the microscope. If under the microscope they find that the moths are free from the disease the presumption is that the eggs of the moth are free from disease. They can have a microscope costing Rs. 300, and if individually they cannot buy a microscope a number of ryots can join together and buy one.

14150. Have you any agency for doing this?—We have an agency at Coonoor. The Silk Superintendent tours about with a microscope and instructs the sericulturists in its use.

14151. You do not mention anything about spinning and weaving. Are there no spinning and weaving centres in this Presidency?—Yes. We have five peripatetic parties going about instructing weavers in improved methods.

14152. But in recent years you have reduced the number of peripatetic weaving parties?—Yes, because we think we have done enough; they have learnt all the improved methods, and no propaganda work is necessary there.

14153. That is the reason why you have reduced the number of peripatetic weaving parties?—Yes.

14154. Have you any lac industry in this Province?—I have not investigated it at all.

14155. *Mr. Calvert*: On page 446 of your note you say, "The chief obstacle to the extension of irrigation by wells in this Presidency is the poverty of the ryot." Is it not rather the smallness of his holding?—That means poverty. The smallness of the holding is an indication of his poverty.

14156. His holding may be too small to make it worth while to dig a well?—Not necessarily; I do not think so.

14157. Do you think that fragmentation is an obstacle at all?—I do not think so; I do not think it has any relation to fragmentation of holdings.

14158. On page 447 you mention that there are 215 rice mills in the Tanjore district. Who owns those mills?—Mostly cultivators.

14159. Do the cultivators get subsidiary occupations in those mills?—It is only in those places where there is a local demand for rice that rice milling can be run as a subsidiary industry; otherwise it must be a factory industry.

14160. Are the workers in those mills, cultivators or are they of the menial classes?—They are not cultivators; they are of the ordinary cooly class.

14161. In 1920 this Pumping and Boring Department was transferred from the Agricultural to the Industrial Department?—Yes.

14162. Could you give us a copy of those orders?—I will furnish you with a copy.

14163. Your Industrial Engineer has written a report full of valuable interesting information on boring. Could you give us a copy of that?—Yes.

14164. What training has your Silk Superintendent had?—The Silk Superintendent is the subordinate of the Sericultural Assistant, who is the Sericultural Expert. The Sericultural Assistant had training in Japan, but the Sericulturist you talk about is a man who had training under this Sericultural Assistant; he originally belonged to the Agricultural Department.

14165. Is your Sericultural Assistant a trained entomologist?—No; he is not a trained entomologist.

14166. Is the reeling of cocoons done by the rearers or by a different class of people?—It is done by the rearers.

14167. The rearers do their own reeling?—Not in all cases; in most cases they do it.

14168. May I know the date of the State Aid to Industries Act?—1923.

14169. After the Reforms?—Yes.

14170. Is security an obstacle in the way of taking loans?—It is, in regard to subsidiary industries.

14171. You refer to the Kallakkurichi Co-operative Society for the milling of rice and the decortication of ground-nuts; who are the workers in the mills? Are they cultivators?—They are cultivators mostly.

14172. *Mr. Kamat:* About this State Aid to Industries Act, are there any industries of standing which you think you have successfully helped to establish here?—As regards payments under the State Aid to Industries Act, the largest amount of loan which we gave was to the Carnatic Paper Mills.

14173. Has that mill come into existence?—The mill is there, but it is not operating on account of financial difficulties. In spite of the aid given by the Government, there are some financial difficulties. The shareholders are squabbling among themselves and money is not forthcoming for working capital. Recently I had been to the mills and I considered the ways and means of finding the required capital, but until the shareholders come to an agreement I do not think it is possible to set the mill working.

14174. So this solitary case of this venture of giving Rs. 4½ lakhs has not been a success?—We cannot say it has not been a success; it has not been a success so far, but it is possible that the extra money might be forthcoming. The machinery is there, everything is there, only the working capital is wanting.

14175. Is it not the case that the Tariff Board have considered this special paper scheme and have recommended that this mill should be started?—Yes, they did.

14176. How long, do you think, this special officer whom you have put on to investigate spare-time industries will take to make a report?—We have not received orders from Government sanctioning the appointment of the special officer, but I have addressed Government.

14177. You have only addressed Government?—Yes, it will take sometime to get sanction.

K. B. M. Bazl-ul-lah Sahib Bahadur.

14178. And how long will it take for the investigation afterwards?—About six months.

14179. It will take more than a year before we know what spare-time occupations are feasible?—Yes.

14180. Have you got any officer, corresponding to the Agricultural Engineer, who investigates the need of adapting agricultural implements to suit your conditions?—There is the Industrial Engineer.

14181. The Mechanical Engineer is also the Agricultural Engineer?—We have nothing to do with agricultural implements; there must be an Agricultural Engineer for that.

14182. *The Chairman:* Who does the agricultural implements on the engineering side; who is responsible for that?—The Director of Agriculture.

14183. *Mr. Kamat:* The Director of Agriculture is responsible for agricultural engineering?—For agricultural implements.

14184. You have no special Agricultural Engineer to devise or to make new designs or adaptations in present designs of agricultural implements, such as ploughs, sugarcane mills, or anything of that sort?—No.

14185. You have also no indigenous firm manufacturing agricultural implements?—I do not know of any.

14186. There are only small local dealers?—Yes.

14187. About this decorticator, you told us that a few of the Kirloskar type had come into this Presidency?—Yes, a few of them, that is what my Engineer told me.

14188. Are you sure that some are imported from the Bombay Presidency into your Presidency?—I believe some are imported from Dandekar Bros. also.

14189. Do they solve the difficulty which you describe about ground-nut and the export of ground-nut to Marseilles in a bad condition?—Those machines do not solve the difficulty.

14190. That type does not solve your difficulty?—No.

14191. It means you must have an Agricultural Engineer, perhaps, who can design the necessary type of decorticator?—It is the Industrial Engineer's work; in fact, I have asked the Industrial Engineer to devise some sort of machinery for it by means of oscillating sieves for the mechanical grading of the ground-nuts.

14192. *Rao Bahadur Muniswami Nayudu:* Will you tell us the percentage of successful borings to the total number of borings made?—From 60 per cent. to 66 per cent. are successful; the rest are failures.

14193. In the case of borings you make the fees payable in advance?—Yes, always.

14194. And in cases where the borings are unsuccessful you do not remit the fees?—No, we do not.

14195. To that extent the ryot is put to a loss?—Yes.

14196. Have you any suggestions to make to enable ryots to take the risk in boring operations without much loss ultimately if the borings should prove unsuccessful?—The obvious reply is to refund the fees.

14197. Did you consider that aspect of it and make recommendations to Government?—I have said that I am considering the question of the reduction of fees; it is one part of it.

14198. You have made representations to Government?—I have not yet done so, but we propose to do it.

14199. You said that concession rates are given for services rendered to co-operative societies?—Yes.

14200. And you say that half the usual rates are charged?—Yes.

14201. Have there been applications from co-operative societies for your department's services?—Yes, several.

14202. With regard to digging of wells or deepening of wells for drinking water-supply, have there been any applications to your department for boring operations?—Several, but we do not take it up, because we are not concerned with the drinking water-supply; we are only concerned with the supply of water for irrigation purposes.

14203. Your department, therefore, does not entertain any applications for boring operations with regard to drinking water-supplies?—Not, unless we have got some boring set disengaged, and not working, which never happens.

14204. There is no other department to take up that work?—I think, it is properly the work of the Sanitary Department, the Sanitary Engineer to Government; whether he takes it up or not I cannot say.

14205. *Sir Ganga Ram*: You know that the fish-canning industry here is for sale, and it is going cheap?—That is the concern of the Director of Fisheries.

14206. You have a fish-canning industry for sale; you have advertised it in the *Madras Mail*. I also asked them privately about it. Cannot you induce anybody to take it up?—I would suggest that you ask the official concerned.

14207. It is an industry?—The fish-canning industry is not under the Director of Industries.

(The witness withdrew.)

APPENDIX 1.

Government Fruit Preserving Institute, Coonoor.

Year.	Capital.	Cost of production per lb.	Average selling price per lb.	Annual output.	Loss.
	Rs. A. P.	Annas.	Annas.	lbs.	Rs. A. P.
Period from 16th September 1921 to 31st March 1923	1,09,048 13 7	*	*	15,728 $\frac{1}{4}$	16,414 14 8
1923-24	1,37,935 7 10	31-63	10-63	19,052 $\frac{3}{8}$	23,153 8 5
1924-25	1,54,536 15 6	17-87	8-52	38,276	30,605 10 9
1925-26	1,58,339 14 10	52-38	7-98	6,441	26,585 2 8

* The auditors had not gone into the question of costing at the time of submission of this audit report.

APPENDIX II.

Silk trade in the Madras Presidency.

Articles.	Quantity.			Value.		
	1922-23.	1923-24.	1924-25.	1922-23.	1923-24.	1924-25.
				Rs.	Rs.	Rs.
Imports—						
Raw silk lbs.	345,550	278,452	364,773	37,27,767	28,40,581	32,68,199
Waste "	...	...	...	...	...	...
Silk yarns, noils and warps . . . lbs.	28	4,711	1,559	478	44,737	15,787
Silk Manufactures—						
(a) Goods of silk mixed into other materials . . . yds.	4,427	2,762	83	7,860	5,796	133
(b) Piecegoods "	29,754	37,399	23,635	82,753	1,03,479	68,067
(c) Thread for sewing . . . lbs.	10	32	110	623	976	2,600
(d) Other sorts "	2,896	1,964	2,042	72,426	50,446	45,356

Exports—

(a) Raw silk lbs.	60	1,120	480	112	1,200	9,000
(b) Chasm or waste „	310,050	395,190	570,760	2,27,739	3,06,393	4,78,021
(c) Cocoons „	17,776	30,745	31,000	20,324	53,745	43,597
Total raw silk „	310,110	427,055	602,240	2,27,851	3,61,338	5,30,618
Manufactures—						
(a) Goods of silk mixed into other materials yds.	7,849	6,665	89,916	13,816	9,667	69,441
(b) Piecegoods „	2,437	4,359	2,556	8,819	15,935	6,469
(c) Thread for sewing lbs.	...	2	...	...	10	...
(d) Other sorts „	34	250	380	61	3,226	366

Major A. J. H. RUSSELL, C.B.E., M.D., D.P.H., I.M.S.,
Director of Public Health, Madras.

Memorandum on Rural Sanitation.

Under the terms of reference the Royal Commission on Agriculture is asked, among other things, to make recommendations for "the promotion of the welfare and prosperity of the rural population," and in particular to investigate "(d) the main factors affecting rural prosperity and the welfare of the agricultural population." The Government of India has asked Local Governments to call for memoranda from various departments which "when read together should afford a clear and co-ordinated picture of the general rural position in the Province and the measures which have been taken in the past and are now being taken to ameliorate it."

It is obvious that questions relating to the *health* of the rural population are amongst the most important which will come under review by the Royal Commission.

2. According to the census of 1921, the population of the Madras Presidency (excluding Indian States) was nearly 42·5 millions. Only 7 per cent. of this total resides in the 81 municipalities of the Province, so that 93 per cent. of the whole population lives in hamlets, villages, or rural towns and is mainly dependent on agriculture for its livelihood. The statistics of previous censuses show that little change in this proportion has occurred, and as industries are few in number and of little importance, it is unlikely that any violent fluctuations in the ratio will occur in the near future.

3. From the standpoint of the sanitarian, agricultural prosperity depends on a vigorous healthy people free from the ravages of preventible disease. The best indices of the health of a community are (i) the infantile mortality rate and (ii) the expectation of life at different ages. Figures illustrative of these indices, in the former case, in so far as they relate to this Presidency, and, in the latter, to the whole of India, are compared with corresponding figures for the few Western countries in the following tables:—

TABLE I.

Infantile mortality rates.

Deaths per 1,000 births registered.

Year.	Madras. Presidency.	England and Wales.
1916	182·8	91
1917	194·0	96
1918	232·2	97
1919	192·9	89
1920	161·3	80
1921	160·9	83
1922	166·4	77
1923	173·7	69
1924	179·2	75
1925	180·9	—

Major A. J. H. Russell.

Owing to faulty registration, these figures almost certainly underestimate the true state of affairs in this Presidency, but even as they are, they indicate an enormous loss of human life. Moreover, the significance of infantile mortality rates lies in the fact that illness during childhood, "even when recovery occurs, is apt by its sequelae to impair efficiency or health" in later life. From this point of view, the table makes it clear that conditions obtaining amongst the rural population are prejudicial to prosperity.

TABLE II.
Expectation of life at certain ages.

—	At birth.	At		
		10	20	30
		Years of age.		
(a) Males.				
India	22·59	33·36	27·46	22·45
Germany	47·41	52·08	43·43	35·29
England	51·50	53·08	44·21	35·81
Scotland	50·10	51·86	43·27	35·17
Italy	46·97	52·55	44·20	36·73
(b) Females.				
India	23·31	33·74	27·96	22·99
Germany	50·68	53·99	45·35	37·30
England	55·35	55·91	47·10	38·54
Scotland	53·18	53·83	45·35	37·22
Italy	47·79	52·76	41·67	37·33

From these two statements, it will be seen that an Indian's expectation of life at birth is less than half the average figure for the peoples of Western countries. The tables also illustrate the remark already made that illness during childhood impairs health at later ages. The terrible loss of life in the adult age-periods, which are ordinarily those of maximum production, must be a very serious handicap to agricultural development.

4. As regards preventible disease, the subjoined statement shows the mortality in this Presidency during the last ten years :—

Deaths from	TABLE III.	1916-1925.
Fevers		2,729,773
Cholera		286,091
Dysentery and diarrhoea		557,562
Small-pox		197,754
Plague		91,192

Appalling as these figures are, it must be remembered that, in addition, approximately 45 per cent. of all deaths are registered under the heading "all other causes"; and in this mass of unclassified deaths which totals nearly 500,000 per annum, many cases of preventible disease find obscure burial. Judging from the figures for cholera and dysentery, the death rate from typhoid fever cannot be insignificant. Indeed, recent enquiries would indicate that in many rural areas, enteric fevers are endemic and exist in widespread fashion. A large proportion of the "fevers" death is certainly due to malaria.

5. The work done in the Madras Presidency during the last six years by the Ankylostomiasis Bureau, officered by the International Health Board, has shown that in the wet districts especially, where rice cultivation is the main occupation, from 80—100 per cent. of the people are heavily infected with hookworm. This human parasite slowly and insidiously undermines the physique of the population, predisposes to other diseases, and reduces productive capacity to a very high degree. Fortunately, these facts have been recognised by the owners and managers of tea and coffee plantations, although in other rural areas land owners and employers of labour have not yet realised the importance of this infective agent.

6. The large annually recurring mortality from water-borne diseases, such as cholera, dysentery and diarrhoea requires further mention. In those municipal areas which are fortunate enough to be provided with protected water-supplies, outbreaks of cholera seldom if ever occur, and this fact gives the clue to the prevention of those devastating periodic epidemics of which the Madras Presidency has had long and bitter experience. The high incidence of dysentery and diarrhoea can be ascribed chiefly to the low standard of general sanitation, and until the rural population develops a sanitary conscience and raises the prevailing low sanitary standard, it is very improbable that any improvement in the sickness and death rates for these dirt diseases will take place. Conservancy arrangements in most rural communities are entirely absent, and, even where they do exist, are of an extremely primitive nature. The banks of rivers and tanks are the favourite resorts for purposes of nature, and, as a result, not only are the only available water-supplies grossly infected, but soil pollution exists everywhere. It is curious that this should be tolerated in a predominantly Hindu population, whose religious teachers have centuries ago laid down strict injunctions prohibiting such insanitary practices.

7. Small-pox is another infection which yearly causes thousands of deaths. The high incidence of this easily preventible disease is chiefly due to ignorance and superstition. Many cases are wilfully concealed and deaths from small-pox are registered under "fevers" and "other causes" in order that village officers and the families concerned may avoid the "troublesome" visits of public health officers and vaccinators. As a result, outbreaks which could have been easily stamped out, if early notification to the Public Health Department had been made, are only discovered when the infection has become so widespread that it can be no longer concealed. So long as superstitious fear of the wrath of the goddess *Mariamman* controls action, so long will like difficulties be experienced.

8. It has been estimated that in this Presidency as many as 17·5 maternal deaths occur per 1,000 births, as compared with the corresponding figure of 4·0 maternal deaths per 1,000 births in England. Thousands of women are therefore needlessly sacrificed year after year because skilled medical attendance is not available and because the custom is to depend on the barbarous services of the barber-midwife or *dai*, who, steeped in superstition, carries on her profession without let or hindrance and in complete disregard of the simplest precautions against sepsis.

9. The problem of malaria is one which is of vital importance to a large proportion of the rural inhabitants of the Presidency. The malarial parasite is probably the correct cause of death in a very large number of the deaths registered under "fevers." In a number of districts, the malaria death rate

is very high, and the amount of chronic invalidism produced by the malarial parasite must diminish to an enormous extent the potential productive capacity of the rural population. Notwithstanding the tremendous moral and physical deterioration known to be produced by this infection, however, no preventive measures on a scale commensurate with the economic importance of the disease have so far been attempted. Malarial surveys have been made in a somewhat spasmodic fashion since 1910 in small areas which were especially brought to notice, and during the last three years, the epidemiological units maintained at the King Institute, Guindy, have carried out a fair number of small surveys at the request of various departments of Government, such as the Forest Department, Public Works Department, etc. These surveys have indicated the great necessity for preventive work, and the appointment of a malariologist, who would work in with the Government of India scheme for an All-India anti-malarial organisation, is under consideration. There can be no doubt that malaria causes enormous havoc among the cultivators in large areas of the Presidency, and the control of this disease is one of the most urgent problems for which available funds should be allotted.

The distribution of quinine is also very desirable, and in the absence of definite anti-malarial schemes, the use of this drug should be widely encouraged. Quinine, however, is practically a Dutch monopoly, and for some years has commanded an exorbitant price in the open market, so that its issue, free of cost or at a price within the means of the people, is largely a question of finance.

10. Finally, mention must be made of the great increase, which has occurred during the last 10—20 years, in the incidence of tuberculosis, and especially of that form known as phthisis, although few accurate figures are available. Here, again, ignorance of the simplest rules of hygienic living and of the causes and mode of spread of the disease is largely responsible. Overcrowding of large families in badly-constructed and ill-ventilated houses is only too common, and the rigid exclusion of "night-air" increases the chances of infection.

11. These paragraphs will perhaps be sufficient indication of the problems which lie before the Public Health Department of this Presidency in its fight against disease. It now remains to describe "the measures which have been taken in the past and are now being taken to ameliorate" these conditions.

12. Prior to the introduction of the District Health Scheme in 1922 and 1923, no co-ordinated system of Public Health administration existed in this Presidency. The executive head of the Public Health Department consisted of a Director of Public Health with one Assistant Director up to 1918, and subsequently three assistants with territorial jurisdictions. The Government maintained eight itinerating cholera parties—each consisting of an Assistant Surgeon and ten trained Sanitary Inspectors—to deal with cholera epidemics in rural areas. One hundred and nine additional trained Sanitary Inspectors, called Deputy Inspectors of Vaccination, supervised the work of rural vaccinators and did their best to control outbreaks of small-pox. In districts exposed to plague, Collectors employed temporary staffs of Plague Inspectors, these being paid partly from provincial funds and partly from the funds of the local boards. Under the Local Boards Act (1920), all local bodies are compelled to maintain a staff of vaccinators, and a few Boards voluntarily employed Sanitary Inspectors for general sanitation work. The wastage involved in the maintenance of a separate trained staff for each epidemic disease was enormous, and, moreover, there was no authority in the district to co-ordinate the work of the various sanitary staffs employed. The Collector was responsible for plague, the cholera parties were sent out by the Director of Public Health, whilst vaccinators were under the control of the local bodies, and the work of the Deputy Inspectors of Vaccination could be inspected only about once every two or three years by the Director of Public Health or his assistants. The District Medical and Sanitary Officer was the recognised adviser to local bodies in public health questions, but this officer could devote only a very small part of his time to sanitary work.

13. With the introduction of the Health Scheme in every district in 1923, the position completely changed. The three Assistant Directors of Public Health were each placed in charge of a bureau in the office of the Director of Public Health, and territorial jurisdiction was abolished. A trained Health Officer was appointed to each district to be in complete charge of the Public Health administration, and, in each taluk, at least one Health Inspector works under the immediate supervision and control of the District Health Officer. The work of the vaccinators employed by local bodies is regularly supervised by both Health Officer and Health Inspector, as these officers are obliged to tour at least 20 days every month.

The duties of the Health staff may be summarised as follows:—

- (1) Investigation and control of all outbreaks of communicable disease in rural areas.
- (2) Supervision of vaccination and all preventive measures, hitherto attended to by special staffs.
- (3) Supervision and improvement of the registration of vital statistics.
- (4) Drafting of plans and estimates for simple sanitary projects and taking steps to remedy defects in village drainage and water supplies.
- (5) Systematic health propaganda work by means of lantern lectures, cinema lectures and demonstrations.
- (6) In the event of outbreaks of cholera, plague or malaria, the disinfection of water-supplies, etc., treatment of early cases, rat destruction and plague inoculation, mosquito reduction and the distribution of quinine.
- (7) The investigation of hookworm infestation and other similar parasitic infections.
- (8) Co-operation with the district health staffs of neighbouring districts and States on receipt of information of the outbreak of infectious disease there, and, in the event of the appearance of infectious disease of a serious nature, the localisation of the disease with the aid, when necessary, of the staff of the adjoining districts.

14. The District Health Scheme is now complete, 24 District Health Officers and 248 Health Inspectors being employed. These are all Government servants, their services being placed at the disposal of local bodies to carry out the provisions of the Local Boards Act (1920), dealing with the health, safety and convenience of the rural population. A great deal of opposition was at first raised to the new scheme, but the work of the last three years has proved its worth, and the almost universal cry at present is for extensions to its activities. Even with 32 additional Health Inspectors sanctioned during the present year, many of the Inspectors' ranges are unwieldy, either in extent or in population, and when epidemics, such as cholera, break out, large temporary additions to the preventive staff are necessary. Under the Local Boards Act the expenditure incurred for epidemic prevention and on account of improvements in rural sanitation must be borne by the local bodies themselves. In many cases, warnings regarding approaching epidemics are ignored until the infection has become widespread, and as an excuse for refusing to carry out even the simplest recommendations made by the Health staffs, the plea of "lack of funds" is constantly employed. At the same time, slow progress is being made, but attention is in this connection invited to the accompanying "Memorandum on the Future Developments of the Public Health Service" which was prepared a few months ago. This memorandum explains in detail some of the difficulties experienced and it seems unnecessary to reiterate here what is already in printed form.

15. Since the reorganisation of the Public Health Department three years ago, the investigation and control of epidemic disease has naturally received most attention.

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Although the anticipated periodic outburst of cholera in 1924 and 1925 caused nearly 96,000 deaths, it is safe to say that at least as many more were successfully prevented, especially when it is remembered that during the previous epidemic wave of 1918 over 128,000 persons perished from cholera in that year alone. Moreover, the new organisation has been able to effect successful sanitary control of the large number of fairs and festivals which are held all over the Presidency. In a few centres, although some cases of cholera have occurred, the prompt measures taken by the District Health staffs have been sufficient to prevent any spread of the disease such as frequently occurred prior to 1922.

In the Government Budget for 1925-26, a sum of Rs. 6½ lakhs was provided for the improvement of rural water-supplies and village roads. The unspent balance of this sum was reallocated to the districts in the budget for 1926-27.

16. During 1922 and 1923, the Madras Presidency for the first time experienced an epidemic of relapsing fever, which threatened to decimate the village populations of several districts. So successfully was the preventive campaign carried through that by the end of 1923 the infection had entirely disappeared and the few minor outbreaks which have appeared since have been speedily stamped out.

17. The progress of vaccination has been very marked, owing to the better system of supervisory control and the great improvement effected by the King Institute in the manufacture of vaccine lymph. In 1924, over 2,000,000 persons were successfully vaccinated, and the figure for 1925, which is not yet available, is also estimated to reach this figure. The success rate which had fallen to about 60 per cent. in 1921 has during the last two years been between 95 and 99 per cent. The effect of the increased degree of protection to the community will be evident only in future years, but it does not seem to be too optimistic to state that, if similar work is done during the next ten years, small-pox epidemics will cease to be a danger to the people of this Presidency.

18. The new District Health staffs have been constantly urged to effect improvement in the registration of births and deaths, and the fact that the average registered birth-rate has increased by 7.9 per mille of population in the last five years is evidence that the vital statistics of this Province are now much more reliable than they have ever been. It is universally recognised that the basis of all Public Health activities rests on accurate registration of vital occurrences, but, although much has been accomplished, a great deal still remains to be done in this direction.

19. The inception of organised measures for the spread of knowledge in matters relating to public health really dates from the inauguration of the District Health Scheme in 1923. Since then the education of the public in health matters has received ever-increasing attention. Health propaganda work is one of the routine duties of the health staffs and is regularly conducted in the villages visited by them. The methods employed include not only formal lectures, lantern demonstrations and lessons in the village schools, but also informal and friendly talks with the villagers. In many places the local newspapers have been made the medium for the spread of information, and large numbers of informative articles and paragraphs have been published. The attention of the public has also been sought through the medium of health dramas, many of these being remarkably well presented.

20. A perusal of the annual reports submitted by Health Officers, and those dealing with the National Health and Baby Week celebrations, indicates the far-reaching degree to which health propaganda measures are now being carried out all over the Presidency. It has been suggested that funds spent on this branch of public health work is money wasted. To this criticism, it is sufficient to point out that public health is dependent upon personal hygiene and the day-by-day individual practice of the principles of preventive medicine, and that, moreover, if general education is an affair of the State, so much the more is education in matters of health.

21. During 1925, 52,100 lectures were delivered in 36,800 centres, the total audiences numbering approximately 2,900,000. Of the lectures, 3,200 were

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illustrated by means of lantern slides. Displays of picture posters and the distribution of illustrated leaflets made the lectures more impressive and attractive.

From the report of the Madras Health Council for 1925-26, it is learned that 90,000 posters referring to eight subjects and 3,000,000 leaflets dealing with twelve different subjects were issued; 2,786 new lantern slides were prepared and issued on loan; and 2,500 slides were prepared for local bodies. Fifteen lanterns were in constant circulation on loan, while eighteen lanterns were supplied to local bodies during the year. Seventy-seven miniature health exhibitions were also held on the occasions of large fairs and festivals. The value of pictorial exhibits as a means of education is being more and more appreciated, and much more could be done if every Health Inspector was supplied with a lantern and slides. This ideal is being constantly brought to the notice of local bodies.

22. The medical inspection of school children is a subject which has been discussed for several years past. Only recently has Government ordered the compulsory inspection of all pupils attending secondary schools, but it would be to the great advantage of the whole Presidency if this order were extended to all primary schools, as the medical inspections concerned would draw attention to many disabilities, and would also be an object lesson to the children in connection with maintenance of health.

23. Probably, the greatest lasting good can be effected by teaching the youth of the country, and in as many as 3,500 schools, lectures, dialogues and dramas were given. In many places health lectures were arranged as part of the programme at Teachers' Associations meetings.

The following table gives comparative figures for 1924 and 1925:—

Year.	Number of lectures given.	Number of lantern shows.	Approximate audience.	Activities in schools.	Exhibitions at fairs and festivals.
<i>Districts.</i>					
1924 . . .	33,840	840	1,554,000	1,261	51
1925 . . .	52,073	3,260	2,874,000	3,521	77
<i>Municipalities.</i>					
1924 . . .	1,553	222	86,700	41	...
1925 . . .	2,691	792	231,770	360	...

These sufficiently illustrate the additional amount of propaganda work carried out in municipal and rural areas during the past two years, and from the reports made by District Health Officers it is evident that it has already borne fruit, e.g., in demands for vaccination, protective inoculation, etc.

24. Propaganda work, under the *ægis* of the Madras Health Council, has grown to such an extent, and the work has become so heavy and complicated, that the time has come when local bodies may legitimately be asked to acknowledge their indebtedness for the success of their health week celebrations by making grants to the Health Council. In this way, sufficient funds would be made available for the employment of suitable photographers, artists

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