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REPORT

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ON THE

ACTIONS OF THE DEPARTMENT OF
AGRICULTURE,

MADRAS PRESIDENCY

FOR THE OFFICIAL YEAR

1906-1907.

MADRAS:

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS.

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REPORT

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The year under report will be a memorable one in the history of the department, as it witnessed the long-contemplated additions to the staff, the laying of the foundation stone of the Agricultural College by His Excellency the Governor, and the further development of the work in the new ten Agricultural Stations, the first of which was established at Coimbatore, and the Imperial Agricultural Museum at A. E. Castle Street, Singapore, where the post office of the Director was created and the Imperial Agricultural Museum was established on October 2nd, 1900. The Imperial Agricultural Museum was transferred to the Department of Land, Revenue and Agriculture, and the Imperial Agricultural Survey, Land Records and Agriculture. Mr. C. Benson, who had been in the service of Government on June 1st, 1898, about 32 years, and Mr. R. W. B. C. Wood took over charge of the department, since changed to that of Director of the Agricultural College, arrived at Coimbatore.

R
J. SILVERMAN
NOTI

1.—SCIENTIFIC AND NATIONAL ENQUIRY.

1907.—Entomological Assistant Ramachandra Rao completed his training at Pusa in August and returned to Madras. In June the Imperial Entomologist communicated a note suggesting the lines of work to be followed by the Entomological Assistants. This was at first to chiefly consist of the study of the pests of the province and ascertaining by enquiries from cultivators the most destructive; they were also to learn the remedies useful against the pests, and to try such simple remedies as are within their capacity; up and down the country, the Imperial Entomologist's Assistants were to be in close touch with the Imperial Entomologist, who is much wanted, so that his expert control over the work of the Assistants is being exercised. Mr. Trefroy visited the Presidency in December and discussed the programme for next year's work with the Assistants. The day was much indebted to him for the valuable advice and help afforded on every occasion. In January it was reported that the paddy and irrigated dry crops of several taluks, Penukonda and Anantapur taluks were being attacked by some disease. Specimens sent, however, were pronounced by the Imperial Entomologist to be the damage described. Precautions against a repetition of the attack by the Imperial Entomologist were communicated to the Collector.

Special attention was paid to the "surul" (or leaf-roller caterpillar) which usually shows itself on the ground-nut crop. One Entomological Assistant was sent to the Hagari Farm, where the crop, introduced to the district at that time, was almost destroyed by this pest; another Assistant was sent to Palamare; special instructions were issued that a search should be made for the pest upon which the pest lives in the absence of the ground-nut crop. The Imperial Entomologist himself paid a visit to some villages in the vicinity of Villupuram to see the pest in the field. It is hoped that some useful information has been obtained.

4. *Mycology*.—The Imperial Mycologist paid a visit to the Godavari in August 1905 to study the fungus disease attacking the palmyra and coconut. His report was received in April 1906, and a small special staff of the Imperial Mycologist was sanctioned by Government in 1906 to work experimentally on the lines suggested by Dr. Butler. Tappers were employed to cut the tops of diseased trees, and another set of tappers to apply Bordeaux mixture to the leaf sheaths of the healthy trees in the affected areas. The Imperial Mycologist, accompanied by the Director of Agriculture, visited the affected areas in March; and it was found that the disease was spreading, destroying more than half the crop in some places. It was decided that the cutting off the heads of the trees should be continued, and this was to be concentrated in the affected areas, and where it is necessary, under the control of the Imperial Mycologist, approved by Government.

For the Agrostologist, United States Department of Agriculture and Forestry, a quantity of different varieties of cow-peas and sorghums have been received from the Government of Madras; seeds of indigenous cottons from Ganjam, Tinnevely, Coimbatore, and Malabar for cultivation at Poona for botanical classification; samples of cotton fibre and yarn to the Director of Agriculture, Central Provinces for the purpose of Messrs. Fleisher & Co. United States, America. A quantity of dried leaf of *gofera Sumatrana* from Cuddapah was supplied to Mr. Bloxam at Leeds. An attempt made to grow lemon grass in a wardian case for transmission to the Director of Agriculture, some seeds were sent instead. Samples of sugar made by different methods, and of the best varieties of canes grown at Samalkota were sent to the Cawnpur Conference.

Some bags of wild Abyssinian coffee seed procured from the British Legation, Calcutta, was distributed among the different coffee districts of Southern India. Some received about it were unsatisfactory, the seed having apparently been immature.

—SCIENTIFIC AND LOCAL ENQUIRY UNDER PROVINCIAL DIRECTION.

In G.O., No. 886, Revenue, dated 11th September 1906, the Government have decided that there is room for greater compression. The Administrative Reports of the Agricultural Stations are printed in the appendix. In addition to this, a separate report for each station is being prepared giving full details of the experimental work in progress there. It would, therefore, seem sufficient if the main lines of the work is being carried on with the different crops and on the different agricultural stations are briefly indicated here.

Laying out and equipment of Agricultural Stations:—Central Farm and Agricultural Experiment and Research Institute at Coimbatore.—The farm itself is situated at a distance of three miles from the Coimbatore Railway station, and consists of about 390 acres of dry land, comprising areas of both red, black cotton, and mixed soils, and some of wet land commanded by a channel-fed tank. The farm is being brought into order and parts of it have been laid out for experimental purposes. In G.O. No. 2282 W. of 20th December 1906, an estimate for Rs. 4.47 lakhs was sanctioned for the construction of the main buildings. The foundation stone was laid by the Governor on September 13th, 1906, and the main road through the

M.R.Ry. R. V. Subramania Aiyar, Acting Second Assistant in the Agriculture, Saidapet, is engaged on surveying and mapping all the farms. Coi Koilpatti and Palur have now been completed.

The instructions conveyed in paragraph 3 of G.O., No. 624, Revenue, dated July 1906, regarding the opening of a new agricultural station in Tanjore are kept in mind, but at present owing to the want of experienced subordinates it is proposed to open any new farm during the current year. The Agricultural Inspector in charge of the Palur Agricultural Station was, however, deputed for a short tour to Tanjore district to help the ryots who are taking up the cultivation of sugarcane with advice, to choose suitable plots for the experiment in jute which the local agricultural associations are undertaking, and give the landholders instructions in to its cultivation. The Agricultural Inspector from Samalkota was deputed to Malabar to select land for jute cultivation and tell the landowners there, who are undertaking the experiments how to cultivate it.

8. *Crops—Sugarcane.*—The experimental work at Samalkota has been continued on the same lines as last year. Disease is becoming less year by year in consequence of the careful cultivation and selection of healthy setts for planting. So new varieties have been introduced from Java, Barbadoes and Mauritius. The varieties were distributed as usual to the ryots and there was a keen demand.

The new canes are making rapid progress in the Godavari delta. A new experimental nursery for distribution has been opened on "upland" land near Samalkota. The well sunk in the land proving unsatisfactory, only an area of about 40 cents was planted up. The canes are doing fairly well. At Palur the canes from the Palur farm and most of those from Melrosapuram also were distributed free this year to the ryots. The necessity for this is explained in the scientific report. It is hoped that the new canes will soon get a good hold on the South Arcot district. Messrs. Iyer & Co. of Nellikuppam, who buy nearly all the canes grown in that part of the district, are doing everything in their power to encourage the ryots to plant the Mauritius cane. The real difficulty here is the uncertainty of the water-supply. This year the channel which supplies this part of the district was closed for repairs in April, the month when the canes should be planted. It is hoped that better arrangements will be made next year. A cane-nursery of about 3½ acres was opened at Melrosapuram in the Chingleput district. It was hoped that the aeromotor would supply sufficient water for irrigating the crop. The winds in the months of January and February proved sufficient to work the aeromotor more than enough.

A distribution was attempted in the Guntur, Bellary and In the Guntur district the seed was purchased by an agent named Brothers. Insufficient attention appears to have been paid to the

511 candies 5 maunds of kapas were purchased, yielding 359 candies of seed. In spite of every exertion on the part of the Revenue officials only 16 maunds were sold for seed purposes. The balance was disposed of as cattle-food. The Collector reports that the crops grown from the seed distributed were of any superiority over the ordinary ryots' crops.

In the Bellary district 78 maunds of farm seed was sold without difficulty. Its superiority over the seed grown on the ryots' own lands was so well understood that the price of one anna in the rupee charged proved no obstacle to its ready sale. 160 and fifty one maunds of seed were purchased from the best ryots' crops by the Agricultural Inspector but this was little appreciated. Only about 10 maunds were sold for seed, the balance being disposed of for cattle-food. Pressure of work made it impossible to inspect many of the crops raised from the seed distributed, but in such fields as were visited the seed was found to have been

purely, where pure strains of uppam and karunganni have been developed at Koilpatti farm, the two varieties generally found mixed in the ryots' fields, the demand for the farm seed was keen. The ryots fully appreciated the superiority of the farm seed.

In the same district Messrs. Harvey & Co.'s Agent, Mr. Steele collected 118 pothies (1 pothy = about 250 lb.) of the mixed seed in which the uppam predominates. Forty and a half pothies were distributed by Messrs. Harvey & Co. and the balance sent to the Tahsildar of Srivilliputtur and the District Inspector at Koilpatti. Mr. Steele has an unrivalled acquaintance with the industry in this part of the district and his experience enabled him to select the best kapas from the best cultivators. The seed was reported to have good germinating power, but to be far from a pure sample.

Rs. 3,000 was allotted by the British Cotton Growing Association for this year. After careful consideration it was decided that it could best be expended in increasing the area under the pure karunganni variety in Tinnevely. It was found that in a few villages round Vagaikulam, about 12 miles north of Tuticorin, pure karunganni is still grown. It was decided to expend the grant from the British Cotton Growing Association to add to it Rs. 500 from the budget grant in the district.

present, its distribution among the ryots would effect no permanent improvement. Under their present methods of cultivation, it would soon revert to its original state. The distribution, of good seed should, therefore, be accompanied, if not preceded, by efforts to improve the ryots' methods of cultivation.

(b) *Premia for ryots who cultivate pure cotton.*—The premium of two annas per acre offered to ryots who grow "practically pure" cotton in certain taluqs in Kurnool and Cuddapah Districts was claimed in respect of 12,700 acres and 3,400 acres in 1906 and 1907 respectively. Of this area 2,400 acres was admitted as qualified for the premium last year. The Collector recommends the payment of the premium in respect of 1,948 acres this year. The matter is still under consideration. It may be doubted if such a small sum as two annas per acre, which could be paid to the ryots for the extra trouble and expense involved in selecting or purchasing pure seed, is really an effective inducement to them to exercise any seed selection.

(c) *Cotton experiments on the Government Agricultural stations.*—A number of experiments are being carried on with Egyptian cotton planted and sown in the usual manner and fertilized by repeated floodings with silt-bearing water. Experiments in irrigating local country cotton and spacing experiments are also in progress. Though the soil is drilled in this part of the country, the seed rate is clearly excessive, and the plants are too crowded to permit of free growth.

At Bellary and Koilpatti the permanent manurial experiments on cotton were continued, but the results were not available at the close of the year. The same remark applies to the other cotton experiments at these stations and at Nandyal. The picking season is not over till some time after the end of the period fixed for the reports. The hybridized cottons at Koilpatti and Bellary produced a number of good plants and at the latter place the best bolls were selected for next year's sowing. It has not been time yet to examine the lint in detail. The study of the "North American" cotton was commenced at Nandyal, but the best seed obtainable locally was found to be very mixed, even when great care was exercised in the selection. Experiments in growing perennial exotic cottons under irrigation were continued at Attur in the Chingleput district; the results are sufficiently encouraging to justify a continuation of the work.

The most instructive experiments in connection with cotton this year were the different cultivation experiments. At Hagari and Bellary the after-cultivation of the country bullock-hoe was much more thorough than on the ryots' lands. The cottons in consequence were green and healthy in appearance in striking contrast to the dried up and stunted crops on the surrounding ryots' lands. For the results of these experiments, see above, the results.

Cotton Expert.—Proposals were submitted for the appointment of a Cotton Expert for this Presidency, but the Government of India considered that it was inadvisable at the present time to recommend the creation of such an appointment.

Paddy.—Experiments in paddy cultivation on black-cotton soil with irrigation were to be an important branch of work on the Hagari farm. A few small plots were planted this year, but the results are not worth recording as they were not on a regada soil. It is hoped to bring a fairly large area under paddy this year. The chief difficulty is the want of coolies who understand wet cultivation. There is a little wet cultivation in the vicinity of the farm and the few coolies who understand this work are always fully employed at this time of year. Efforts are being made to secure the requisite labour.

Banku paddy has been tried at Samalkota and on the Coimbatore Central farm at Saidapet. It has given good results in all cases. This variety lends itself well to single seedling planting. The yield is good, the crop ripens early, and the rice fetches a good price although new to the people.

The paddy crop on the red soil area at Koilpatti was a failure for want of water, and paddy growing will not be attempted again here.

On the Saidapet farm an interesting comparative paddy manurial experiment was conducted in testing sunn-hemp ploughed in green against Parry & Co's. mineral fertilizer. The sunn-hemp produced about 2 tons of green manure; 182 lbs. of the mineral fertilizer were applied. The result was in favour of the green-manuring, 4½ acres of land under this treatment producing 1,245 lbs. of grain and 1,250 lbs. of straw; while 3½ acres treated with the mineral fertilizer only produced 1,128 lbs. of grain and 32 lbs. of straw.

13. *Jute.*—Jute, sunn-hemp and gogu (*Hibiscus cannabinus*) were grown on comparative plots at Samalkota in both seasons. The results of the first crop were very encouraging, the fibre being of good quality though the yields were only moderate. The cold weather sowings were a failure both here and at Palur. Further experiments are being made on the Samalkota farm, and on ryots' lands in the Górávari, Nijore and Malabar districts. The experience gained up to date points to the fact that Bengal jute should be sown early in the hot weather, as it is extremely sensitive to water-logging in the early stages. All that can be said here at present is that the Górávari jute plots are decidedly promising, and there are good grounds for thinking that it will be introduced into that district. It appears to be more robust and less susceptible to insect attacks than 'gogu'. The Government has paid a short visit to the Outtaek jute farm in August last with a view to appointing an expert to study the methods of cultivation in force there.

14. *Tobacco.*—Some experiments were conducted by Messrs. Spencer & Co. of Madras at the expense of the department with a view to seeing if an improved type of Indian leaf could be obtained by better curing. The reports on the results submitted to various firms were not wholly unfavourable, and it is intended to continue the experiments on the return of Messrs. Spencer & Co's. Manager from Ceylon. A small quantity of Borneo tobacco seed and Sumatra seed for wrapper tobacco was procured and supplied to Mr. T. H. Barry of Cocanada for experiment, the lankas, where at present only a coarse variety is grown.

15. *Agave.*—Pressure of other work has prevented much attention being paid to this subject during the past years. A sample of fibre produced on the Hindupur plantation has been sent to the Imperial Institute for valuation. Instructions have been issued for the extension of the plantation either at Hindupur or in selected localities in the neighbourhood and this will be taken up as soon as the state of the work at Hagari permits.

16. *Paspalum dilatatum*—has been tried on several of the farms. It will not grow in the dry season without irrigation, but may make a useful fodder grass if planted along the sides of irrigation channels. Even under these conditions, though it grows well, it does not attain the size and luxuriance said to be typical of it in Australia.

17. *Flax.*—A small quantity of flax seed was received from the Director of Agriculture, Bengal, and distributed to the Assistant Superintendent, Land Records, and some private individuals. No results are to hand yet. In some cases it

V.—AGRICULTURAL EDUCATION.

21. From the commencement of the year the College of Agriculture was transferred to the control of the Educational Department to that of the Board of Revenue. The report on the farm is appended. The number of students at the Saidapet College of Agriculture was reduced to 17. The College is to be closed in January next, and there are only one class remains. Four students secured the diploma of the College. It is noteworthy that neither of the two students who passed first and second in the examination were willing to take up posts in the Government service. This is going as showing that a knowledge of agriculture secures a career outside Government service. The acting Vice-Principal remarks that, so far as he knows, no student of the College is without employment. It is hoped to avoid any break in the continuity of the teaching of agriculture in the Presidency by commencing work at Saidapet in temporary buildings till the College and Research Institute is finished. Nine apprentices sent by the District Associations and the Central Agricultural Committee were trained on the Government farms for varying periods. Too often the men are not genuine agriculturists. If intelligent ryots were chosen who were already familiar with the crops grown on the farms, they might acquire much valuable information.

22. The number of publications received from and sent to other Provincial Governments and countries was as under—

Number received	...	{ Indian ...	...	...	...	...	...	...	336
	...	{ Foreign ...	...	...	...	...	...	...	575
Number sent	...	...	...	...	...	...	...	...	22

KUMBARONAM,
17th July 1907.

M. E. COUCHMAN,
Director of Agriculture.

appears to have been too late in the season when the seeds were received. At the Central Farm at Coimbatore the Principal reports that the temperature was evidently too high for it, as the plants came up well, but stopped growing very early, only about 15" high when ripe.

18. *Reclamation of saline lands.*—A lengthy series of experiments has been carried out in the Sivaganga zemindary by the lessees. Their report has been received, till the plots themselves have been visited by the Deputy Director no opinion can be pronounced. Similar experiments have been conducted by the Public Works Department in Therkuthéravu village in the Madura district for the last few years. The treatment consisted of applications of avarai (*cassia auriculata*) leaves and red earth. The yield per acre, which was only 3.2 measures in the first year, rose to 185—1 measures last year. An attempt was made to induce some ryots in the Periyar tract to reclaim saline lands in accordance with instructions issued by the Deputy Director of Agriculture. The treatment was to consist of cutting trenches to carry off the saline matters, and manuring, and the assessment was to be remitted in cases where these instructions were carried out. Only one ryot qualified for the remission of assessment. The experiments will be continued.

19. *Agricultural Exhibitions and other work of the Agricultural Associations.*—Cattle Shows and Agricultural exhibitions were held at Ongole, Bobbili, Pittapur, Ellore, Narsapur, Conjeeveram, Kothacheruvu (Anantapur), Madura and Tinnevely, and an Agricultural and Industrial exhibition at Cannanore. Money grants for prizes were made by Government at several of these shows. The Ongole show has spread the fame of the Ongole cattle far and wide, but the cattle-owners have now got an exaggerated idea of the value of their animals which restricted business this year. A good deal of interest in agriculture is no doubt excited by these exhibitions. It is more difficult to get the associations to undertake any practical demonstrations of improvements in cultivation. Several of the associations, however, are doing useful work. Amongst these may be mentioned some experiments with sunn-hemp fibre conducted by the Ganjār association; the Gódvārī and South Canara associations are introducing groundnut into those districts. The Salem, Tinnevely and South Canara associations have introduced the Mauritius canes. Paddy spacing experiments have been tried in Malabar. Jute in Malabar and Tanjore. Mr. Markandaya Sastri of the Ongole association has a small experimental farm on which he is trying ground-nut, and *Crotalaria* cotton with promising results. The Madura association has bought an oil-press and a cane mill. The Kurnool association is trying some improved cottons. The Penukonda association has its own agricultural journal, and is doing useful work in all directions. Every effort is being made to get the associations to take advantage of the concession made in G.O., No. 1084, dated 8th May 1907, in which financial assistance was promised to associations undertaking specific experiments approved by the Agricultural Department. The Officers of the department take every opportunity when on tour of interviewing the leading men in those associations who show signs of vitality, discussing agricultural matters with them, and encouraging them to initiate demonstrations of useful implements and methods. It is felt that the enthusiasm which is too often confined to public platforms might, if enlisted in the cause of field work, create a most valuable link between the department and the ryots. The latter are at present apt to be under the impression that all the operations on the Government farms are conducted on too expensive a scale to have any practical interest for them. Demonstrations carried out on their own fields by the associations with their own cattle and labour would at present make more impression on their minds.

IV.—BOTANY.

20. The report of the Acting Government Botanist is printed as an Appendix, and it appears unnecessary to summarise it here. The greater part of the Government Botanist's time and attention were taken up by the management of the Samalkota, Palur and Talipa ramba Agricultural Stations, of which he was placed in charge pending the appointment of the second Deputy Director. The Systematic Assistant Mr. Tadulingam did some botanical touring on the Nallamalais. An Economic Assistant was appointed a few days before the end of the year.

APPENDIX I.

ADMINISTRATIVE REPORTS OF THE AGRICULTURAL STATIONS AND THE MISCELLANEOUS WORK DONE BY THE DIRECTOR OF INDUSTRIAL AND TECHNICAL INQUIRIES DURING THE YEAR 1906-1907.

AGRICULTURAL STATIONS.

General.—The year under report has witnessed several changes in the personnel of the department. At the commencement of the year Mr. Benson was in charge of the department, with the title of Deputy Director of Agriculture, and his head-quarters at Madras. This title ceased when he resigned; and on the 15th June, I took over charge from him, as Superintendent of Farms, my head-quarters being removed to Coimbatore on the 1st August. The title was again changed towards the end of the year to Deputy Director of Agriculture.

2. The commencement of the year saw the work of the department largely increased. Besides the management of the Bellary and Koilpatti farms, and the agave plantation at Hindupur, four new farms were opened during the year, and got into more or less working order. Of these, the most important was the farm attached to the Central Agricultural College at Coimbatore, consisting of some 390 acres of dry red and black soil, and 45 acres of wet land. Besides this a large pumping station and farm at Hagari, a cotton farm at Nandyal, and an irrigated farm at Attur, were all equipped, laid out and cultivation started.

3. On 2nd January I handed over charge of the Agricultural Research Institute, Coimbatore, to the Principal, Mr. Shepperson, and was thus enabled to give more attention to the district farms. The other stations mentioned above continued to be under my charge during the year.

4. Mr. Benson or myself were on duty the whole of the year, with the exception of two days' casual leave in January. Our journeys involved the spending of 227 days in camp, and the travelling of 19,577 miles by rail, and 196 miles by road.

5. M.R.Ry. Rao Bahadur C. K. Subba Rao Avargal, Sub-Assistant Director of Agriculture, was on furlough till 14th June 1906. From 15th June to 18th August 1906, he was in charge of the Central farm. From 18th August 1906, his head-quarters were transferred to Bellary, where he remained in superior charge of the Bellary, Hagari, Nandyal and Hindupur Agricultural stations. Most of his time was spent in immediate supervision of the farm work at Hagari, frequent inspection visits to the other places. M.R.Ry. R. Ramasami Aiyar continued in charge of the Hagari station until 18th August 1906, when he was transferred to Coimbatore. Certain frauds perpetrated by the Inspector during the time he was in charge at Hagari, having come to light, he was suspended from the 15th December 1906. The Overseer at Hagari and the Inspector at Bellary changed places on 9th November 1906. The Nandyal farm has been under the charge of M.R.Ry. S. Raghunatha Rao since the beginning of the year. The Inspector at Attur was unchanged. The Inspector at Koilpatti was transferred to the Principal, Agricultural Research Institute, on 14th December 1906, when the Probationer A. V. Tirumuruganathan Pillai was placed in charge. L. S. Natesa Aiyar and S. Ramasami Pillai were also transferred to the Principal. The latter later in the year was deputed to special cotton work in the Tinnevely district under my charge. Three Probationers were appointed during the year—K. Sankara Aiyar on 28th May 1906, M. V. Raghavalu Nayudu on 9th November 1906 and T. R. Venkasami Rao on 21st March 1907.

THE HAGARI AGRICULTURAL STATION.

6. This station has been in existence just a year, the land having been handed over on 30th March 1906, and work commenced shortly after that date.

Experimental work on the farm has accordingly been somewhat desultory, though the main objects of the station have not been lost sight of, and it is hoped that a real start has been made. Much difficulty has been experienced in obtaining sufficient labour since the district is a thinly populated one, while the demand at Hagari has been increased by the work proceeding under the guidance of the Professor of Engineering on special duty. The need of constant supervision at the Coimbatore Central station, until the arrival of the Principal, prevented me from spending as much time as I should have liked at this station, and the experimental work suffered therefrom.

7. Even now the initial difficulties have not been entirely overcome since the water-supply has not yet been proved, while the need of farm buildings is strongly felt.

8. The basins constructed in accordance with the proposals of the Professor of Engineering on special duty were completed about the middle of August 1906, and from that time onwards were repeatedly filled with silt-bearing water. Each tank had about 4-acre feet of water.

Difficulty was experienced in getting the land sufficiently dry to sow, and it was not until December that the first basin, field No. 8, was finally transplanted with Egyptian cotton. Other basins were sown on the 12th and 13th of January 1907, respectively, the cotton in all basins is looking well, but has not yet come into bearing.

9. Egyptian cotton for comparison is also being grown in two other sites. Experiments in sowing this cotton both in the basins and outside have been carried out on a small scale. The sowing of a small plot of jowari cotton is also being tried: the water was not applied until late in the season, but the plots are looking green and could be readily picked out at a glance. An experiment on the spacing of cottons was initiated on the same lines as experiments at Bellary and Koilpatti.

10. Paddy was grown on 2½ acres in field No. 10, though the soil is not black soil. Some information was obtained on the value of green manure from the results obtained off 15 (these results being largely corroborated by the present appearance of the plots laid out in No. 21, where a series of plots testing

(a) the manures to be applied to paddy, and

(b) the best time for planting this crop on black soil, have been laid out.

11. Of other experimental work little need be said. The area to be put under irrigation was fixed and the yield of equivalent acres carefully determined. This will be laid out as soon as water is available after harvest. A few simple manual tests on ground-nut were tried, but the crop suffered to such an alarming extent from insect pests that no results of any value were obtained. This attack is of interest inasmuch as the crop is an absolutely new one in the district and was sown on soil hitherto uncultivated. The matter is engaging the attention of an Entomological Assistant. The rest of the farm land was cropped in the ordinary way: jowari (sorghum) either alone or mixed with Bengal gram occupying some 87 acres, while jowari pure or mixed with korra was sown on 25 acres, other crops included Egyptian cotton, coriander, sweet potato, maize and various kinds of grains.

12. Other work carried out during the year under report consisted in the laying out of the farm generally—the making of roads and drains, the fencing of the whole area, the construction of supply channels, the repairing of the bunds, levelling in various fields. The farm bullocks continued in fair health all the year.

THE BELLARY AGRICULTURAL STATION.

The chief item of importance to be recorded in this station during the past year has been the acquisition of about 7½ acres lying to the west of the farm. This it is hoped to add to the enclosure of a piece of jail waste to the south which will render the farm more compact.

The new field was not handed over until the season for sowing was getting late. It was sown to jowari (*Andropogon sorghum*) and Bengal gram.

13. The permanent farm experiments were all maintained. The cultivation plots were sown to cotton and korra, and as the cotton season is not yet complete, nothing can be said as to the results of the permanent cotton experiments, except that the cotton tests.

14. An experiment in thinning cotton was tried in field No. 1. Results are not yet obtained. The hybridised cottons were again grown in 72 plots in field No. 1. It was decided to select from them good bolls of the type required, irrespective of their parentage. Some will be sown as material for further selection next season.

15. The rotation manual plots were this year under main crop jowari (*A. sorghum*). The results obtained here are again very uneven, and will require careful analysis before a definite conclusion can be arrived at. The munguri or early sown jowari in field No. 5 was got in under good conditions. Thirty-one varieties were sown mostly in 25 cent plots. Some of them were very good, but the crop on the whole was fair, and returned Rs. 6 per acre profit. Half a dozen of the best varieties will be selected for further trial next season.

16. Many of these crops suffered to a varying degree from insect pests, which were somewhat serious this year. The jowari especially, both early and late, was rendered patchy by the attack of stem-borer, while an attack of aphids, rendered more virulent by the unfavourable weather, did some havoc in December.

17. This completes the purely experimental work on the farm. Other crops grown in the ordinary course comprised kandi (*Cajanus indicus*), Bengal gram, chillies, and brinjals, the two under irrigation. The coconuts on the farm were given a little manure, as they appear to have been almost stationary in growth. Paspalum was replanted, but has proved very poor and unsuited to dry conditions.

18. A certain amount of clearing has been done; two hedges, one between fields 2 and 3, the other between No. 6 and the new field, having been completely uprooted.

The farm livestock continued healthy during the year.

19. Three apprentices were trained for short intervals during the year, and two probationary staff of Wards' Home Farm Superintendents were stationed for a month at the farm, in order to familiarise themselves with the use of the Ceded Districts implements.

THE NANDYAL AGRICULTURAL STATION.

22. As the land for this station was acquired only on the 5th April, the year under report has been the first year of this station's existence. The most important part of work lies in the investigation of "Northerns" cotton, but since picking is still in progress, results are not yet complete. The land was cultivated from the end of August onwards through the hot weather by means of hired labour. Half the land was sown in June with four varieties of *jonna* (A. sorghum), three from Bellary and one local. The yield of grain was poor, as they were sown thick for the production of fodder. The exact figures were from 21 acres of land—1,288 lb. grain and 22,000 lb. fodder. This outturn may be valued at about Rs. 14; the cost of cultivation was Rs. 73. This field was afterwards cropped with Bengal gram and horsegram. The former failed entirely, the latter produced 2,738 lb. grain, and some 4,000 lb. fodder, the whole valued at some Rs. 140; the cost of cultivation was Rs. 91. The fodder has been stacked on the farm for the future use of the farm animals.

23. The other half of the land, with the exception of about 30 cents put down to horsegram, is being cropped with varieties of "Northerns" cotton, some having been transferred from Bellary, and some from stocks selected at the cotton growing centres of the "Northerns" district. The yield up to date has been very satisfactory owing to careful cultivation and good seed. The farm land is however generally in good condition both in this field and in No. 2.

24. The rest of the work done on the farm has been the erection of the farm buildings, namely, quarters for the Inspector, cooly lines, cattle and implement sheds, manure-pit and office. These, though actually completed before the end of the year, I have not been able to pay entirely, owing partly to the closing of the treasuries for the Easter holidays, and partly to the fact that my tappal went astray when on tour in the Tinnevely district. The grant sanctioned for fencing has also not been spent: I did not realise until too late that the work had been transferred to the Civil side from the Public Works Department and had to be executed departmentally. This occurrence has, however, enabled me to take up a strip of road permanently handed over by the Revenue Department, thus allowing a good wide headland turning the bullocks.

25. In accordance with the instructions conveyed in B.P., No. 78, Press, dated 11th March 1906, I have arranged for some experiments calculated to discover the value of indigo rotation crop, and plots for this purpose have been marked out. The investigation and selection of the varieties of cotton and *jonna* found in the district will be a main part of the experimental work at this station during the present year, while observations on the early and late sowing of certain local and imported varieties of *jonna* (A. sorghum) are also considered worthy of attention.

THE HINDUPUR AGRICULTURAL STATION.

26. No experiments were carried out at this station during the year. The plants are very irregularly, and while some are splendid specimens, others are barely alive. However, the plantation cannot be said to be in a completely satisfactory state. Some of the soil have been taken in order that the soil may be analysed, as it seems possible that it may be found in this district. The plantation was inspected at intervals and the watchman in charge given orders concerning the care of the nursery beds and the weeding of the plantation. The suckers in the nursery are growing satisfactorily, and sufficient have now accumulated not only to fill up gaps, but also to extend the plantation. No fire occurred during the year. A few plants have poled.

THE KOILPATI AGRICULTURAL STATION.

27. The year under report has here also witnessed an expansion of the station area, a large block of land being taken up in the black soil to the west of the land already belonging to the farm. This has enabled a larger area to be put down this season in cotton for the purpose of seed-distribution, an important part of the work of this station.

28. The different permanent experiments were continued this year with varying success. The rotation manurial plots were cropped with cumbu, which suffered severely not only on this farm, but throughout the whole district, from Pachali (green bug). This combined with unseasonable weather almost completely wiped out the first crop of cumbu, a small picking being got only from the later growth. The imported cumbus, "Awned cumbu" and "Bhowanag cumbu," both suffered severely from the same cause, the latter from its early habit having to bear the full brunt of the attack. The cotton crop also suffered, though not to the same extent from stem-boring insects. The exotic "cambodia" was the worst in this respect, the yield of the local cottons being not materially affected. All the cottons at the time of report are healthy and appear to promise well. The permanent cotton manurial plots show several marked differences in habit and should give some interesting results.

29. The cotton crosses are wonderfully luxuriant and have attracted much attention from visitors to the farm, who are becoming more numerous each year and many of whom take deep interest in the work. The improvement effected in the farm cottons by good cultivation

led to a number of local cultivators in March. Their interest was certainly a demand for implements may be looked for during the next season.

As far as the cultivation of the red soil block is concerned, there is not much to report. The farmers from want of water, and it is a matter for decision whether it would not be better to concentrate what water is available on a few fields and crop the remainder uniformly on which class of land no experiments have yet been made. Ragi planted on ridges and in beds, was again compared greatly to the advantage of the former. A new variety, Jaffna, was tried and is at present growing very well. Varieties of sweet potatoes were sown. The local variety on a slightly better soil produced the heaviest yield; but the varieties fetch a better price from their quality and colour. Ground-nut both here and in black soil suffered from *Surul Puchi*. The fact of the pest appearing in black soil, where it was a new crop and where any source of infection in the shape of other crops of the year was very remote, opens up a field of investigation as to the life-history of this pest. The crop was a failure owing to insect pests. Growing paddy, moreover, in such poorly drained and costs more than is ever likely to be recovered in the crop. A small crop of local rice was also raised.

The comparative growth of *irungu* sorghums was continued. The slight botanical difference appears to have no agricultural importance. The figures show no decided advantage in either sort, though the thin-stemmed varieties would undoubtedly make better fodder.

The experiments with *paspalum* continue. This grass is being grown under varying conditions of water and with varying methods of cultivation.

The Divi Divi in field No. 13 has yielded 250 lb. of pods. Last season an attempt was made to bale the pods in a cotton press, but Messrs. Harvey & Co. at Virudupatti were unable to take the risk of possible damage to the machinery. There is at present no local market for the pods.

Other crops grown either experimentally or in the ordinary course on the red soil were *Arachis* and *Caravonica* cottons, Bimlipatam jute (*Hibiscus cannabinus*), black gram (*Phaseolus*), Bengal gram (*Cicer arietinum*), redgram (*Ujjanus indicus*), horsegram (*Dolichos biflorus*), brinjals, chillies and various fruits—pomegranates, guavas and coconuts.

Other works which were executed during the year are the building of the cooly line and implement sheds in the black soil block, the fencing of the newly-acquired land, the raising of a fence having partially to be lifted and re-erected, and levelling and draining in connection with the laying out of the new land.

The farm cattle continued in good health throughout the whole period.

During the year five apprentices were trained—two at the instance of the Central Government, and three from the Salem, Kumbakonam and Tinnevely Districts.

The most important event to be chronicled during the year was the tapping of a very good supply of water by the Professor of Engineering on special order. The old well had not proved satisfactory, and the engine and pump were removed to the new well in September 1906 when the whole pumping installation was handed over to the Agricultural Department. The main difficulties to be faced in the profitable utilization of this water were twofold—the extreme poverty of the soil and its high porosity.

Attention was accordingly paid in drawing up the cropping scheme, not only to the selection of dry and irrigated fodder crops, but also to the general improvement of the soil by green-manuring. About 8 acres were sown with varieties of gram which were ploughed in. On 14 acres groundnut was sown and proved a fairly successful crop: it was grown without irrigation. In the eastern block 13½ acres were put under four varieties of cholam: the yield was good. A small patch of lucerne was sown: it is hoped that in the neighbourhood of Madras it will prove a profitable crop for fodder purposes. A trial was made in two plots of sunn-hemp: it was completely in both cases.

Another branch of work on the farm is the experimental growth of perennial exotics under irrigation, and so far the results may be considered fairly encouraging. Plots sown in 1905, but were not put in sufficiently early with the result that though the plants were very luxuriantly no seed was produced before the July rains. The following pickings were made and the cotton appeared satisfactory in length and quality of staple:—

Cottons at Attur (1905-1906).							Area of plot.	Yield of kapas per acre.
Name.								
Sea island	...	...	...	...	...	...	·66	210
Egyptian	...	...	...	...	...	...	1·00	130
Secma pathi	...	...	...	...	...	...	·16	78
Pomidi palnad	...	...	...	...	...	...	·16	31½
Narasaraopet	...	...	...	...	...	...	·33	12
American varieties	...	...	...	...	...	...	·20	520

At the beginning of the rainy season all the cottons were pruned and began to factorily, but for some reason they withered in December. They have since started factorily, but the check they received will cause them to be late in flowering. A free laid out in the eastern block and sown in October with four varieties of perennial cotton to ascertain what amount of change such cottons undergo under their altered conditions seems possible that these cottons would do better as annuals, and the comparison of the yield, year after year, with the second, third and fourth years of the same variety seems some interesting and valuable results.

40. Besides the perennial cottons, the department grew some 4 acres of mixed cottons for Mr. Fyson. The first lot sown unfortunately failed to germinate, but those grew very luxuriantly. The Inspector has conducted the statistical portion of the experiment owing to Mr. Fyson's regrettable absence on sick leave.

41. A good deal has been done apart from the cultivation in clearing and laying the land. The whole of the east block has been fenced and part of the west block. This it is proposed to completely enclose owing to the constant trespass of cattle. Much clearing also had to be done in both blocks. The whole work of erecting the farm buildings also on the Inspector, as the work was done departmentally. Quarters for the Inspector, store, cooly lines and a cattle shed have been erected in the western block, while a water hut has been built near the gate in the eastern block.

42. The Inspector has been in sole charge throughout the year under report. Apprentices from the Central Agricultural Committee, the Kumbakonam and the Salem Agricultural Associations respectively, have received training for short periods during the year.

R. CECIL WOOD,
Dy. Director of Agriculture
Northern Division, Coimbatore

PUMPING WORK DONE AT THE ATTUR AND HAGARI AGRICULTURAL STATION

Attur.—This installation is under the Deputy Director of Agriculture and has satisfactorily throughout the year. The well is not emptied by the 4" pump which extracts 100 gallons per minute. One cusec could be obtained continuously without difficulty as the water is derived from the sands in the bed of the Palar river.

Hagari.—The farm lies behind the sand dunes fringing the river and about a mile, the land gradually sloping upwards and away from the river. For experiments it was arranged to make a 10" centrifugal pump, which would require about 21 horse power and a lift of 21 feet when working at maximum efficiency in dry weather. The delivery channel has its full supply level in the berm of the river and runs off at right angles into the gradually rising ground. When it gets into a cutting about 4 feet in depth, a second engine and pump lift the water 10 feet and it is then carried still further back from the river till it reaches the limit of the land which can be commanded by water at this level. The second pumping station possesses no features of interest; the engine is of 3½ h. p. and the pump has a suction pipe 4" in diameter and delivers 0.86 cusecs which is sufficient for the area of high land. The 10 pump is placed on a square masonry well built on the edge of the river bank and provided with openings on the river face to admit the water. The jacket circulating water is obtained from a pot well sunk in the berm and raised by a small plunger pump. This was necessary as the river water in flood time is heavily charged with silt and would therefore soon clog the jacket. Pumping was commenced in June last year, but all the attempts to make a permanent pond in front of the pump proved a failure as a constant succession of small freshes filled up any excavations in the sand. It was found, however, that a 6 feet well sunk in the berm penetrated a layer of sand continuous with the river bed, and from this well it was possible to draw 150 gallons per minute without lowering the water level beyond a certain limit. It was determined therefore to construct a large well or pond inside the berm and to connect it with the pump well or pump by an 18" earthenware pipe. The pond was made 25 feet square and the sides were prevented from slipping in by walls of brickwork 6 feet in diameter sunk round a square of 25 feet side. Laying the pipe to connect this pond with the pump was a tedious job as it had to be placed 10 feet below the water level in the sand at the time and the Supervisor Mr. S. Rajagopalaswami Mudaliyar deserves great credit for carrying out the work at a comparatively trifling cost. When the work was finished it was found that the well did not yield so much water as was anticipated; the percolation amounting to but little more than 2 cusecs. It shows signs, however, of increasing and it is hoped that pumping during the flood season of this year will materially increase the rate of percolation. In the meantime the water-supply is ample for the requirements of the farm. A short masonry aqueduct connects the pump with the delivery channel and on one side of it is built a masonry tank 20 feet square and 4 feet deep for measuring the discharge of the pump. As first installed the pump was provided with fast and loose pulleys 18 inches in diameter but it was found that the speed was too great for the lift when the river was in flood.

pulley has been removed and replaced by one 21" in diameter. To enable the pump to run easily with the driving belt on a fixed pulley the discharge pipe has been fitted with a valve which is only gradually opened as the engine attains its full speed. Whilst the pump was running the belt connecting the pond with the pump well an accident occurred due to the sudden break of the belt from the fast to the loose pulley. On this occasion the suction valve stuck and the water in the pump and delivery pipes commenced to run backward. The only closed and the hydraulic shock produced was sufficient to fracture the pump. To prevent this in future a relief valve has now been fixed on the pump although the head of water above the pump can never be more than 4 feet.

A. CHATTERTON,
Director of Industrial and Technical Inquiries.

THE CENTRAL FARM AT COIMBATORE.

ing out and improvements.—The fencing of the farm has been completed as far as regards the building operations in progress. This work was much delayed by the non-delivery of materials, many urgent letters having been written to the contractors, so that the fence might be complete by the end of the financial year. A small extreme south-west of the farm is incomplete, because the actual line to be taken has not yet been finally decided. The bund across the tank in continuation of the western boundary has been laid out and will be completed before the rains set in. Some difficulty has been experienced in preventing human trespass, and it may be advisable to plant a line of aloe just inside the wire fence. A drain which enters the farm along the north boundary and connected with one running north and south through the farm and connects the Superintendent of Farms. This will now form the main water channel across the farm. It has been found impossible to utilise the water on the western side on account of the loss of water often carried by it. The southern portion will be widened and well before the rains set in. The road running north and south by the side of the farm has been laid out but not metalled through to the southern boundary where a gate access to the road leading to the wet land. An occupation road giving convenient access to the fields has been constructed from the north and south road some 10 chains to the west. In other places bunds have been straightened, fields levelled where necessary and improved means of drainage constructed.

Half of the wet land extensive improvements have been made. It was found that the uniform slope and the convenient series of experimental blocks could be made in such a way that each field, or series of two or three, could be irrigated and the results compared with the rest. This will enable experiments on water-rate, etc., to be made. The bunds have been straightened, irrigation channels and constructed in accordance. The main channels have been cleared and straightened as far as possible. The western half is much more uneven and no attempt has yet been made to lay it out.

2. Farm buildings.—The farm buildings are approaching completion, the Farm office is already occupied by the clerk. The B type quarters provided for the Inspector have been handed over and are occupied by him. A row of 6 C type quarters has also been handed over. These provide accommodation for the Assistant Manager, Mechanic, etc. Two are

used as temporary office for the Farm Inspector and temporary grain-store. Considerable inconvenience has been occasioned by the delay in the completion of the grain store in the permanent buildings.

3. Crops—Paddy.—The paddy crop on the whole yielded well, although it was somewhat late.

With the exception of Banku paddy the varieties were all local—vide statement in the margin.

Ser.	Variety of paddy.	Area.	Date of harvest.	Yield per acre.	Price obtained per 100 lb. of paddy = 150 lb.
		ACS.		LBS.	RS. A. P.
1	Banku *	0.65	29th January 1907.	3,626	6 0 0
2	Tuluku samba	0.75	16th January 1907.	3,172	5 10 0
3	Sinna'samba	15.00	From 20th January to 10th February 1907.	1,922	5 14 0
4	Sadasamba	29.00		1,988	5 12 0

A crop experiment in 10 cents of fairly uniform growth of this paddy variety gave 500 lb. of paddy and 500 lb. of straw.

Banku was distinctly superior in yield and it also ripened considerably earlier than the others. The best local variety is the chinna (or sinna) samba, it is, however, much mixed, a large proportion of the grains in the rice prepared from it being red. The yield however was

Cholam.—The variety sown was the ordinary yellow variety of the land somewhat late and was not a particularly good crop. The rains experienced and early January damaged the grain considerably making it dirty grey in color and yellow. A few ears of a white cholam were observed, mixed with the yellow. Seed both from the yellow and white for sowing next season.

Cumbu.—A few fields had grown this crop but it had been harvested before charge in January 1st.

Ragi.—An area of 13 acres was grown under irrigation. The crop was somewhat yielded at the rate of 642 lb. per acre.

Korra (or Tenai).—This was grown mixed with cotton and also alone, the pure much the best.

Cotton.—Varieties sown were local uppam and uppam from Koilpatti to small area of caravonica. Local uppam was grown upon the black soil both alone with korra.

The plants on the land sown with pure cotton were much better than those on lands.

Koilpatti uppam was grown both pure and mixed with korra on the red soil pure was much superior to the mixed. In the Koilpatti uppam about Karankanni together with a few stray plants of Bourbon were found. Seed separately from these as also from a few other "sports" noticed. The yield of korra said to be good. The cotton were sown late and made comparatively poor growth plants being scarcely 6 inches high. A large number were killed by the cotton and the somewhat unseasonable rains in late March and during April damaged the crop considerably. Caravonica was sown on a small piece of light soil in December. The crop was not good, but the plants which germinated have grown well and give promise. They are however of very different types as might be expected with a hybrid variety.

Each well marked type will be separately collected and a fresh sowing made next season.

Minor crops.—Safflower was planted along the borders of fields near the boundaries to prevent cattle trespass and two small fields on the more or less saline portion of the farm were sown with it. The crop appeared to be fairly good and healthy. The yield was 46 lbs. per acre. It was found that there was not much local market for the seed as the oil is not suitable for culinary purposes, although it is the case in Bombay. It will be tried at the Imperial Botanical Station.

Wheat was grown under irrigation on an area of 6 acres. The crop was not good and yielded at the rate of 983 lbs. per acre. Samples of the wheat were sent to the Imperial Botanical Station for analysis.

Seedling was sown in three or four small fields but it is evident that the crop was not up well and sufficiently thickly, but growth stopped very early. The crop was not much more than 15 inches high. There appeared to be a fair proportion of seed capsules formed. The crop was seriously attacked by a red rust which caused premature ripening and also by insects whose grubs penetrated the ripening capsules and devoured the young seed.

Lab-lab beans (Dolichos Lab-lab) were sown on several cholam fields in the country fashion. Grown in this way, however, Lab-lab beans occupy the land for a long time and do not sufficiently cover it, hence the growth of weeds in such fields is very great and the land becomes foul. At the time the beans are ripe, the land has become so hard that it cannot be ploughed till rain has fallen. These beans were badly infested with a pod borer.

Red gram was grown on the fields occupied by cumbu but the crop was practically destroyed by pod borer.

A small quantity of Dindigul tobacco seed had been obtained and an area of 50 cents was planted. The yield of cured leaf amounted to 642 lbs. A sample of leaf is being forwarded to Messrs. Spencer & Co., Dindigul, for favor of report as to quality.

Chillies were planted on a small portion of irrigable land but the season was not right. The particular variety chosen which made good growth but produced little fruit. The crop was however seen to be very mixed and the most pronounced varieties were collected separately and seeds saved for further cultivation.

Gau was sown early in December on a small piece of garden land. The germination was fairly good and the crop on the whole sufficiently thick. Five varieties were recognized on the plot; so the seeds were allowed to ripen, and were collected separately; they will be sown on another piece of garden land next May.

Paspalum dilatatum.—A few shoots of paspalam dilatatum were obtained from the Superintendent of Farms and planted at the side of a water course along which water runs daily. Up to the present it has done well; seed will be saved and further sowings made.

Experiments.—A grant of Rs. 600 having been made to the Superintendent of Farms for ensilage experiments, three pits were dug, two of which were filled with cut cholam. Up to the present these pits have not been opened, it having been intended to leave them till the period when fodder is scarce.

A piece of land having an area of two acres was planted with paddy and irrigated by water from the well sunk and controlled by Mr. Chatterton. The plants, however, never grew well and were finally smothered in grasses, which the water was not apparently deep enough to kill.

Sugarcane.—A piece of garden land was selected by the Government Botanist sometime before January for the purpose of growing varieties of Mauritius canes alongside local canes. The land was well worked by the country plough and manured with 86 loads of cattle manure. Six plots each of 30 cents were laid out, levels were taken and a series of trenches were made across each plot, following the level; these trenches were watered from a well and canes planted in them. When the canes are well up permanent irrigation channels will be made between each two rows.

These trenches are laid out with the idea of economising water. White ants and stem borers have given some trouble by attacking the sets and young shoots. The varieties sown are:—Red Mauritius, and striped Mauritius from Palur Agricultural station, ash Mauritius from Samalot Agricultural station, local white cane (vella) from Coimbatore, local striped (namam) from a village 20 miles north. On the wet land about 2 acres have been set aside for sugarcane, the variety chosen being vella which will be planted at the end of May. The land has been well manured by sheep-penning and tank silt has been added to improve the level as well as the quality of the soil.

During the next season the crops will be carefully examined with a view to seed selection and it is hoped that reasonably pure strains of the various crops may be obtained.

Weather.—This season has been characterised by an abnormal amount of rain. In late December, early January a total of 3.54 inches was registered. The tank instead of being dry in the middle of January contained water well into February. From the middle of January till the middle of March it was dry, at the end of March 1.17 inches were registered. In April, however, the rainfall was such as had not been known locally for many years. The farm gauge registered a total of 3.56 inches for 8 days' fall.

This rainfall was on the whole very beneficial, enabling the land to be broken up by the country plough and greatly facilitated the sowing of summer cholam.

Princ.

PERSON,
Research Institute and
Central Farm, Coimbatore.

During the year under report the Government Botanist was in charge of the station till he proceeded on leave on January 19th. The Director of Agriculture was in charge for the rest of the year.

2. The area of the farm remains the same as last year. Blocks 10, 11, 12, 19 and 20 have been levelled; the main channel down the centre has been turfed and a road laid out along the bank of the Ellem river leading to the farm. The scrub jungle which formerly covered the ground between the farm and the river has been partially cleared, and planted with hariali and Avenue trees have been planted above the new road. Formerly this piece of waste land was infested with jackals and wild cats which caused a good deal of damage to the canes.

3. One acre of "upland" land (i.e., land not commanded by the canal) was rented in Jagum-aripetta, about 1½ miles from the farm; a well was dug, and 40 cents has been planted with canes for distribution. It was intended to plant a larger area, but the supply of water in the well proved deficient. The canes are doing fairly well. The remaining area was sown with jute on April 14th and this is a very promising crop.

4. The rest-house is proceeding slowly. There appear to have been difficulties about the construction of this much needed building has been delayed. Visitors to the station at present are obliged to put up in the jaggery store which is unbearably hot in April and the Inspector's quarters are also unfinished, though better progress has been made with the construction.

Staff.—Agricultural Inspector V. Muthuswami Aiyar has been in charge of the farm the year assisted by the Assistant Manager M.R. Ry. N. Sitaraswami Nayudu, who has been in charge of the farm from its commencement. The farm has been kept in excellent order throughout the year.

6. *Training of apprentices.*—T. C. Krishna Kurup, a former student of the Saidapet College, was sent by the Central Agricultural Committee for six months training here, which he completed in September last. E. Kamaraju sent by the Ganjam Association for a year's training will complete his course in August next. He was allowed to visit Palur for a short time to study ground-nut cultivation.

7. *Season.*—The months of April and May were entirely rainless. The heat was also abnormal, the average mean day temperature at Cocanada, the nearest reporting station being higher than last year by 3.5° and 5.2° in April and May, respectively, the readings culminating in an average of 112 F. for the last five days of May. The canes are planted in March and April and the canals are closed during May; this abnormal weather coming at such a time was therefore very trying to the cane crop and there were many deaths in the cane fields. The farm is favourably situated under the bank of the canal, and arrangements were made to store up water in the channels when the canals closed. This was baled out during the dry weather and the farm crops then suffered much less. It is interesting to note that the new Barbadoes seedlings Nos. 208 and 376 stood the drought well. The drought was followed by heavy rain in June, 10 inches falling between June 13th—30th. This rendered all field operations difficult and labour became scarce. In spite of these drawbacks the farm crops were satisfactory.

8. *Crops.*—During the year under report there were 33 varieties of canes grown on the farm in all 8½ acres being under cane. They are divided into three classes—

(1) Those which are considered fit for distribution, viz., Red, Striped and Ashy Mauritius and red and green sports.

(2) *Class I*—varieties which are the more promising canes. Comparative immunity from disease is the point to which most attention is paid in the classification.

(3) *Class II*—inferior or untested canes, which are considered worth cultivating to watch their behaviour under local conditions.

A number of canes were rejected for disease, and the following were added to the collection:—Red and white Java from Madras, Purple Bourbon from Behar and Langi canes from the Central Provinces (these latter have subsequently been rejected for disease). Java seedling No. 36 and Tanna Blanche from Mauritius. The Barbadoes seedlings referred to above are being cultivated on as large a scale as possible. No. 208 in particular has a very high reputation in Barbadoes and appears well suited to the climate. While no cane has been discovered which is immune from the fungus disease, the varieties now being distributed suffer very little provided that care is taken in planting to reject all setts which are not perfectly healthy, and provided that the land is kept clean and well drained. The health of the canes. As a result of the careful attention paid on the farm, the yield of the canes steadily diminishing.

9. *Distribution of canes.*—This year was a successful one for the cane crop. It was possible with small quantities of seed to plant. Those ryots who had been planting at Rs. 3 per 100 or more. Only Rs. 2 per 100 was required. It is doubtful that the canes will entirely replace the existing variety in the district. They are they less subject to disease and richer in sugar, but they are far larger than the local canes. In a crop-cutting experiment conducted on the farm this year the average weight of the local Bonta cane was 1.8 lb., while the Red Mauritius weighed 3.8 lb. At Palur a sample of ashly Mauritius sent for analysis averaged over 5½ lb. per cane. In the manual tests the Red Mauritius which is decidedly inferior to the Ashy and Striped, both in size and quality, yielded at the rate of 48 tons of cane and over 5 tons of jaggery per acre. The crop-cutting experiment of Bonta on the land of a ryot adjacent to the farm gave only 24 tons of cane and less than 2 tons of jaggery per acre. The area under sugarcane in the Godavari district appears to be increasing, after the disaster falling off a few years back and this recovery may be in part ascribed to the introduction of the new canes, which have made the industry more profitable. When the canes were being distributed the opportunity was taken to impress upon the ryots the importance of careful cultivation and especially the bad effects of the almost universal practice of over-watering the canes, flooding the whole surface of the field, instead of filling the trenches only and keeping the surface dry and of allowing the stagnant water to stand in the trenches. They were also shown the healthy condition of the farm canes, and the system of cultivation by which these good results were attained was explained. They are well aware of the defects in their own practices, but it is to be feared that, so long as their own slovenly cultivation yields them a fair profit, they will not reform their ways.

10. *Fibre experiments.*—A series of experiments with Bengal jute (*Corchorus capsularis*), Bimlipatam jute (*Hibiscus cannabinus*) and sunn-hemp (*Crotalaria juncea*) was carried out during the year. A full report of the results of these is given in Mr. Barber's letter of 19th December last. The fibre was well reported on, the jute being valued at Rs. 11 per maund and the gogu (Bimlipatam jute) at Rs. 10-8-0. The best yield of jute was at the rate of 805 lb. per acre and of gogu 1,235 lb. Neither of these are heavy yields; the jute yield might be called poor. The sunn-hemp crop yielded at the rate of about 805 lb. per acre, and the fibre was valued at Rs. 10 per maund only. The second crop fibre crops sown in October were a complete failure.

Jute has been sown earlier this year, on April 14th, both on the farm, on the new nursery and on three plots of ryots' lands outside the farm. The growth is very promising, and there appear to be good prospects of proving that it would be a paying crop in the delta, if the ryots could be induced to take it up. Bengal jute is evidently better suited to the delta than gogu or sunn-hemp as it suffers less from insect pests, which are often fatal to the two latter crops.

Other crops.—Banku paddy was tried and yielded at the rate of 3,081 lb. per acre. Other crops were turmeric, cotton, local and Egyptian, red gram, Budama paddy, chillies and plantains. These being only rotation crops call for no special remarks. In the current year ground-nut has been introduced and promises well.

Visitors.—The Government Botanist visited the farm on three occasions, the Director of Agriculture on two occasions and the Commissioner of Agriculture on one occasion. There were also numerous other visitors. Efforts are being made to popularise the farm by holding meetings of cultivators when anything is going on to which it is specially desired to draw their attention. It is thus hoped to familiarize them with better methods of cultivation and any new crops which may be introduced such as jute and ground-nut. At present they are too prone to dismiss all the farm methods from their notice as far too expensive for imitation. A better acquaintance with the farm would dispel this illusion (for such it is) and thus widen the sphere of usefulness of the farm.

M. E. COUCHMAN,
Director of Agriculture.

THE PALUR AGRICULTURAL STATION.

Charge and area of the station.—The Government Botanist, Mr. C. A. Barber, was in charge of the station during the year under report till January 19th, when the Director of Agriculture took charge of it, pending the appointment of the second Deputy Director. It has subsequently been made over to Mr. Sampson, Deputy Director of Agriculture, Southern Division. Towards the end of 1905-1906 it was decided to make this station permanent. The small area originally taken on lease for two years from January 1905 was purchased in 1906 and extended. The station now consists of about 32 acres of dry and 20 acres of wet land, the entire area having been handed over on the 25th April 1906.

2. *The season.*—The season was unfavourable for the successful growth of farm crops. The total rainfall during the year under review was 50.24 inches as against 54.40 of the previous year, but the distribution was so unequal that the crops suffered at one time from drought and at another from continuous and excessive rainfall. February, April and May were entirely rainless. In March nearly so; during the four months, June to September, the rainfall ranged between 1½ to 3 inches a month. In October, November and December about 42 inches fell, and this was even more disastrous in its effects on the ground-nut crop than the drought which preceded it.

3. *The objects and experiments of the station.*—The two important functions of the farm, viz., the study and improvement of the ground-nut and the introduction of better class canes, were steadily kept in view during the year. A detailed record of the experiments and results of the year will be found given in the scientific report of the station.

Ground-nut.—The harvesting of the irrigated crop of 1906.—Only about 2½ acres were put under irrigated ground-nut last year. The abnormal drought affected the crops considerably. For Mauritius, i.e., Mauritius grown in India was tested against Mauritius imported from Mauritius in two duplicate plots but the results were inconclusive. On analysis the local Mauritius was found slightly superior both in oil content and proportion of kernel to shell. The following new varieties were also given a trial:—Spanish, Big Japanese, Tatas, Virginian, Barbados, Ceylon, Small Japanese, Madagascar and the old country seed. The results pointed to the superiority of the local Mauritius, which yielded the heaviest crop though the Virginian was almost equal to it. The old local variety has almost disappeared now, and it is difficult to procure seed.

5. As regards the planting and harvesting of the rainfed crop of 1906, the work was chiefly confined to the growing of varieties, but the crops on the farm, in common with those in the whole district, suffered severely owing to the heavy rains of October to December, which not only reduced the yield of the crop but also the oil-content of the nuts. The "Sural" caterpillar and the "Tikka" fungus disease, always worst in the rain-fed crop, were much in evidence. The varieties most affected by the inclemency of the weather were the Spanish and the small Japanese. The Spanish ground-nut imported from America, though injured in a similar manner, was slightly better in its yield, and it is being tested now as an irrigated crop in the dry season.

6. *The irrigated crop of 1907* was sown in February and March 1907. Fourteen half-plots have been laid out for experiments on the irrigated ground-nut crop. The experiments, which were laid down for the first time at the close of the year under report, consist of

manurial and varietal plots. The manures selected are burnt shell-lime with and without farm-yard-manure, fine bone dust, and powdered shells. These are all readily procurable in the country in case they should be successful. There is one no-manure plot, and one plot to which no manure will be applied, but to which the oil-cake and haulms will be returned, the oil alone being removed. In the varietal plots Tata's ground-nut, Mauritius from Mauritius, Virginian, Big Japanese, Ceylon-Mauritius, Small Japanese, and Senegal are being tested in parallel half acre plots against local Mauritius. Should any of these prove satisfactory after acclimatization they could be substituted for the existing or "local Mauritius" ground-nut in the event of this showing signs of deterioration either in productiveness, oil content or in susceptibility to disease. Several other varieties are being grown on a small scale for the preliminary study of their habits.

7. There is much scope for improvements in the ryot's methods of cultivation, and these are being investigated, the plan followed being sowing in rows followed by intercultivation with the Bellary bullock-hoe. It is expected that an economy of seed and irrigation water will be secured by this plan. It has also been found that fallow land can be kept clean from all weeds, except hariali grass, by frequent working with the guntaka (or scuffle) in the dry weather. The conservation of soil moisture by the use of this implement and the harrow is receiving careful attention.

8. *Disease and insect pests.*—As mentioned above, the rainfed crop was attacked by "Tikka" and "Surul". The irrigated ground-nut crop of 1906 also suffered to some extent. Spraying with Bordeaux mixture had no appreciable effect. The present irrigated crop is singularly free from "Surul" and but little "Tikka" has appeared. The salting of the ground as a preventive of the millipede pest was tried again, without any visible effect.

9. In the last few years there has been a remarkable spread of interest in the ground-nut crop and numerous applications for seed came from all parts of the Presidency. A good seed-store has been constructed to supply this demand. There are no doubt many other districts where ground-nut could be profitably grown in parts.

10. *Sugar-cane.*—During the year under review the work consisted chiefly of growing the best Mauritius varieties for distribution, besides the cultivation of several local and introduced varieties. Red, Striped and Ashy Mauritius having been found by their growth and analyses to be the best canes they were selected for distribution to the ryots. The closing of supply channel from the Tiruvadi anicut in April this year, the month when the cane would be planted has caused, it is feared, a decided set-back to the cane cultivation. On account of great difficulty was experienced in inducing the ryots to take our canes for plant. The Melrosapuram canes there was practically no demand at all, except from Messrs. Tawker & Sons of Madras. Under these circumstances it was decided to distribute the canes in the district to avoid the necessity of crushing them, and to introduce the new canes as early as possible into the district. A brisk demand then sprang up, to meet which most of the Melrosapuram nursery had also to be sent for. Important assistance was given by Messrs. Parry & Co. of Nellikuppam in bringing the canes to the notice of the ryots and offering pecuniary inducements to them to plant them in preference to the inferior local canes. The Melrosapuram nursery was more of a sugar-cane nursery than a regular experimental sugar-cane station, and experiments were few and simple. Wrapping the canes in the Godavari manner was tried but without any marked success, while top dressings of ammonium sulphate produced inconclusive results. Each application having been followed by a heavy downpour of rain which probably washed it away. The experiment of growing the canes on dry land was a failure, and has been abandoned this season. The growth of the canes was not so good as on wet land.

The nursery at Melrosapuram.—About 3½ acres were finally planted with canes. Samalkota on a piece of land commanded by the aer-motor. Except in some saline where the canes failed, the canes grew well, considering the poor quality of the soil, but the aer-motor was not able to supply a sufficient quantity of water, and water from the oil-cake had to be used to supplement it. It appears that the winds do not blow with sufficient regularity and strength in the months of January, February and March to drive the large aer-motor effectively. There is practically no cane cultivation in the Chingleput district, and the demand for canes was not except from Messrs. Tawker & Sons. The bulk of the canes had to be sent by rail to Nellikuppam and distributed free to the ryots there. It is therefore proposed to take a ratoon crop off the land this year and give up the nursery next year. The Palur farm will thereafter be sufficient to meet such demand as exists in the southern part of the Presidency.

11. *Rotation crops.*—Only a small portion of the *Indigofera arrecta* from Pusa germinated and it was a failure. Two cuttings of the other kinds of indigo were obtained. The results of testing the manurial value of the refuse or seed were inconclusive owing to want of irrigation. Gingelly, Ragi, Tenai (*Setaria Italica*) and Chumba (*Pennisetum Typhoidum*) were also grown as rotation crops. As regards paddy, half an acre of dry land was sown with an inferior variety of Motta Kuruvai paddy which was entirely grown as a rain-fed crop. The yield was very poor. Six acres of sprouted samba paddy was sown broadcast, and three acres were transplanted with the same variety. This year a series of spacing experiments will be undertaken with the paddy crop.

12. *Pulses and fibres.*—Redgram sown on 80 cents yielded 375 lbs. of grain per acre while blackgram tried on one acre was spoiled by the rains. A piece of land half an acre in extent was sown with Bengal jute, Sunn-hemp and Gogu on equal areas in November 1906. Jute was a failure as the crop was subjected to heavy rains in its earlier stages and the seeds were formed while jute plants were 1 to 1½ feet high. Experience gained in the Godavari district points to the fact that Bengal Jute succeeds best when sown in the hot weather. Mr. Finlow, the Fibre Expert to the Government of Bengal, having stated that jute might be suitable for the Tanjore delta, some seed was procured and supplied to the District Agricultural Association. The Agricultural Inspector from Palur was deputed to select suitable plots for its cultivation and to give instruction to the mirasidars who were trying the experiment. Sunn-hemp failed altogether on the farm; a small quantity of Gogu fibre was extracted.

13. *Miscellaneous.*—Three pairs of cattle were purchased during the year and a cattle shed constructed. Land required for the erection of farm manager's quarters and cooly lines will be shortly acquired. A seed-store was built; most of the land has now been laid out into suitable plots for experimental work. Part of the farm was leased out last year to private individuals. This has become very foul. It has been taken in hand now and will be utilized during the coming season. Six apprentices underwent training at the station. The neighbouring ryots show considerable interest in the operations, and visitors are numerous. There is no doubt that there is a wide field of usefulness open for this farm.

M. E. COUCHMAN,
Director of Agriculture.

THE TALIPARANBA AGRICULTURAL STATION.

The area of the farm has been increased by the further acquisition of 1.17 acres of old pepper garden and 6.90 acres of protective scrub jungle. Some 23 acres are now under cultivation. This includes about 18 acres of pepper gardens, 2.77 acres of wet land and about 1½ acres of new clearing on the more level slopes, for experimental cultivation.

2. *Pepper.*—The main work has consisted in the renovation of old gardens by terracing, digging, lifting shade, substituting vine props and new standards for dead or fallen ones and replacing vines where vacancies have occurred.

3. *A*—A series of manurial experiments have been started and plots have been set aside for the application of manure, cattle manure, leaf mould and ashes; while sunn-hemp, wild Indigo (*Tephrosia*) and leafy weeds have been grown as green manures. Grass and leafy weeds are also being tried.

4. *Pepper.*—Cuttings of muruku (*Erythrina indica*) which are the general standard for pepper in the low country have been used to substitute dead standards, and other trees are being experimented with for this purpose. Separate plots have been set aside for these trials and these are being planted up as vacancies in the existing standards occur. 5. *Varieties of pepper under cultivation.*—Besides the local varieties, the Wynad, Balamecottab, and Cheriakodi varieties have been introduced and the cultivated Burma variety of pepper is also under trial. Unsuccessful attempts were also made to raise plants from seeds which were obtained both from the Wynad and from North Canara.

6. *Yield of pepper.*—The yield of pepper this year is only one-third of that of last season. The yield has been the general case in the low country and is attributed partly to the low yield of last year and partly to the failure of the June rains which are generally acknowledged to be necessary to set the fruit.

7. *Fodder crops.*—Trials have been made with cholam (*Andropogon Sorghum*) as a fodder crop. So far these have not met with much success. Guinea grass (*Panicum maximum*) has been planted out both in the shade of the pepper gardens and in the open. This is more promising, but further trials are necessary before any definite opinion can be formed.

8. *Cotton.*—Varieties of local, Egyptian, Sea Island and Caravonica cotton have been grown in hill-side clearings and periodic sowings were made to ascertain the correct time of sowing. None of these have shown any promise of success and except for a few bolls of the indigenous variety none of the others have been able to mature any bolls.

9. *Other crops.*—On the wet lands, paddy was cultivated as a first crop and small trial plots of sunn-hemp, jute and Bimlipatam jute (*Hibiscus Connabius*) were sown for fibre as a second crop. The Bimlipatam jute is very promising, but further trials must yet be made with all three. A trial plot of sugarcane was also planted towards the close of the year, but the crop is too young to form any opinion as to whether it will prove successful.

10. *Cocoa seedlings* have been raised in a nursery for planting on the hill side clearings, a few plants of *Ficus elastica*, shaddock, and pine apples have been planted out for trial. Lemon grass which was obtained last year has been grown on a larger scale on an open hill-side.

11. Mahogany, teak and rain trees have been raised in a nursery and have been planted out near the boundary of the farm.

12. *General remarks.*—An inspection bungalow and quarters for the Agricultural Inspector have been completed by the Public Works Department. These were handed over to the officer in charge towards the close of the year. Two wells have been sunk to supply water to these: a good deal has been done in revetting, improving and repairing water courses and drains, in cutting paths, maintaining fire lines, thatching, repairing and building huts and thinning out jungle where necessary.

13. The farm has been under the charge of an Agricultural Inspector for the whole year, who has been assisted by an Agricultural Probationer since the middle of April. This has given the former time to make a more extensive study of the pepper crop in the low country.

Koilpatti
24th July 1907.

H. C. SAMPSON,
Deputy Director of Agriculture, Southern Division

MISCELLANEOUS WORK DONE BY THE DIRECTOR OF INDUSTRIAL AND TECHNICAL INQUIRIES.

I have the honour to submit the Administration Report of the Department of Experiments in Irrigation by pumping for the year ending 31st March 1907.

2. The establishment during the year consisted of four Supervisors and, for part of the time, of one Sub-Overseer whose services on the 10th September 1906 were transferred to the Deputy Collector who was placed on special duty in connection with the well-boring operations in the Chingleput district.

3. The work of the department during the year may be roughly classified as follows:—

(a) Maintenance of the installations already at work, of which there were 35 at the beginning of the year.

(b) Investigation of new pumping projects.

(c) Erection of new installations.

(d) Collection of data regarding the duty of engines and pumps and more particularly the duty of water.

4. Increased experience with the working of the Hornsby Oil-Fuel Engine has led to the conclusion that it is well adapted to the needs of the agricultural community. Even in the hands of comparatively unskilled workers it is not liable to break down. The installations at work have required no assistance whatever and the duties in some installations were generally of a very trivial character.

5. Messrs. Parry & Co. have introduced the National Oil-Engine and have them at work. A 10 h.p. engine has been lent to me to ascertain whether or not it is suitable for agricultural work and I have had it running for some time driving the work tanning drums in the School of Arts. The engine is worked with liquid fuel but it has been under observation for a sufficiently long time to justify the expression of an opinion upon its merits.

6. The visible success of the earlier pumping installations has led to a large number of enquiries on the part of ryots and land-owners for information regarding the making profitable use of oil-engines and pumps on their lands. Many of these could be rejected without paying an actual visit to the lands whilst others had to be impracticable after detailed investigation on the spot. Of those that were deemed feasible some finally fell through owing to the inability of the applicant to offer sufficient security to enable a loan to be granted under the Agricultural Improvement Loans Act. A few for loans were subsequently withdrawn because the favourable character of the season did away with the urgent necessity which had previously existed for supplementing the supplies of water.

7. The most important result of the numerous investigations that have been made to ascertain the possibility of obtaining sufficient supplies of water to keep an engine and pump going in certain districts and over certain tracts of country it has been discovered that abundant supplies of subterranean water exist and can be raised to the surface without much difficulty. I will be convenient to submit the detailed evidence on this point in the reports of individual stations in Appendix A, the following being a summary of the results:—

(a) To the south of Pondicherry the artesian beds long known to exist in French territory have also been proved to extend nearly as far south as Cuddalore where however the water pressure is not sufficient to bring it to the surface and pumping must be resorted to. To the north of Madras in the basin of the Kortaliyar river, sub-artesian water has been found in large quantities

over a tract of country the longitudinal axis of which is roughly parallel to the main north-south road. Further inland in the same basin to the north of Tiruvallur sub-artesian water has also been found, but the extent to which it is available has not yet been investigated. An extension of the investigations with boring tools and deep well pumps will probably bring to light the fact that in many other places along the East Coast these conditions exist. These sub-artesian supplies of water are likely to be of a permanent character as the water drawn from them will be replaced each year in the rainy season.

(b) Wells sunk on the margin of many of the big rivers penetrate into beds of sand directly connected with the river and as the sand is usually coarse the flow of water is very free and it is not difficult to sink wells sufficiently large to keep 3" or 4" pumps going continuously. Examples of this may be found on the south bank of the Vaigai near Manamadurai, on the north bank of the Coleroon near Kuthur, on the Hagari river at the Government Experimental farm and on the banks of the Palar at Attir near Chingleput. As sources of water-supply, wells of this type are likely to become exceedingly important as, where the conditions are favourable, they offer a simple solution of the problem of tapping the water stored in the beds of rivers.

(c) In the South Arcot district in the neighbourhood of Cuddalore and Villupuram, extensive beds of coarse sand have been discovered at a comparatively small depth and these yield water very freely and it is probable that in many other places similar conditions may exist, as for instance, immediately to the north of Madras, partly within and partly without the municipal limits several engines and pumps are at work or in course of erection to lift water from the underlying sand.

(d) In the Coimbatore district there are a number of deep wells with a water-supply sufficient to keep from 4 to 6 inches running and in such instances it would be much cheaper to use the work with oil engines. So far the experiment has only been tried on the new experimental farm and at the Central Jail, but a considerable number of cases have been investigated and in one instance two engines have been purchased and I hope during the year a considerable number of engines will be put down to raise water instead of employing cattle. In other districts similar wells exist but it must be admitted that the total number forms an exceedingly small percentage of the total number of wells from which water is drawn for irrigation.

(e) In many river channels there are perennial or almost perennial supplies of water and though a good deal of this is used by the system of spring channels, an enormous quantity of water remains unutilized and engines and pumps can, in many cases, render it available for irrigation. On the Adyar river, for instance, several engines and pumps are at work and all over the Agency it requires but little search to find similar unutilized sources of water. The main difficulty to be overcome is due to the gradual slope of the land on each side of the river which necessitates either the erection of high banks to carry the water or pumping through long and consequently expensive mains. The most economical solution is usually to carry the water from the low level channel to some distance into the high bank and then to lift it into the high level by means of the pump. In some cases the lift may be accomplished by means of a simple experiment.

- (3) A 5 h.p. engine and a 3-inch pump for M.R.Ry. T. Subramania Iyer, Timmanacharikuppam.
- (4) A 5 h.p. engine and 3-inch pump for M.R.Ry. Muthukumaraswamy Pillai of Cuddalore.
- (5) A 7½ h.p. engine and 4-inch pump for M.R.Ry. Vaidyanatha Aiyar of Valavanur.
- (6) A 7½ h.p. engine and 6-inch pump for M.R.Ry. Ratnasabapathy Mudaliar in Tondiarpet.
- (7) A 5 h.p. engine and 3-inch pump for M.R.Ry. Muniappa Gramany in Tondiarpet.
- (8) A 7½ h.p. engine and 4-inch pump for M.R.Ry. Balagurunurthy Chetty of Panjerikuppen.
- (9) A 5 h.p. engine and 3-inch pump for M.R.Ry. V. P. Rajappa Gounder of Unjalur.
- (10) A 3½ h.p. engine and piston pump for the Mysore Fruit Growers' Association.
- (11) A 5 h.p. engine and 3-inch pump for the Maharaja of Bobbili.

All the above are Hornsby cheap fuel engines and though the majority have been ordered through the Pumping Department, it is satisfactory to note that several have been purchased independently.

10. For the installation of engines and pumps loans under the Agricultural Improvement Loans Act have been granted in the following instances :—

	Rs.
(1) M.R.Ry. D. Sundarasiva Rao, Ellore	6,000
(2) „ P. Venkata Reddi of Dorigallu	2,000
(3) „ V. P. Rajappa Gounder, Unjalur	2,000
(4) „ T. Subramania Aiyar, Timmanacharikuppam	2,000
(5) „ K. Ginjappa Gounder, Satyamangalam	2,500
(6) Zamindar of Laccavaram	5,000

The total amounts to Rs. 19,500 which added to the previously reported loans makes the sum total lent for the purpose of oil-engines and pumps Rs. 44,000.

11. Great difficulty has been experienced in getting the owners of engines keep any system of accounts that will furnish information of value and it is still difficult to obtain from them a profit and loss statement. There is no doubt that the majoring stations have been worked at a very good profit as the demand for oil-engines steadily increases from landholders and they have had no opportunity of seeing the pump has been worked.

worked by bullock power. Apart from the saving due to the employment of an oil-engine instead of the cattle, he estimates that with average prices the yield per acre will be increased in value by Rs. 50 owing to the superior extraction of the more powerful mill.

14. In the industrial regeneration of the country the oil-engine is already playing an important part and in the future it is likely to be a factor of supreme importance. In this motor simplicity and cheapness have reached the highest development and a motor suited to Indian requirements has at last been found. Slowly but certainly it is opening the eyes of the people to the advantages of mechanical methods of working and they are gradually losing the diffidence and distrust with which they have hitherto regarded anything pertaining to the Mechanical Engineer.

15. Undoubtedly the most important work to be taken up in the immediate future is the scientific exploration of the water resources of the country. A beginning was made with this last year and continued during the year under review, but the scale of operations was much too small and the results obtained only serve to demonstrate the importance of much more extended work in this direction. The most important result obtained was the discovery of sub-artesian water in the village of Surapet belonging to Messrs. Tawker & Sons. Shortly after this the Special Deputy Collector commenced work in the Chingleput district and it was necessary to place under him the services of the only subordinate I had who possessed a good practical knowledge of boring. A good deal of work has been done in the Ponneri taluk but the method of working, until quite recently, was very unscientific and the results have not been of much value. Lately, however, the adoption of a more rational procedure has led to the discovery that the Kortaliyar sub-artesian water underlies a very considerable area of country.

16. The publication from time to time of the results obtained with boring apparatus has excited an enormous amount of interest among the people of this country and has given rise to a very considerable correspondence from all parts of India regarding the tools employed in the methods of working pursued. For exploratory work, not only are numerous sets of boring tools required, but pumping power to test the inflow to the boreholes and to test the inflow to existing wells is urgently necessary. All over the country the work of advising land-holders as to the extent of their water-supply and the consequent feasibility of installing engines and pumps would be greatly simplified if we possessed a portable pumping set by means of which wells could be unwatered in a comparatively short time.

17. In the appendix figures are given relating to the actual cost of pumping water at some of the stations where accurate accounts have been kept. These are summarized in the following table which shows the number of cubic feet raised—one foot for one anna in both 1906-1907 and 1905.

	1906-1907.	1905-1906.
Melrosapuram	3,900	...
Kadiampatti	4,013	6,400
Villupuram	3,230	5,800
Cuddalore	9,370	6,750
Saidapet	8,300	4,126
Katalai	...	6,500
Bezwada	3,340	3,200

The comparatively high cost of water-lifting is due in the main to the small use that is of the pumps. At Saidapet and Cuddalore where the engines ran for long hours the cost of water is much less than at other stations where the running hours were fewer. In instances the pumps simply supplement other sources of water-supply and render, what formerly extremely precarious, a certainty. At Katalai the pump enabled plantains to be raised instead of paddy and the plantain garden yielded at least ten times as much as the paddy per acre. At one pumping station it was not necessary to run the engine and pump at all the natural sources of water-supply proved adequate; yet this, according to the owner's experience, does not happen one year in four.

8. In last year's report (paragraph 12) the meagreness of the information which had been obtained regarding the duty of water was commented upon and I have but little to add to it this year. At Saidapet, Kadiampatti and Bezwada proper accounts were kept and it is possible to state what depth of water was supplied to each crop, but there is no information as to whether the irrigation was properly done or not. The principal factor in determining the duty of water is the nature of the soil and sub soil. On heavy soils the duty is much higher than on sandy soils, but it would seem that the difference between the two can be greatly diminished by careful cultivation and properly controlled waterings. On farms where several crops are cultivated it is impracticable to get the owners to keep accounts of the distribution of water and the utmost that can be obtained is a statement, not always correct, of the number of times the pump has been worked.

19. The most important deduction from the results of these pumping stations is the high value which attaches to water when the supply is perennial and not liable to failure. A careful investigation of the cost of well irrigation shows that it really costs the ryots in labour and produce from Rs. 60 to Rs. 90 per acre for garden cultivation and the figures given in the appendix to this report show clearly that the cost of most pumping stations amounts to fully Rs. 30 an acre and yet a large profit is made and the adoption of engines and pumps is making good progress. Where the cost of water is considerable superior cultivation follows and the margin of profit to the ryot is not very different under the wells of Coimbatore or the canals of the Godavary. Irrigation projects of enormous magnitude are now hung up mainly because the return on the capital outlay is insufficient. It would seem that for the certain water-supply which could be guaranteed from the Tungabhadra reservoir the ryots could well afford to pay from Rs. 12 to Rs. 30 per acre instead of Rs. 5. Similarly with the other projects, the water they will supply is really worth much more than is charged for it and it certainly seems open to consideration whether it would not be better to impose a much higher water-rate rather than not supply the water at all. It will take time to get this generally recognized and the extension of irrigation by pumping plants seems likely to prove the most potent educative influence in this direction.

20. During the year a considerable amount of attention was paid to other methods of lifting water and furnishing motive power than those adopted. Several suction gas producers plants were under observation with very satisfactory results and it is probable that in places where charcoal can be procured for not more than Rs. 20 a ton, gas engines can be used as a source of motive power if the amount required is not less than 10 or 12 horse-power. A great many improvements have been effected in the design of centrifugal pumps and constant speed pumps are now on the market that will work satisfactorily through a wide range of lift. It remains to be seen whether the complications introduced into their construction and the enhancement in their cost are fully compensated for by the undoubted improvements in their performance. The Hornsby engine and the Gwynne centrifugal pump are now kept in stock in Madras in large numbers and of a considerable variety of sizes, so that it is possible to get delivery of a pumping plant in a few days. The practical importance of this can hardly be overestimated and where there is little to choose between the productions of rival makers, those on the spot are almost certain to secure the preference. It would certainly be desirable to have a greater variety of engines and pumps to select from, but it is not merely necessary for would-be competitors in the market for engines and pumps to secure a recognition of the suitability of their machinery, they must also have it on the spot and ready for delivery at very short notice.

21. As was reported last year, the Madras Corporation have adopted Hornsby to drive the centrifugal pumps in several of their sewage pumping stations. The engine worked very well and a considerable saving in the fuel bill was effected; but it was recognized that there was no perceptible improvement in the pumping. It was proposed to replace the oil-engines by new steam plants, I volunteered to investigate the matter and with the consent of Government the work was started early this year. Preliminary work of the sewage system, the Venturi meter belonging to the pump, was placed in position. The main leading from the DeMello's Road pumps and it was then found that the defect was in the pumps being unable to discharge the sewage gas which accumulated in Ventilating pipes were fitted to the pumps and a very marked improvement in the discharge took place. A report has been submitted to the President of the Corporation recommending lowering of the level at which the pumps are fixed wherever possible so as to reduce the of suction and suggesting that in future all centrifugal pumps should have horizontal fan should be placed at the bottom of the pumps. This will enable suction valves to be dispensed with and will entirely eliminate the troubles due to the evolution of the sewage gas if suction pipes; the pumps will run in solid water and their efficiency will be much greater at present.

22. Recently a consideration of the methods of utilizing the water in the sand of rivers led to the discovery that the commonly accepted idea that there is a slow flow of water through the sand is quite erroneous. The minimum hydraulic gradient at which water flows through sand is much greater than the slope of the river beds and any movement of water below the surface of the sand is therefore impossible. The most important conclusion following from this conclusion is that it is now possible, by determining the hydraulic gradient at which water ceases to move in any river bed, to demarcate the area from which ex-spring channels, wells or intercepting galleries draw their water-supply. This will enable us to put down pumping plant in the future with a certain knowledge as to the effect it will have upon the water in the river bed and will enable us to predict with a fair degree of accuracy the volume of water which can be obtained after visible flow in the river has ceased. It follows that since there is no movement of water in the sand the quantity actually available is much less than was generally supposed to be the case. This question will be dealt with in detail in the scientific report, which is now under preparation, in which also the technical questions briefly referred to, will be discussed in greater detail.

23. Appendix III is a statement of the accounts for the year. The total expenditure on the department amounted to Rs. 14,105-4-7, but it is only possible to estimate approximately the value of the work done as the expenditure only in part defrayed by the funds placed in my hands. Roughly it amounted to slightly over half a lakh of rupees and there is work in progress which will be shortly completed at an additional cost of a quarter of a lakh of rupees.

A. CHATTERTON,
Director of Industrial and Technical Inquiries.

ENCLOSURE I.

In the following notes details are given of the results obtained at some of the pumping stations which were described in last year's report—vide pages 37—41.

Melrosapuram.—The engine and pump worked on 157 days for 958 hours at a total cost, including interest and depreciation on capital outlay, of Rs. 660 equivalent to annas 11 per hour. The quantity of water raised was on an average 1,861 cubic feet per hour and the lift 23.14 feet. 3,900 cubic feet were lifted, one foot for one anna. The rainfall was 51.79 inches, the area under the pump was 20.10 acres and 97,600 cubic feet of water were supplied to the sugarcane plantation which was ordinarily dependent on the Canadian aermotor. In all, therefore, 1,686,000 cubic feet of water were supplied to 20.10 acres equal to an average of 1.92 feet per acre. Owing to defective cultivation the value of the produce per acre amounted to only Rs. 86, whilst the cost of the water-supply was nearly Rs. 33 per acre.

Kadiumpatti.—This installation worked very unsatisfactorily during the year owing to the defective supply of water in April, May and June and the excessive rainfall in August which materially damaged the crops. 1,510,100 cubic feet of water were raised at an average height of 21 feet at a total cost of Rs. 493-11-0 equivalent to 4,013 cubic feet raised one foot for one anna. Careful accounts were kept of the distribution of water to the several crops, but the yield from the land was so poor that the information which has been recorded is of no practical value.

Villupuram.—The engine and pump were worked for 1,432 hours and raised 6,000,000 cubic feet of water at an average height of 13.33 feet. The working expenses amounted to Rs. 1,050 and interest and depreciation at 12½ per cent. on a capital outlay of Rs. 4,000 to Rs. 500 making the total cost Rs. 1,550. This works out to 3,230 cubic feet lifted one foot for one anna. This installation was worked by Messrs Parry & Co. The high cost is due to very high rates paid for fuel and to the inclusion in the accounts of the total cost of the establishment—mainly this pumping station. The water-supply is excellent and the neighbouring farmers are extremely anxious that it should be kept permanently at work and are willing to pay Rs. 10 per acre for dry crops and Rs. 20 per acre for wet crops on the terms offered at Messrs. Parry & Co. The land round the well is very poor and it is necessary to make an impervious channel for about ½ a mile to carry the water suited for irrigation.

Katalai.—The total capital expenditure on this installation is about Rs. 14,000 so that the cost and depreciation amount to Rs. 1,750 per annum. During 1906-1907 the pump was worked for 153 hours and the working expenses were Rs. 440. The land commanded by the pump is 300 acres but permission to take water in the hot weather has been restricted to an area of 60 acres. The lands are usually watered by a channel from the Amaravati river and the supply was exceptionally good and assistance from the pump was not required. Five acres of plantains were cultivated and watered after the channel ran dry. The plantains were sold at annas 12 per bunch and yielded not less than Rs. 600 per acre which is a very good return. Ordinarily the plantains may be calculated to yield a gross return of Rs. 200 to Rs. 300 per acre. This installation has proved very profitable and demonstrates in a remarkable way the high value which may be assigned to a certain and perennial water-supply. Many other installations would be set up on the Canvey if the terms upon which water can be drawn from the river were made sufficiently favourable. The leading channel from the pump which cost Rs. 1,500 and had only just been completed was washed away by a high flood in November. The engine and pump worked satisfactorily and the owner required no assistance from us.

Nellikuppam.—From the accounts furnished by the owner the following abstract has been reduced. Total area under cultivation 19.61 acres, value of produce Rs. 2,571 as shown in the following table—

					RS.
Plantains,	5.65	acres	yielded	crop	worth
Ragi,	1.56	"	"	"	36
Kumbu,	5.42	"	"	"	214
Paddy,	6.98	"	"	"	821
	19.61				2,571

The working expenses of engine and pump were Rs. 289, interest and depreciation Rs. 300, cultivation expenses Rs. 1,023, total Rs. 1,612, leaving a net profit of Rs. 959 or Rs. 49 per acre. The engine and pump and the water-supply are capable of irrigating a much larger area of land and consequently neither are anything like fully utilized. In the cane-crushing season the engine drives a sugar mill and is kept fully employed. The success of this plant has induced a number of people in this part of the country to invest in oil engines and pumps, a plentiful water-supply being usually procurable within 20 feet of the ground level.

Cuddalore.—The engine and pump were run 3,533 hours and lifted about 2,500 cubic feet per hour a vertical height of 27 feet. The working expenses were Rs. 1,189 and interest and depreciation may be estimated at Rs. 400, making the total charges Rs. 1,589. 2,370 cubic feet were lifted one foot for one anna. This fairly favourable result is due to the fact that the plant was steadily at work for 9 months of the year. The water-supply is sub-artesian in character and though the flow is less than when the borings were first made it is now fairly constant. 46.25 acres were under cultivation and yielded a gross income of Rs. 2,698-3-3, whilst the total expenditure including pumping charges amounted to Rs. 3,069. This disappointing result was entirely due to the failure of the sugarcane crop, from 10 acres of which only Rs. 275 was realized. Mr. Panduranga Mudaliyar is however sinking another well about a quarter of a mile from the existing well with a view to extending the area under cultivation to 90 acres. With increasing agricultural experience this enterprising vakil will probably obtain better results.

Saidapet.—From the accounts furnished by the Acting Principal it appears that the engine was run on 203 days for 2,103 hours and lifted 4,965,000 cubic feet of water an average height of 22.5 feet. The total cost of working including interest and depreciation was Rs. 842-13-9 which means that 8,300 cubic feet were lifted one foot for one anna. In addition to watering the Botanical Gardens, 6.9 acres in area, attached to the Agricultural College, 34.65 acres of crop were grown. The cultivation expenses amounted to Rs. 880 and the receipts from sale produce to Rs. 1,416. Commercial considerations did not influence the choice of crops cultivated; otherwise the returns would have been much larger. The water registers were kept with great care and accurate information obtained as to the distribution of water to the different crops. From the data thus obtained diagrams of water-supply including rainfall have been prepared which will be discussed in detail in the report on the duty of water.

Bexwada.—The pump lifts water from Ryves' Canal in the Kistna Delta system and was worked for 1,213 hours, raising 1,920 cubic feet per hour on an average lift of 19½ feet at a total cost of Rs. 850. This is equivalent to 3,340 cubic feet raised one foot for one anna. The farm land is very sandy and there was a very heavy loss of water through seepage from the distribution channels with the result that the duty of water on the land was very low.

ENCLOSURE II.

Of the pumping plants erected recently possess no features of a character and need not be referred to in detail but the installations at Surapet erected by Mr. Gopinath Tawker, on the Godavari lankas for Messrs. Innes & Co., of Cocanada, and the Hagari experimental farm merit a brief description.

Surapet.—At the outset a 6½ h.p. engine and a 4" pump were erected early last year to lift water from a small pond close to the Kortaliyar river. The pump delivered about 3,000 feet per hour and the percolation into the pond was sufficient to keep the engine at work about 5 hours a day. Under the pump 28 acres of plantains were planted and have done well and will undoubtedly yield a good return on the capital outlay. Whilst the work in connection with the above plant was going on I was informed that some years ago the villagers had bored a hole with a long jumper at the bottom of a well near the village from which sand gushed forth and fearing that the well would be damaged they had plugged it as soon as possible. In September, to test the truth of this statement a 3-inch borehole was driven down and, at a depth of 40 feet from the surface of the ground, sub-artesian water was obtained which filled the well to within 13 feet of the ground level. To avail himself of this water Mr. Tawker agreed to sink a new well and provide a 12 H.P. engine and 6" pump. This was made 12 feet in diameter and sunk about 24 feet, and from the bottom four 7 inch pipes were put down till the water bearing sand was reached. The pipes have not proved very satisfactory as they choke with sand and at the present time only two of them deliver water in quantity sufficient to keep the pumping plant at work and 40 acres of sugarcane have been put down. Borings have been made by the Special Deputy Collector which reveal an extensive area of water bearing sand and plans and estimates are now being prepared for water from a number of wells to irrigate an area of 300 acres. It is intended to put a suction gas producer and gas engine as the source of motive power and to distribute it to the pumps in the several wells. For various reasons it is necessary to proceed with caution to avoid incurring loss, the principal trouble being the lack of experience on the part of the cultivators with the valuable crops which it is now possible to grow.

Godavari lankas.—As is well known, the lankas on the Godavari river below the ancient yield valuable crops of tobacco, which is sown at the end of the flood season and cut in February. When the local rains fail, it is necessary to water the crop and this is done at great expense by hand labour, the coolies having to carry the water up from the river in chatties and water each individual plant. Naturally this is very expensive and as the crop never gets sufficient water, the returns from tobacco cultivation vary greatly with the character of the season. Messrs. Innes & Co. of Cocanada, having acquired a long lease of a lanka belonging to the Vizianagaram Samasthanam, consulted me as to the possibility of using oil engines and pumps for raising water from the river to water the tobacco. After inspecting the lanka, I considered that it would be quite practicable to lift the water from the river-bed but that it was not quite certain that at the end of the season there would not be too much salt in the water as the lanka was situated within the tidal limits. Eventually Messrs. Innes & Co. obtained a lease of a Government lanka much higher up the river and decided to install four oil engines and pumps, two on the lower lanka, and two on the upper, where there was absolutely no question about the water-supply remaining fresh throughout the year. The main stream of the river runs close to the Eastern or left bank and the lankas form the opposite bank, gradually sloping up from the deep river-bed and subject to erosion or accretion during every flood season. On this side it would be quite impossible to establish pumping stations at any reasonable outlay and in all probability they would be washed away by the first high flood but on the western side of the lankas there is a deep narrow channel known as the Togaru Paya which has in most places almost vertical banks and is subject to very slight changes from year to year. Judging from the size of the trees on the banks and the testimony of the villagers there is no doubt that this channel has remained unaffected by floods for a very long time and it was accordingly determined to erect two pumps on its banks. The lower one, intended to irrigate Chintia Lanka, the land on the western bank of the channel, is a 6" centrifugal pump driven by a 16 h.p. engine and will deliver two cusecs on a lift of 25 feet. The pump is placed over a brick well sunk a short distance back from the bank and connected to the channel by a culvert made with 18" earthenware pipes. The water is delivered into a channel carried in embankment which runs back into the gradually rising ground. A small 1" centrifugal provides circulating water for the engine jackets. The upper pumping station on Tadapudi Lanka is similar in general arrangements but the pump is an 8" centrifugal driven by a 24 h.p. engine and capable of lifting 3½ cusecs. The land in this case is situated between the Togaru Paya and the main stream and is of a rather rough uneven surface which necessitates carrying the water in a channel with several branches and over one deep depression a wooden trough supported on tressles made of palm trees has to be employed. On Tadapudi Lanka there is a large brick well originally made to obtain water for a small indigo factory and on this a 12 h.p. engine and a 4" pump have been fitted. This has been at work all last season but the infiltration to the well is not sufficient to keep the pump fully at work and the engine can only be run continuously by reducing its speed so that the pump delivers about ½ of its discharge. This is of course an inefficient way of working but it is convenient till steps are taken to deepen the well and obtain a better flow.

At Tadapudi Lanka a well has been sunk and a 3" pump has been fitted to the well and has been employed. During last cold season the water was very low and the crops were obtained, which was fortunate as the bigger crops were ready to deliver water. It is mainly in dry seasons that the value of the crop. Experiments have been in progress to ascertain what crops can be grown during the hot weather and good results have so far been obtained with cotton, sugarcane and the channels are at present unable to deliver the early floods it is hoped that pumping will be possible. The lankas are now covered with silt; but what will happen later on when the floods will be quite uncertain. The engines and pumps may be submerged for a few days and preparations have been made to meet this contingency but it is only in exceptionally bad years that the pumps at the wells will be drowned. The jute on the higher parts of the lankas will benefit from the floods as in the middle of June it was fully 5 feet high and capable of standing immersion.

Should these expensive experiments of Messrs. Innes & Co. prove successful they open out a new future for lanka cultivation. In the lower lankas within the range of the tide wells may be relied upon to supply fresh water and even in the upper reaches of the river it is not probable that pumping water from numerous wells will prove more convenient than raising the water direct from the Togaru Paya. The submersion of the engines and pumps is bound to be a source of trouble and as the wells can be sunk in the highest parts of the lankas, they can be protected from all but extraordinary floods. In the event of pumping proving profitable, obviously most of the difficulties due to the periodic flooding of the land will disappear if an electrical system of distributing power be adopted as the central generating station can be sited on the mainland of the Central Delta and the power distributed by overhead wires. Electro-motors and small centrifugal pumps fixed in numerous wells will enable the lankas to be irrigated with less waste of water than a smaller number of pumping stations of much larger capacity and in flood time it will only be necessary to place the electro-motors in a dry place and the reach of the floods.

ENCLOSURE III

Cost of establishment from 1st April 1906 to 31st March 1907.

Designation.	Salary.	Travelling allowance.	Total.
	RS. A. P.	RS. A. P.	RS. A. P.
Supervisors	8,627 6 8	2,715 12 0	11,343 2 8
Sub-Overseer	210 0 0	33 0 0	243 0 0
Peons	192 0 0	188 7 6	380 7 6
Driver at Kadiampatti	140 0 0		140 0 0
Total	9,169 6 8	2,937 3 6	12,106 10 2
<i>Contingencies.</i>			
Supplies and Services—			
Wages		122 13 5	
Materials		460 8 9	
Tools and plant		618 3 0	1,391 4 2
<i>Ordinary contingencies.</i>			
Purchase of books		6 6 0	
Telegram		53 12 0	
Postage		0 2 0	
Tour charges		35 0 0	
Office expenses		183 2 3	
Miscellaneous		2 0 0	
			277 6 3
Grand Total			14,105 4 7

APPENDIX II.

REPORT OF THE WORK DONE IN THE GOVERNMENT BOTANIST'S OFFICE DURING THE YEAR

Changes in the staff.—Mr. C. A. Barl
19th January 1907 on privilege leave at
then too In the

of the Taliparamba farm. In May 1907, the Samalkota
of the Deputy Director of Agriculture, Northern Division
under report the Palur farm was transferred to the
Agriculture, Southern Division. I took charge of the
official year.

Mr. N. Venkatakrishnama Nayudu, Assistant
June 1906. No Economic Assistant was appointed.
Assistant was absent on leave on account of illness for about
about three weeks at the close of the year, and continues so.

Mr. P. N. Venkata Row, Assistant in Entomology, was suspended
on account of misconduct and his services were finally dispensed with. It was not till
of July that the vacancy thus caused was filled up by the transfer of the Assistant to the
Entomologist. The Entomological work of the office was thus practically in abeyance
April to August. Fieldman V. N. Rama Row was placed in charge of the sugarcane at
at Melrosapuram on the 18th April. As he was found to be not up to the mark, he was
back in October 1906 to the Collector's office, Chittoor, from which he had been
Fieldman Subramania Aiyar was made Agricultural Inspector in September and was
in charge of the Palur farm, while Agricultural Inspector D. Balakrishnamurthi was re
of the farm work and deputed to enquire about the sugarcane industry.

In April 1906, fieldman Subbiah was appointed and confirmed in the appointment
six months' probation. In March 1907 he was appointed Assistant Farm Manager and
to Palur where he is now working.

The three appointments of fieldmen thus fell vacant during the year and the vacancies
not yet filled.

2. *Work of the office staff—Government Botanist.*—The Government Botanist was altoget
156 days on tour during the year. Samalkota was visited thrice, viz., in June, August
December, and the visits occupied 41 days altogether.

The second visit was made in company with the Director of Agriculture, the Imperial
Agricultural Chemist, the Bengal Jute Export, the Superintendent of Farms, the Agricultural
Adviser to the Court of Wards, the Collector of Gódvári and the Chemists of the Deccan
Factory, for selecting a site for a sugarcane nursery for the production of good seed cane for
distribution to the ryots in the northern parts of the Presidency. Three reports were
submitted on the subject of such a nursery. After the second visit to the Samalkota farm, the
Government Botanist proceeded to the Government farm at Cuttack in company with the Jute
Expert and the Reporter on Economic Products and observed the method of cultivating the crop
and extracting fibre therefrom. A report on this inspection, another on the specimens of jute
received from Gaujam and Vizagapatam and a third on the experiments conducted with jute at
the Samalkota farm and lastly a report on the advisability of extending jute cultivation in the
Gódvári district were submitted to the Board. The third visit to the Samalkota farm was made
in company with the Director of Agriculture and the Imperial Entomologist.

Three visits were paid to the Taliparamba farm, viz., in April and October 1906 and in
January 1907. The visits occupied on the whole 26 days. During the first visit all matters
connected with the farm were gone through, all the plots were inspected and a scheme for the
forthcoming year laid down. The second visit was made in company with the Director and
Mr. R. C. Wood and the last in company with the Director and Mr. Shepperson.

The Palur farm was visited on five occasions which took 33 days in all. Two of the visits
were made in company with the Director.

The Melrosapuram farm was visited in May and July.

Coimbatore was visited on five occasions. During the first visit, the site and plan of the
Research Institute were discussed with the Director. The second visit was in company with
Mr. R. C. Wood for selecting a site for a botanical garden. The third visit was for attending
the ceremony of the foundation stone of the Institute and the College being laid. In October
100 mahogany plants were taken and established at the farm. The last visit was for meeting
Mr. Shepperson.

Tanjore, Nidamangalam, Cuddalore and Tiruchengode were visited on various occasions.
The Nidamangalam trip was for inspecting the mango garden of Sir S. Subrahmaniam Iyer.
Experiments were instituted for inducing the trees to fruit. The results of the experiments are
to be watched for at least two seasons before any conclusions are drawn in regard to the results.
A report on the inspection was submitted. Mr. Abraham Pandithar's garden at Tanjore, Mr.
Pandurangam's sugarcane plantations and Messrs. Parry & Co.'s casuarina plantation at Cud-
dalore were visited, and the Kumaramangalam home farm near Tiruchengode was inspected with
Mr. Sampson.

3. The Government Botanist made contributions on the following subjects to the "Agricultural
Journal of India":—

(1) The Samalkota Sugarcane farm.

Early maturing canes.

The Origin of New Sugarcanes by "Bud Variation".

wrote also Bulletin No. 56 of the Madras Agricultural Department on the "varieties of
red pepper".

Work of the Economic Assistant.—The late Mr. Venkatakrishnama Nayudu spent altogether
on tour. He attended the Conjeevaram Agricultural show with a number of exhibits,
parent varieties of sugarcane, groundnuts, fibres, etc.

Work of the Systematic Assistant.—The Systematic Assistant attended also to the duties of
the Assistant and to the general management of the office during Mr. Barber's tour.
ness, he could not spend more than 27 days on tour. He identified grasses sent by
bers, and 2,000 plants of Mr. Barber's collection including all the host plants of
indens, a root parasite of the prickly-pear, etc. In October, he explored the Nallamalais to
new kinds of haustoria, collected at Digunametta many root connections of *Ximenia ameri-*
discovered a new root parasite, viz., *Opilia amentacea* of the order of *Olacinae* and made
general botanical collection. The tour on the Nallamalais lasted about three weeks. The
ag of the barks collected on the Anamalais, and of the grasses collected in South Canara
ished. He contributed notes on sundry botanical subjects to the Reporter on Economic
cts, the Director of Agriculture, etc., and also assisted Professor Fyson of the Presidency
e. While he was preparing for a tour in the Travancore forests he was attacked with
ms fever. The Director of the Botanical Survey of India inspected the botanical collections
office on the 12th October 1906.

New Assistant in Economic Botany.—The new Assistant in economic botany who was
ted only about 12 days before the close of the official year attended to sundry botanical
n the office.

Work of the Assistant in Mycology.—The Mycological Assistant was studying in the
ing of the year herbarium and spirit specimens of the sugarcane fungus, accompanied the
ment Botanist to Palur and conducted the necessary spraying operations for the *tikka*

disease in the ground-nut crop of the farm. In July, he investigated a disease which was rather confined to parts of the Amalapur taluk and of the Razole division of the Narsapur taluk and which was called "Lakka nrugadam", literally "exudation of resin", the characteristic of the disease being a gummy exudation starting at the base and gradually extending upwards to nearly three-fourths of the trunk. A more extensive and serious disease which affected the palmyra and coconut palms and was characterised by the rotting of the bud or cabbage as it is called, has engaged his attention from October last. One Agricultural Inspector and eight Special Revenue Inspectors co-operated with him. The Imperial Mycologist inspected the diseased palms in March last and suggested that the operations for the eradication of the disease should be confined to a compact tract.

8. *Work of the Entomological Section.*—As said before, the entomological work of the office was in abeyance till August. Both the assistants were engaged till December in visiting the Government farms by turns for studying the crop pests.

The work at head-quarters consisted chiefly in sorting, arranging, labelling, and recording the old and the fast accumulating tour collections, according to the Imperial Entomologist's directions. Many insects collected locally were reared in the office for studying their life history. The collections of insect specimens have been divided according to the Imperial Entomologist's directions, into two classes, one the most important called the "E" or economic collection, and the other "G" or general collection. The former class comprises pests or useful insects and the other class consists of insects of general interest. All economic specimens are given serial numbers and recorded in an economic register and until they are identified, they go by their numbers as E-1, E-4, etc. Similar is the case with the "G" collection. All the reports and notes of observation, etc., of the pests are filed according to the numbers of the pests. The number of economic insects at present on record is about a hundred.

The system of submitting a report every month to the Imperial Entomologist on the work done by the Assistants has been introduced and the reports are being sent every month and received back with remarks from that officer. In addition to the monthly reports, special reports on any particular investigation are also sent to Pusa for the Imperial Entomologist's remarks. All the insects to be named are also sent in batches and three such batches were sent during the year and several insects got named. In short the work has been very much enlarged and the Provincial Entomological Assistants are in close touch with the Imperial Entomologist and are guided and supervised by the latter in everything.

The Imperial Entomologist visited Madras in December with the special object of discussing the work of the Entomological Assistants and the keeping of the collections. He spent a couple of days in giving all kinds of directions and drawing up a plan as regards their work, and the keeping of the collections. The Entomological work in the office is now carried on in accordance with the directions of that officer.

9. *First Assistant in Entomology.*—Mr. Ramakrishna Aiyar, the First Entomological Assistant, spent altogether 70 days on tour. He visited the Palur, Attur, Melrosapuram and Surul pest in the groundnut crop. In March he was sent to investigate insect pests which had seriously damaged the paddy crop in many parts of the Penukonda. Specimens of the pests were sent to the Imperial Entomologist who identified one of the pests as "Schoenobius bipunctifer".

10. *Second Assistant in Entomology.*—Mr. Y. Ramachandra Row, the Second Assistant Entomology, visited the Saidapet, Samalkota, Coimbatore and Hagari farms, and studied crop pests which were numerous especially at the last. At the end of the year, he was at Hagari farm. He spent altogether 89 days on tour.

11. *Fieldmen.*—Fieldman Subramania Aiyar was sent in April 1906 to inspect and re-site for a sugarcane nursery at Melrosapuram. He visited the place several times etc. He was sent to Palur on three occasions and helped the Agricultural Inspector in laying on etc. Till he was put in charge of the Palur farm as Agricultural Inspector in September, he spent 27 days on tour.

Fieldman Subbiah was sent to Timmerly in June to attend the agricultural show with Palur farm exhibits and to Samalkota in January 1907 to assist the Agricultural Inspector at the cane-crushing season. His tours extended over 44 days before he was posted as Assistant Farm Manager, Palur.

Fieldman V. N. Rama Rao was sent to Melrosapuram on two occasions to superintend operations at the cane nursery and to settle the nursery accounts with the Pastor. He also visited the neighbouring villages of Chingleput, Conjeeveram and Melrosapuram to enquire about and margosa oil-cakes.

12. *Artist.*—The artist visited Samalkota twice and made paintings of sugarcane and plants, and 24 paintings of moths and butterflies. He prepared sketches of ploughs, harrows, He drew sketches of the ground-nut crop affected with surul pachi, tikka disease and millip. He also drew several plans of buildings for the farms under the Government Botanist's charge well as for other Government farms.

13. *The Library.*—The Librarian, who was working under the Government Botanist, was transferred to the Director's office in February 1907. During the year under report many botanical books and periodicals on Botany and Entomology, were added to the collection. The proposed system of cataloguing is not yet taken up on hand and a rough list is used by the librarian in taking out books, etc. A new scheme of distributing books, pamphlets, journals, etc., will be given effect to shortly.

CAMP PALUR,
12th June 1907.

C. K. SUBBA RAO,
Ag. Government Botanist.

APPENDIX III.

REPORT ON THE COLLEGE OF AGRICULTURE, SAIDAPET, FOR 1906-07.

I have the honour to submit the report on the College of Agriculture for the official year ended 31st March 1907.

2. I took charge of the office of Principal from Mr. Keess on 22nd January 1906, as stated in the report for 1905-06, and have held it since.

M.R.Rys. R. V. Subramania Aiyar, M. R. Ramaswami Sivan, J. Chelvaranga Raju and T. V. Narayana Rao continued to act during the year as second, third, fourth and fifth Assistants respectively.

The post of sixth assistant was held by M.R.Ry. T. Mohan Lal until the end of December, when his services, being no longer required, were dispensed with, as he was a temporary man.

From January M.R.Ry. R. V. Subramania Aiyar had no teaching work to do. He has now been deputed to survey and map the Central farm at Coimbatore and other agricultural stations—vide your Dis. No. 943, dated 12th April 1907. From the above it will be seen that the teaching staff consisted of six assistants including myself till the end of December and of four since.

3. At the commencement of the year there were two classes (II and III) with 31 students—class II, 19; class III, 12. Class III finished its course at the end of December, when only one class was left. Five stipendiary students of this class not having succeeded in passing in at least four out of the six preliminary subjects during the first two years' course became disentitled to stipends under College rule 6. Two of them left the College, while the other three continued their course as paying students. Thus the strength of this class (class III of the current session) was 17 on the 31st March.

Numerous applications from persons both in and out of the Presidency for prospectus and rules of the college continued to be received during the year under report.

	Class I.		Class II.		Class III.		Casuals.		Total.	
	31st March 1906.	31st March 1907.	31st March 1906.	31st March 1907.	31st March 1906.	31st March 1907.	31st March 1906.	31st March 1907.	31st March 1906.	31st March 1907.
1. Europeans and Eurasians	..	..	..	..	2	..	..	..	2	..
2. Native Christians	..	..	1	..	2	1	..	..	4	1
3. Muhammadans	..	..	7	..	6	5	1	13	13	6
4. Brahmans	..	..	11	..	1	9	..	12	12	10
5. Non-Brahman caste Hindus	..	..	..	..	..	..	..	..	..	..
6. Panchamas and kindred classes	..	..	..	..	..	..	..	..	..	..
Total	..	..	12	..	11	15	1	2	* 31	17

* Includes one student who rejoined the college with a view to complete the Diploma.

Classification according to general educational qualifications—

Matriculates	..	..	..	..	..	..	8†
F.A.'s	..	..	..	..	..	..	1
Non-Matriculates	..	..	..	..	..	..	8

† Two of these have also passed the Upper Secondary examination.

4. *Instruction.*—Instructions, both theoretical and practical, were given in accordance with the directions contained in G.O., No. 439, Educational, dated 24th July 1902, as in previous years.

April to December—Two classes.

Lectures—Class II.—Received lectures in Meteorology and Geology, General Chemistry, Anatomy and Physiology, and Agriculture.

Class III.—Lectures were delivered in Agriculture (including Entomology), Agricultural Chemistry and Veterinary Science and Hygiene.

Practical work—Class II.—The students had field classes regularly. They were also engaged in field cultivation. They raised on about $4\frac{1}{2}$ acres cholam, dholl mixed with varagu, blackgram, greengram, etc., performing all the operations connected with the cultivation themselves. They had each also a fair share in the general work of the farm. As to Agricultural Engineering, they were taken to Guduvancheri to see irrigation works, to Chetput to see brickkilns and to Egmore to see the station buildings under construction. They were also solely employed twice, each time a week, in the preparation of engineering plans and estimates. In General Chemistry, the students had qualitative analyses to do. In Anatomy and Physiology, they had dissections and practical physiological demonstrations at the hospital.

Class III.—This class worked in the dairy and practised skimming milk by the cream separator, churning butter, etc. The students took part in the supervision of farm work under the guidance of the Bailiff and had practice in ploughing. They undertook their second tour of agricultural enquiry in the Coimbatore district—vide Board's Proceedings, Mis. No. 5217 dated 30th August 1906. M.R.Ry. J. Chelvaranga Raju, Acting Fourth Assistant, went in charge of the party. The tour lasted from 2nd to 26th September. The practical work in Agricultural Chemistry consisted of qualitative analyses of feeding stuffs and manurial substances. For practical instruction and work in Veterinary Science and Hygiene, they attended the hospital regularly and took part in dressing cases and in performing minor operations. By a special arrangement with the local butchers, rains were obtained from them for the students to practice castration. The animals after operation were returned to the butchers with a reward.

January to March—One class.

Lectures.—The class received lectures in the subjects of the third year's course, viz., Agriculture and Entomology, Agricultural Chemistry and Veterinary Science and Hygiene.

Practical work.—The students had field classes and dairy practice. They were also engaged in the extraction and preparation of different kinds of fibres. As in the previous years, practice in ploughing and in other farm operations will be given from July next. They undertook their first tour of agricultural enquiry from 7th to 26th January. The tour was made in the South Arcot, Tanjore, Trichinopoly and Madura districts, and M.R.Ry. T. V. Narayana Rao, Acting fifth Assistant, accompanied the students—vide Board's Proceedings, Mis. No. 7394, dated 19th December 1906. In Agricultural Chemistry they had laboratory work at quantitative analyses. Practical instruction and work in Veterinary Science and Hygiene were given at the hospital.

5. During the year under report, as in previous years, the demand for the services of passed students both in public and private service was in excess of the supply available. So far as my knowledge goes, no ex-student is without employment.

6. The students had regular exercises in gymnastics and physical drill.

7. The "Recreation Club" and the "Students' Agricultural Association" were discontinued till the end of December. They had to be suspended during the current session on account of the paucity of the students and want of funds.

8. **Examinations.**—The results of the Government Technical examinations held in December are detailed in the subjoined statement. The results were on the whole satisfactory. They were particularly so in Agriculture, Veterinary Science and Hygiene and General Chemistry.

Students of class III, 12 in number, appeared for their final Diploma examinations. Four (two stipendiary and two paying) have qualified themselves for the diploma. Three have each passed in all the subjects, but one for the diploma.

Subject.	Candidates who appeared for first time.			Candidates who appeared after having previously failed.		
	Appeared.	Passed.	Percent- age.	Appeared.	Passed.	Percent- age.
Botany, Intermediate, Special	17	8	47.0	5	1	
Meteorology and Geology, Intermediate, Special	12	(a) 11	91.7	6	3	
General Chemistry, Intermediate, Special	16	(b) 5	31.2	..	..	
Anatomy and Physiology, Intermediate, Special	11	(c) 10	90.9	..	..	
Veterinary Science and Hygiene, Intermediate, Special	..	..	..	..	..	
Surveying and Levelling, Intermediate, Special	..	..	..	10	(c) 5	
Agricultural Engineering, Intermediate, Special	17	9	52.9	3	2	
Agriculture, Advanced	11	(d) 11	100.0	1	1	100
Agricultural Chemistry, Advanced	11	5	45.5	..	..	

* Exclusive of two who did not appear.
† Exclusive of one who did not appear.

† Exclusive of one who did not give his paper.
First-class—(a) 4; (b) 2; (c) 3; (d) 3; (e) 1.

9. R. R. Dongrey, a paying student from Central India, won the Clogston prize of the value of Rs. 45-6-2, for having secured the highest number of marks in the College examinations throughout the three years' course. The Robertson prize of the value of Rs. 87-4-8, which is awarded to the candidate who stands first in Agriculture advanced at the Government Technical examinations, was won by G. Jogi Raju, a stipendiary student from Gaddavari. The same student was entitled to the guaranteed appointment of Rs. 40, which is conferred upon the candidate who secures the highest number of marks in the Diploma examinations, but he declined to take it up and has entered private service. With regard to the total number of marks, R. B. Dongrey was ranked second and K. Krishnamurthi Rao, a stipendiary from Cuddapah, third. The former would not take service in this Presidency. In these circumstances the appointment was conferred on K. Krishnamurthi Rao. He has been entertained on a salary of Rs. 40 per mensem in the grade of Assistant Managers of Agricultural Stations—vide B.P., Mis. No. 2200, dated 28th April 1907.

10. **Museum.**—Up to end of December M.R.Ry. T. V. Mohan Lal, acting sixth Assistant, was in charge, and during the rest of the year M.R.Ry. T. V. Narayana Rao, acting fifth Assistant. A few additions were made to the specimens and some of the old ones were replaced.

11. **Veterinary hospital.**—I continued to be the officer in charge and M.R.Ry. S. P. Swaminathan, the hospital-keeper. As reported in the report for 1905-06, the hospital-keeper has been, under the Proceedings of the Director of Public Instruction, Dis. No. 615, dated 5th February 1906, practically in sole charge of the hospital work, ever since I took charge of the office of Principal. Of course in difficult cases he seeks my advice. The manner in which he has managed the hospital is highly creditable to him and he has proved his fitness for independent charge of a Veterinary Hospital.

There was a fair increase in the number of cases. The increase has not been so steady and satisfactory since 1904 as it was in the years previous, and the number of patients has practically reached the maximum. It is, however, possible to increase the number of bovine patients, if cattle owned by poor people be housed, fed and treated at the hospital cost. Proposals about this were submitted to the Director of Public Instruction in 1904. The number of cases treated during the year are collated below with that of the previous year:—

	1905-06	1906-07.
Horses	350	386
Cattle	551	557
Other animals	351	360
Total	1,252	1,303

There was a saving in the expenditure, which including "Establishment" was Rs. 1,483-5-9 as against Rs. 2,056-1-7 in 1905-06, and there was a substantial increase in the income, which was Rs. 969-9-5 in the year under report as against Rs. 837-15-1 in the previous year—vide appendix III.

A separate report by M.R.Ry. S. P. Swaminathan is enclosed.

12. I beg in conclusion to acknowledge the services of the staff and officers of the College.

S. L. D'SILVA,
Ag. Vice-Principal.

21st May 1907:

APPENDIX I.

STATEMENT giving particulars called for in Proceedings of the Director of Public Instruction No. 10542 of 1898 (the occupation of parents added as in previous years).

Class.	Distribution of scholars according to wealth.			Occupation of parents.				
	Richer class.	Middle class.	Poorer class.	Officials.	Petty-officials.	Traders.	Land holders.	Others.
I	..	..	..	..	..	..	..	..
II	..	..	..	..	..	..	..	..
III	..	..	..	..	..	..	..	..
Total	6	12	..	1	..	1	9	8

Average number on the rolls (1st April to 31st December 1906—two classes) 39.67
Average daily attendance 21.4
Average number on the rolls (1st January to 21st March 1907—one class) 17
Average daily attendance 13

APPENDIX II.

STATEMENT showing the distribution of students according to districts.

Districts or provinces.	Class I.	Class II.	Class III.	Casuals.
1. Gōdāvari	..	..	1	..
2. North Arcot	..	..	1	..
3. Tanjore	..	..	1	2
4. Tinnevely	..	..	1	..
5. Coimbatore	..	..	1	..
6. Salem	..	..	1	..
7. Malabar	..	..	2	..
8. Travancore	..	..	3	..
9. Indore State	..	..	1	..
10. Kathiawar	..	..	2	..
11. Punjab	..	..	1	..
Total	..	..	15	2

APPENDIX III.

STATEMENT showing expenditure and income at Veterinary hospital.

	1905-1906.	1906-1907.
<i>Expenditure—</i>	Rs. A. P.	Rs. A. P.
Establishment	859 8 0	876 0 0
Hospital charges	465 2 4	268 3 9
Medicines and instruments	279 9 7	388 14 1
Repairs to Veterinary hospital buildings	451 13 8	153 3 11
Total	2,056 1 7	1,686 5 9
<i>Income—</i>		
Subscriptions	16 0 0	24 0 0
Payment on account of	191 7 10	283 1 1
Payment on account of advice and medicines	538 12 0	577 6 7
Payment on account of sundry matters	91 11 3	85 1 9
Total	837 15 1	969 9 5

APPENDIX IV.

Number of books on 1st April 1906	2,394
Number of books added during 1906-1907	52
Total	2,446
Number of books lost and written off during 1906-1907	5
Number of books on 31st March 1907	2,441
Number of books taken by the staff	292
Number of books taken by students	370
Total	662

APPENDIX V.

FINANCIAL statement (including Accountant-General's adjustments received up to date).

No.	Items.	Budget estimate, 1906-1907.	Expenditure.	
			1905-1906.	1906-1907.
			Rs. A. P.	Rs. A. P.
1	Principal and Vice-Principal	595	* 12,498 1 6	902 9 3
2	Masters and teachers	8,916	8,675 5 1	8,811 0 0
3	Establishment	2,431	2,380 0 1	2,301 10 4
4	Travelling allowances	225	274 14 0	198 0 9
5	Veterinary Hospital establishment	877	859 8 0	876 0 0
6	<i>Supplies and services—</i>			
	Library allowance	100	134 1 0	5 12 0
	Prize allowance		75 0 0	
	Scholarships	1,939	2,842 11 6	1,766 14 7
	Petty works of construction		237 14 0	
	Laboratory charges	300	378 15 1	301 12 0
	Veterinary Hospital charges	2,104	465 2 4	268 3 9
	Repairs to Veterinary Hospital buildings		279 9 7	388 14 1
	Furniture and appliances including Europe stores and purchase of livestock	100	451 13 8	153 3 11
	Ratta and carriage to Agricultural students	600	83 12 2	6 10 3
	Farm annexe	7,000	2,126 5 1	504 0 9
	Botanical garden	1,200	518 9 3	4,931 1 7
7	<i>Contingencies—</i>			
	Petty repairs to buildings	500	8,896 9 3	759 14 2
	Cleaning charges	43	776 0 3	100 11 0
	Rents, rates and taxes	165	45 12 5	59 9 9
	Repairs to furniture	50	172 12 0	161 8 0
	Tour charges	100	17 3 0	2 4 0
	Postage charges	90	126 1 9	25 5 9
	Telegraph charges	15	87 5 6	60 0 6
	Purchase of books	462	2 5 0	3 0 0
	Office expenses		7 6 0	0 4 0
	Total	27,820	4,580 5 9	409 5 2
			41,737 12 0	22,592 13 6
			2,406 14 8	388 14 1
	<i>Receipts—</i>			
	Farm annexe		7,604 5 10	5,657 6 7
	College fees		466 0 0	336 0 0
	Rents and miscellaneous		252 10 7	201 1 11
	Veterinary Hospital		837 15 1	569 9 5
	Total		9,160 16 8	7,164 1 11

* Includes Rs. 735-3-0 being exchange compensation allowance.

Note.—The figures in parenthesis are Accountant-General's adjustments.
 Note.—In the revised estimate for 1906-1907, submitted with this office letter No. 132, dated 12th February 1907, amount of surrender under each of the several budget heads has been given.

ENCLOSURE No. 1.

Letter—from M.R.Ry. S. P. SWAMINATHAN, Hospital-keeper.
 To—the Acting Vice-Principal, College of Agriculture.
 Dated—Saidapet, the 29th April 1907.

I beg to submit my report on the working of the Veterinary hospital for the official year ending 31st March 1907.

During the year under report, I continued to be the Hospital-keeper. On your becoming Principal from 22nd January 1906, I was ordered to have charge of the hospital (*vide* Director of Agriculture's Proceedings, Dis. No. 615, dated 5th February 1906) and it continued to be under my charge throughout the year 1906-1907.

The number of cases admitted rose from 1,252 (horses 350, cattle 551, other animals 351) in 1905-1906 to 1,303 (horses 386, cattle 557, other animals 360) in the year 1906-1907. There was thus, during the year under report, an increase of patients under each heading, which shows that this hospital has been as popular with cattle-owners as with the owners of horses and dogs. Among the bovine patients treated, there were 33 cases of epizootic apthia, and of these 25 were calves that came from the King Institute of Preventive Medicine. All recovered and were discharged from the hospital as cured. Under the present circumstances of the hospital, it may be said that the number of cases has practically reached the maximum. I believe, however, that there is room for increasing its usefulness, if your proposals for enhancing the number of cattle patients are given effect to.

The receipts were Rs. 969-9-5 (subscription Rs. 24, stabling Rs. 283-1-1, advice and medicines Rs. 577-6-7, sundries Rs. 95-1-9) in 1906-1907 against Rs. 837-15-1 (subscription Rs. 16, stabling Rs. 191-7-10, advice and medicines Rs. 538-12-0, sundries Rs. 91-11-3) in the previous year. The income under "stabling" has increased by about 50 per cent. and the receipts under "advice and medicines" have also advanced. This is due to a larger number of horses being admitted and to a larger proportion of them being treated as in-patients at the hospital. I beg to note that the feeding charges do not go under receipts as, according to the rules, the hospital undertakes only treatment of in-patients and owners have to make their own arrangements for the feeding and attendance (other than medical) of their animals.

Both from a financial and professional point of view, the work of the year under report may be said to compare favourably with that of the previous years.

Four horses, four bulls and eighteen dogs were castrated during the year and all were discharged with not a single case of casualty. Four cases of canine and one case of bovine rabies were admitted into the hospital. All these cases of rabies were kept under close and careful observation until death.

As usual, the diseases treated were varied and the surgical practice was interesting.

I have the honour to submit the report on the farm and botanical garden for the year 1906-1907. A separate report on the farm by M.R.Ry. J. Chelvaranga Raju, acting fourth Assistant and Farm Manager, and another on the Botanical Garden by M.R.Ry. T. V. Narayana Rao, acting fifth Assistant and Officer in charge of the garden, are enclosed. I request that about 50 printed copies of the report be furnished to me as in the previous years for distribution to visitors and others applying for them.

2. During the year under report I continued to be in charge of the farm. As stated in the last year's report, the farm had been for sometime in the independent charge of the Vice-Principal, but, with the reversion to the Agricultural Department on 18th July 1904 of M.R.Ry. C. K. Subba Rao, Rao Bahadur, the last acting Vice-Principal, the charge of the farm devolved on the Principal. I succeeded to the charge on 22nd January 1906, when I assumed charge of the office of Principal.

3. M.R.Ry. J. Chelvaranga Raju continued to be the Farm Manager and M.R.Ry. V. S. Subramania Sastri to be the provisional Bailiff during the year. M.R.Ry. T. V. Somayazulu, an ex-student, was the acting assistant bailiff and second clerk until 30th June, when he reverted to his permanent appointment in the Guatúr Collectorate. The post has since been allowed to lie vacant. The absence of an Assistant Bailiff and second clerk made the difficult circumstances in which I had been placed still more difficult and the work of the Manager and Bailiff heavy.

4. *Season.*—The season was unfavourable. The rainfall amounted to 49.97 inches, which was quite average, but the fall was unseasonable and the distribution ununiform.

(April and May).—There was no rain during the period. These months are dry.

South-west monsoon (June to September).—In June the rainfall was insufficient, being 1.0 inch as against an average of 2.03 inches. Further, the fall was distributed over six days, and the usual preparatory operations for the sowing of hot-weather crops could not be undertaken. In July, there was the average fall of 4.84 inches, of which 3.70 inches fell in a day and permitted of land being ploughed and sown with fodder crops. In August, 3.91 inches fell as against an average of 5.03. In September, the rainfall amounted to 10.63 inches, which was double the average for the month. Paddy was drilled in dry lands in the early part of the month.

North-east monsoon (October to December).—The rainfall was very deficient in October and November. In October only 3.71 inches fell, while the average due was 11.45 inches, and in November the fall was 8.47 inches as against an average of 13.3 inches. The standing crops suffered severely. December was marked by an unusual fall of rain, i.e., 16.77 inches, while the average due for the month was only a third of this. These heavy rains, were very injurious to crops, specially to the Bombay paddies under experimental cultivation which were just throwing out ear heads.

Dry weather (January to March).—In January the rainfall was a trace and in February and March had but one wet day with 0.45 inch. The fodder crops that were destroyed by the heavy rains in December were replaced by fresh sowings in January, but these again perished in drought.

5. *Crops and cropping.*—Information about the crops grown during the year is furnished in statements in Appendix III. Having regard to the approaching closure of the farm greater part of the arable land was placed under fodder crops and the area under other was restricted.

Further trials in the cultivation of the eight Bombay varieties of paddy selected by the Board for special trial were conducted during the year. The three usual modes of cultivation were adopted, viz., drilling dry, sowing sprouted seed broadcast in puddle and transplanting. The results are given in appendix III (e), (f) and (g). As in the previous years, the crops raised on

the dry system fared the worst, and M.R.Ry. J. Chelvaranga Raju thinks, and I agree with him, that this mode of cultivation is the least suitable to these paddies. The broadcast and transplanted crops also did not on the whole do well. The heavy rains in December harmed them considerably.

M.R.Ry. J. Chelvaranga Raju draws attention in his report to a crop of banku paddy—No. 3, Appendix III (a)—which was sown out of season and which, in consequence, took over ten months to mature, while the usual age of the crop is only five months. The crop was sown in February and was regularly irrigated from the oil-engine. By July the crop attained a luxuriant growth, but there were no signs of earheads. The crop was pruned down with the exception of a small portion which was left uncut. The cut portion shot into fresh growth again and both the portions put forth earheads in September, and the crop was harvested in October. The yield was good. The cut portion yielded better, which is noteworthy.

The experiment referred to in the last year's report for comparing the results of transplanting paddy in single seedlings with those of transplanting in the usual way was again conducted during the year under report—vide Appendix III (b)—while in the previous year the yield of grain was in favour of "single planting", the results this year were practically the same in both methods. Even then in the case of "single planting" there was a saving in seed and labour. Further trials are desirable.

The effect of green manuring for paddy was compared with that of Messrs. Parry & Company's special paddy fertilizer. The green manure used was a crop of sunn-hemp, which is a leguminous plant, ploughed in. The paddy fertilizer was used in the same plot to which it had once been applied in the previous year. The comparison is in favour of green manuring. Full information is given in appendix III (i).

Uppam and Karunganni cotton crops that stood on 1st April continued to yield fairly well. The crops were removed during the year.

Caravonica cotton must be considered a failure. The plants were pruned in August, but the new shoots also became sickly and subject to insect pests.

The ratoon sugarcane crops that were standing on 1st April did not thrive well. The crops (4.6 acres) were sold by auction for Rs. 205.

The crop of plantains on 1.50 acres referred to in the last year's report continued to yield well. The proceeds during the year were Rs. 230. Half an acre more was planted during the year. This has not commenced to yield yet.

6. The oil-engine worked very steadily and satisfactorily. It needed very few repairs during the year. The total cost of working, including repairs and wages of driver, but excluding depreciation and interest, fell from Rs. 1,045-8-7 in 1905-1906 to Rs. 542-13-9 during the year under report, and the cost of lifting one acre inch one foot high from 8.2 pies to 3.4 pies—vide Appendix II (a).

7. *Stock.*—Cattle stock had been considerably reduced in the latter part of 1905-1906, but, during the year under report, only two bull calves were sold. The stock is capable of a reduction and steps are being taken to dispose of about 25 head. Sheep stock was thinned down by the sale of 62 head—vide appendix IV.

8. *Finance.*—Expenditure fell from Rs. 8,896-9-0 in 1905-1906 to Rs. 5,690-15-9 in 1906-1907 and the receipts from Rs. 7,066-10-10 to Rs. 5,657-6-7. The saving in expenditure was due to a variety and number of causes. In view of the impending closure of the farm all avoidable expenditure was avoided; the oil-engine cost less; and the reduction of the stock towards the close of 1905-1906 and the raising of fodder crops lead to the diminution of expenditure under cattle food. The fall in the receipts is only apparent but not real. The receipts of the year are the average of the past few years. Last year's income was swelled by the proceeds of sale of cattle, casuarina plantations and sugar-cane. The income from these sources during the year under report was comparatively little as will be seen from the following figures:—

	1905-1906.	1906-1907.
	RS.	RS.
Cattle ...	805	63
Wood ...	1,100	70
Sugar-cane ...	1,470	300 (ratoon)
Total ...	3,375	433

9. *Botanical garden.*—M.R.Ry. T. Mohan Lal, acting sixth Assistant, was in charge until the end of December, when his acting appointment at the College ceased. M.R.Ry. T. V. Narayana Rao, acting fifth Assistant, has been in charge since 1st January. He was also in charge from 1st to 27th April, during the absence of M.R.Ry. Mohan Lal on sick leave.

The cropping results of the year are not satisfactory. The unusual fall of about 7 inches of rain in a single day in September affected most of the crops while young, and the heavy rains in December damaged them again when they were advancing to maturity. The cabbages grown during the year did not form into globe heads like those in 1905-1906, nor did the crop of turmeric yield so abundantly as that grown in that year. Ratoon canes stood on about 22 cents on 1st April and 11 cents were planted during the year. Both the lots were sold in auction for Rs. 95.

The garden won a prize for the collection of sorghums exhibited at the flower show held in January last at the Agri-Horticultural Gardens, Teynampet.

10. I beg to bring to your notice the good work done by M.R.Ry. J. Chelvaranga Raju as Farm Manager and by M.R.Ry. T. V. Narayana Rao as officer in charge of the Botanical garden. M.R.Ry. V. S. Subramania Sastri rendered excellent service as Bailiff.

21st May 1907.

S. L. D'SILVA.

ENCLOSURE No. 1.

Letter—from M.R.Ry. J. CHELVARANGA RAJU, Acting Fourth Assistant and Farm Manager.

To—the Principal, College of Agriculture, Saidapet.

Dated—Saidapet, the 8th May 1907.

I beg to submit the report on the working of the College Farm Saidapet, for the year 1906-1907.

The assistant bailiff's place was not filled up. This increased the work of the bailiff and manager a good deal although help was received in a way from other sources.

Season.—The rainfall registered at this farm during the year was 49.91 inches. Appendix I of this report shows the rainfall registered in each month compared with the fall in the same months during the previous year together with the average monthly rainfall of the last 36 years. During the first two months of the year—April and May—there was no rainfall. In June the rainfall was 1.09 inches; the average due being 2.03 inches. This was distributed over six days and consequently the usual preparatory tillage for the sowing of hot weather crops could not be undertaken. In July the fall was 4.84 inches, while the average due for the period was 3.98 inches. The rainfall was distributed over nine days and during the last week there was a fall of 3.70 inches in a single day. Advantage was taken of this rain in ploughing a good breadth of land for dry sowing and in sowing some fodder crops. In August the fall was 3.91 inches, the average due for the period being 5.60 inches. This was distributed over ten days which was very favourable for sowing some area under dry crops and also for the crops that were sown in the previous month. In September the rainfall was 10.63 inches, while the average due was only 5.60 inches. This was distributed over ten days, the third week alone registering 9.11 inches, of which 6.97 inches were precipitated in a day. The moisture obtained in the last week of August coupled with the slight falls in the first two weeks of September facilitated the drilling of paddy in dry lands. In October the rainfall was only 3.71 inches, while the usual average for the period was 11.45 inches. In the first two weeks of October the weather was very dry and several of the young crops sown in the previous month showed symptoms of withering. The rain registered was distributed over ten days in the last two weeks of the month. In November the fall was only 8.47 inches, while the average due for the period was 13.33 inches. This was distributed over 14 days and had it not been for this distribution, several acres of paddy would have completely withered. In December the rainfall was nearly one-third of the fall registered in the whole year, viz., 16.77 inches, the average due being only 5.9 inches. The fall was distributed over 13 days and there were several days in which rain was heavy. These heavy and untimely rains damaged a good area of the Bombay varieties of experimental paddy which was just then filling their ears, and so sunn hemp grown for fodder. In January there was rain only in one day and that was 0.4 inches, the average due being 0.57 inch. The area under fodder crops that was spoiled by excessive rains of the previous month was resown and the rainfall in January being below the average crops were withering. In February there was no rainfall at all and consequently the crops were parched up. In March rain fell on one day to the extent of 0.45 inch.

Implements, machines, etc.—The ordinary implements of the farm were in constant use and the students were given enough practice in the working of bamboo drill, ploughing, etc. The over head bullock power chaff cutter was put in order and the same was utilised in chaffing fodder for the live stock. The winnowing machine was also locally repaired and was in use. The oil engine is in good order and has been working very satisfactorily. Some of the data connected with the oil engine as will be of general interest are given in Appendices II (a) and II (b). A new chrome tanned bucket was purchased from the School of Arts and it has been in constant use in one of the wells of the farm and has not needed any repair till now.

Manures.—About 210 tons of farm yard manure (from loose boxes, cattle byres and sheep pens) were collected during the year. No special manures were purchased. Messrs. Parry & Co.'s, special paddy fertiliser which was in stock from last years purchase was tried in the same plot in which the manure was tried last year and the results are noted in Appendix III (i). Sunn hemp was grown for green manure in paddy lands and was ploughed in before transplanting paddy. The results in several cases were satisfactory.

Crops.—The total area of land cropped during the year on the farm and on the cemetery lands temporarily handed over to the farm by the Madras Corporation was 143.19 acres. Out of this four acres were cultivated by students. The remaining 139.19 acres include double crops and crops that stood throughout the year. In cropping the farm during the year the instructions of the Principal to contract the area under crops other than fodder crops and to increase the area under fodder crops was strictly adhered to.

Appendix III contains statements regarding crops grown during the year.

- (a) Particulars of grain crops grown.
- (b) do. fodder crops.
- (c) do. miscellaneous crops.
- (d) Particulars of crops grown and ploughed in for green manure and crops abandoned owing to failure of timely rains, etc.
- (e) Particulars of Bombay varieties of paddy grown under drill system.
- (f) Particulars of Bombay varieties of paddy sprouted and sown broadcast under puddle.
- (g) Particulars of Bombay varieties of paddy that were tried under transplantation method.
- (h) Particulars of experiments regarding single planting vs. ordinary planting of paddy.
- (i) Particulars of the results of green manuring vs. Messrs. Parry & Co.'s, special paddy fertilisers.

Grain crops.—This occupied 40.23 acres and comprised 23.08 acres of paddy, 5.70 acres of ragi, 5.30 acres of cholam, 3.75 acres of varagu and 2.40 acres of sunn hemp for seeds. Of the 23.08 acres of paddy, 8.40 acres were grown with Bombay varieties of paddy, 2.35 acres with chinnu samba, 4.89 acres with sirumoni and 7.44 acres with sixty days' paddy.

The Bombay varieties of paddy grown for experimental purposes were tried in three different ways, viz., drilled dry, sprouted and sown broadcast in puddle and transplanted from nursery. The drilled paddy under dry system has shared the same fate as in previous years in not yielding well and any attempt to grow these varieties dry in localities and soils of this nature will in my opinion end in failure. Appendix III (e) shows results.

The sprouted varieties which were shown under puddle have heavy rainfall in December when the crops were damaged and Appendix III (g) shows details.

The transplanted experiments were conducted in field Nos. 10, 12 and 14 (b) (under the influence of oil-engine) in $\frac{1}{2}$ acre and $\frac{1}{4}$ acre blocks. Four varieties were grown in No. 10 in $\frac{1}{4}$ acre blocks and four varieties were grown in Nos. 12 and 14 (b) in not less than $\frac{1}{2}$ an acre blocks. The fields were treated alike and the crop in the early stages was affected with disease reported in paragraph 17 of last year's report. The $\frac{1}{2}$ acre blocks were affected the most. This coupled with the heavy rainfall in December damaged the crops to a great extent. Appendix III (g) shows details.

I would direct attention to serial No. 3 in Appendix III (a). The crop is Banku, one of the Bombay varieties of paddy, which usually matures in less than five months. When this was sown in February (not the season for cropping the ordinary varieties of paddy) the crop did not put forth ear heads in three months. Consequently the area was divided into two blocks—one was cut and the other was left to grow. The cut block began to throw fresh growth and about September ear heads were produced. In the uncut block also ear heads were formed at this time, but the yield was not as much as from the cut block. From the above facts it is clear that a variety of paddy if not sown in the proper season will take a much longer time to mature than the usual period of growth. This might probably account for the same variety of paddy having different duration of growth in two adjoining districts.

The experiment of single planting vs. ordinary planting of paddy was continued this year and both the blocks yielded almost the same results. Appendix III (h) shows details. Messrs. Parry & Co.'s special paddy fertiliser, was also tried in the same block of land in which the manure was applied last year. Side by side another field was grown with sunn hemp and the same was ploughed in as green manure to compare results with the above. The former plot in the early stages of growth was far better than the latter, but at the time of harvest the green manured block looked better in ear heads. Full details of the results are given in Appendix III (i). The remaining crops referred to in Appendices III (a), (b), (c) and (d) do not call for special remarks.

Livestock.—Appendix IV shows the number of stock at the commencement and end of the year. Two bull calves were sold during the year and one heifer died while under treatment at a veterinary hospital. The sheep stock was reduced a good deal. Ten rams, 2 old ewes and 27 lambs were sold during the year. There were eight deaths amongst sheep. One died of old age, a gimmer of dysentery and six lambs of diarrhoea. Appendix V shows the yield of milk from the farm cows during the official year. Appendix VI shows in regard to the cows of the farm, the yield of milk between the last and previous calving in order to indicate the milking capacity under normal conditions.

Distribution of seeds, implements, etc.—Several applications were received from various parts of the Presidency for sunn hemp, Bombay varieties of paddy, sixty days' samba, American cotton seeds, guinea grass tufts, cholam and other seeds of crops raised in the farm and were supplied with. Some varieties of plantain suckers were sent to Telaprole estate. Trained coolies of the farm and ploughs with and without cattle were also lent to those who wanted them in the vicinity of the farm. Implements and other agricultural products were sent to several agricultural exhibitions held in the Presidency. Improved ploughs of the Saidapet pattern were manufactured, whenever the farm smith could spare time, and supplied to several who wanted them.

Finance.—Appendix VIII shows the receipts and expenses of the farm. The farm proper excluding the botanical gardens has worked at a profit this year. This is chiefly due to the fact that the farm managed to raise its own fodder crops and also to the fact that much money was not spent in extra labour in cleaning the farm.

Appendix I.

RAINFALL statement for 1906-1907.

Month.	1905-1906.			1906-1907.			Average for the last 36 years.
	Total collected.	Rainy days.	* Wet days.	Total collected.	Rainy days.	* Wet days.	
April 1906	1.22	..	2	..	..	..	0.39
May	..	..	..	..	..	..	1.65
June	0.78	5	2	1.09	3	3	2.03
July	1.40	7	3	4.84	4	5	3.98
August	2.42	3	6	3.91	3	7	5.03
September	7.89	..	5	10.83	4	10	5.60
October	20.66	3	12	3.71	6	5	11.45
November	9.46	7	12	8.47	3	11	13.33
December	9.22	1	1	16.77	4	9	5.93
January 1907	5.78	..	2	0.04	1	..	0.57
February	6.10	1	..	6.45	..	..	0.44
March	..	..	..	..	..	..	9.44
Total	48.03	27	48	49.01	27	51	50.84

* A wet day is one in which more than 10 cents of rain are collected.

Appendix II (a).

DATA connected with the oil-engine and pump at Saidapet Farm during the year 1906-1907

Number of days pump worked in the year	203 days.
Do. of hours do.	2,163.33 hours.
Average time each day do.	10.36 hours.
Total number of gallons of oil including liquid fuel consumed during the period—	
Liquid fuel	1,260 gallons
Kerosine oil	48 " } 1,308 gallons.
Consumption of oil per working hour	0.62 gallons.
Total cost of oil and liquid fuel during the period—	
Liquid fuel	Rs. 178-8-0
Kerosine oil	15-0-0 } Rs. 193-8-8
Cost of oil per working hour	0-1-5.6
Average height of water lifted by pump during the period	22.43 feet
Minimum height of water do.	20.00 "
Maximum height of water do.	27.95 "

Total quantity of water	31,018,667 gallons.
Average number of gallons lifted per day	152,801.3 gallons.
Do. do. per hour	14,747.4 do.
Total cost of working the engine and pump including repairs, wages of driver, etc., but excluding depreciation and interest.	Rs. 542-13-9
Cost of working do. do.	0-4-1.5
do. of lifting 31,018,667 gallons or 1,367.2 acre inches to an average height of 22.43 feet	Rs. 542-13-9
Cost of lifting one acre inch to a height of 22.43 feet	0-6-4.2
Do. do. do. of 1 foot	0-0-3.4
Area of land (including double crops) under the influence of oil-engine in the Farm excluding 6.9 acres of B. gardens	34.65 acres.
Area of lands under the influence of oil-engine in the Farm excluding 6.9 acres of B. gardens	17.75 acres.
Total number of acres irrigated once during the year by engine and pump excluding water used for coconuts in the road, manure pit, etc.	571.570 acres.

Appendix II (b).

STATEMENT showing the details of expenses for oil-engine during 1906-1907.

Month.		Liquid fuel.			Kerosine oil.					
		in	Quantity gallons.	Valuc.	Castor oil.	Cylinder oil.	Engine.		Lamp.	
							Quantity in gallons.	Value.	Quantity in gallons.	Value
1	2	3	4	5	6	7	8	9		
			RS. A.	RS. A. P.	RS. A.		RS. A.	RS. A.		
April 1906	..	..	17 0	1 2 0	..	..	..	3 6		
May	..	..	17 0	4 8 0	13 0	..	..	11 6		
June	..	..	17 0	1 12 6	..	..	..	3 6		
July	..	..	34 0	3 12 0	13 0	48	15 0	1 10		
August	..	..	17 0	2 10 0	..	..	..	..		
September	..	..	17 0	6 10 0	..	..	..	..		
October	..	..	17 0	2 5 6	13 0	..	..	4		
November	..	..	17 0	2 8 0	..	..	..	..		
December	..	..	17 0	..	..	..	..	..		
January 1907	..	..	277	2 10 3	..	..	..	1 10		
February	..	..	120	1 14 0	13 0	..	..	4		
March	..	..	180	6 0 0	13 0	..	..	8		
Total		..	1,260	178 8	28 13 3	65 0	48	15 0	44	18 3

Month.	Asbestos.	Wages.	Repairs.	Contingen- cies.	Exercy.	Soap.	Cotton waste.	Matches, etc.	Total.
10	11	12	13	14	15	16	17	18	
April 1906	Rs. A.	Rs. A. P.	Rs. A.	Rs. A.	Rs. A.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.
May	..	15 0 0	..	0 3	..	..	0 0 3	16 2 3	54 5 0
June	..	15 0 0	2 5	..	..	..	0 1 3	38 1 9	84 10 0
July	..	15 0 0	..	0 4	..	0 4	..	37 9 0	32 4 3
August	..	15 0 0	4	0 1	..	..	..	74 12 6	39 6 6
September	..	14 8 3	..	0 2	..	..	..	32 2 0	30 5 3
October	..	15 0 0	42 12	0 1	..	..	..	..	..
November	..	14 0 0	..	..	..	0 2	..	..	..
December	5 12	15 0 0	..	..	..	0 2	..	..	..
January 1907	..	15 0 0	10 4	0 1	0 8	..	0 8	..	..
February	..	13 8 6	..	..	..	..	..	..	..
March	..	9 1 0	..	0 1	..	..	..	..	..
Total	5 12	171 3 0	56 12	6 13	0 8	0 8	1 12	0 1 6	542 13 9

* Belting.

Cropping statement—Grain crops—cont.

Appendix III (a).

CROPPING statement—Grain crops.

Serial number.	Field number.	Area.	Name of crop.	Date of sowing.	Date of harvest.	Yield.				Remarks.
						Grains.		Straw.		
						Amount.	Per acre.	Amount.	Per acre.	
<i>Paddy—Bombay varieties.</i>										
1	10	ACS. 1.20	Bombay varieties.	10th October 1906.	2nd January 1907.	1,104-00	920-0	2,560-0	2,133-0	One acre was grown with experimental paddy.—appendix IV (g) gives details; the rest with mixed paddy. Crop was affected with disease.
2	12	1.77	Do.	8th October 1906.	Do.	1,361-25	769-0	3,192-0	1,804-0	Four varieties were grown for experimental purposes; appendix III (g) shows details. Crop was affected with disease.
3	12	0.60	Banko ..	2nd February 1906.	24th October 1906.	1,515-00	2,525-0	2,400-0	4,000-0	Standing on 1st April 1906. The crop was sown out of season. As the crop did not produce ear heads till July, the rank growth was cut, with the exception of a small portion of the crop and 10,920 lbs. of green fodder were obtained and the crop was allowed to grow. Both the portions produced ear-heads and in October 1906. the crop was harvested. The cut portion yielded better.
4	14 (a)	0.25	Do.	1st June 1906.	21st October 1906.	710-00	2,840-0	1,600-0	4,000-0	
5	14 (b)	0.42	Do.	3rd July 1906.	1st November 1906.	1,408-00	3,362-0	1,680-0	4,000-0	
6	14 (c)	3	Halwa .. Sadiya.	8th October 1906.	31st December 1906.	80-00	260-0	224-0	678-7	Grown for experiment and is included in appendix III (g). The crop was affected with disease very badly.
7	15	1.06	Bombay varieties.	6th September 1906.	11th January 1907.	205-25	194-5	755-0	712-0	Sown dry with drill—appendix III (f) shows details.
8	21	0.26	Bombay mixed.	29th October 1906.	16th February 1907.	270-00	750-0	812-0	1,700-0	
9	21	0.64	Bombay varieties.	Do.	5th February 1907.	605-00	945-0	1,285-0	2,007-8	
10	22	0.68	Do.	Do.	5th February 1907 and 15th February 1907.	876-40	1,280-0	2,416-0	3,544-0	Sown sprouted; paddy—appendix III (f) shows details.
11	22	0.09	Dadkani ..	Do.	15th February 1907.	115-20	1,250-0	279-0	3,100-0	
12	26	0.50	Zina Colum- bia.	6th September 1906.	10th January 1907.	63-75	127-5	392-0	784-0	Sown dry with drill.
13	28	0.50	Bombay varieties.	29th October 1906.	11th February 1907.	140-00	290-0	280-0	550-0	Sown sprouted broadcast in dry land.
<i>Paddy—Chinna Samba.</i>										
14	19	1.10	Chinna Samba.	6th October 1906.	30th January 1907.	2,255-00	2,050-0	4,510-0	4,100-0	Transplanted.
15	26	1.25	Do.	4th September 1906.	4th February 1907.	825-00	650-0	1,650-0	1,320-0	Sown dry with drill.
<i>Paddy—Sirumany.</i>										
16	14 (b)	0.42	Sirumany.	2nd November 1906.	1st March 1907.	387-50	923-0	630-0	1,500-0	The crop was affected with disease.
17	20	0.415	Do.	21st October 1906.	29th February 1907.	1,141-25	2,750-0	1,245-0	3,000-0	These are experimental blocks where single ping cross ordinary plantings tried—appendix III (g) gives full details.
18	20	0.415	Do.	Do.	Do.	1,153-00	2,770-0	1,245-0	3,000-0	

Serial number.	Field number.	Area.	Name of crop.	Date of sowing.	Date of harvest.	Yield.				Remarks.
						Grain.		Straw.		
						Amount.	Per acre.	Amount.	Per acre.	
<i>Paddy—Srirumary—cont.</i>										
		ACB.				LB.	LB.	LB.	LB.	
19	20	0.41	Srirumary.	21st October 1906.	19th February 1907.	1,216.4	3,040.0	1,250.5	3,050.0	These are the blocks where green manuring <i>versus</i> Parry & Co's special fertilizers was tried—appendix III (i) shows full particulars. Sown dry with bamboo seed drill.
20	20	0.43	Do.	21st October 1906.	19th February 1907.	1,130.9	2,620.0	1,032.0	2,400.0	
21	22	1.50	Do.	7th September 1906.	20th February 1907.	1,387.8	770.0	2,775.6	1,540.0	
22	M.L. 7	1.00	Do.	23rd October 1906.	26th February 1907.	1,790.0	1,790.0	2,500.0	2,500.0	
<i>Paddy—Sixty Days' Samba.</i>										
23	12	0.35	Sixty days' samba.	13th March 1906.	6th June 1906.	620.0	1,971.0	700.0	2,000.0	Standing crop on 1st April 1906.
24	12	0.30	Do.	18th June 1906.	22nd September 1906.	562.5	1,875.0	660.0	2,200.0	
25	12	0.95	Do.	22nd November 1906.	12th March 1907.	882.5	929.0	1,425.0	1,500.0	
26	12	1.50	Do.	16th January 1907.	..	..	..	..	..	Crop standing.
27	14(a)	1.00	Do.	9th February 1906.	2nd May 1906.	1,340.0	1,340.0	1,680.0	1,680.0	Standing crop on 1st April 1906.
28	14(a)	0.75	Do.	12th June 1906.	12th August 1906.	1,405.0	1,873.0	1,800.0	2,400.0	
29	14(a)	0.85	Do.	..	..	..	..	..	..	Crop standing.
30	14(b)	0.33	Do.	18th June 1906.	25th September 1906.	435.6	1,329.0	580.0	1,720.0	
31	14(b)	0.33	Do.	13th March 1906.	6th June 1906.	727.6	2,204.5	750.0	2,278.0	Standing crop on 1st April 1906.
32	14(b)	0.33	Do.	12th January 1907.	28th March 1907.	250.0	757.5	485.0	1,500.0	
33	M.L. 7 (a)	0.75	Do.	5th December 1906.	19th March 1907.	900.0	1,200.0	1,500.0	2,000.0	
<i>Ragi.</i>										
34	3	2.50	Ragi	20th July 1906.	3rd October 1906.	1,876.0	750.4	6,422.0	..	
35	5	1.50	Do.	15th June 1906.	28th August 1906.	1,584.0	1,056.0	8,120.0	5,113.0	
36	10	1.20	Do.	8th June 1906.	28th August 1906.	1,391.5	1,158.5	4,312.0	3,593.0	
37	11	0.50	Do.	21st July 1906.	28th September 1906.	704.0	1,408.0	2,240.0	4,180.0	This was grown amongst young plantain tree in the interspaces.
<i>Cholum.</i>										
38	23	1.20	Cholum	31st October 1906.	8th March 1907.	148.2	114.0	4,251.0	3,270.0	The crop was at first intended for fodder but was subsequently allowed to seed.
39	28	1.00	Do.	22nd August 1906 and 28th September 1906.	18th January 1907.	464.0	113.0	15,456.0	3,864.0	Do. do.
<i>Paragu.</i>										
40	15	0.50	Paragu	17th August 1906.	26th January 1907.	890.0	780.0	750.0	1,500.0	
41	M.L. 7 (a)	0.75	Do.	17th August 1906.	24th January 1907.	880.0	1,173.0	1,200.0	1,500.0	
42	8	2.50	Paragu and dholl.	4th August 1906.	21st January 1907 and 6th February 1907.	910 varagu 245 dholl.	364.0 98.0	4,480.0 ..	1,792.0 ..	Field is subject to trespass by cattle of slaughter-house.
<i>Sunn hemp.</i>										
43	19	1.10	Sunn hemp.	27th January 1906.	19th May 1906.	714	650.0	..	..	Standing crop on 1st April 1906. Stems did not realize any value.
44	23	1.20	Do.	29th January 1906.	14th May 1906.	309	238.0	..	..	Do. do.

Appendix III (b).

CROPPING statement—Fodder crops.

Serial number.	Field number.	Area.	Name of crop.	Date of sowing.	Date of harvest.	Yield.				Remarks.
						Green fodder.		Hay.		
						Quantity.	Per acre.	Quantity.	Per acre.	
Cholam.										
1	2	0.75	Cholam	1st August 1906.	12th January 1907.	..	..	1,932.0	2,576.0	Variety grown was black Irungu.
2	3	2.50	Do.	8th February 1907.	..	..	..	..	..	Crop standing.
3	4	1.00	Do.	23rd March 1906.	8th June 1906 to 9th August 1906.	7,056	7,056	..	..	Standing crop on 1st April 1906. Yield represents two cuttings. Variety is Irungu.
4	7	1.96	Do.	13th March 1906.	23rd May 1906.	14,056	7,171	..	..	Standing crop on 1st April 1906. Yield represents two cuttings.
5	12	1.80	Do.	17th May 1906.	3rd July 1906 to 6th October 1906.	25,256	14,031	..	..	Yield represents two cuttings.
6	13	2.00	Do.	6th August 1906.	30th January 1907.	..	..	4,446	2,220	Crop was unirrigated.
7	27	1.60	Do.	4th August 1906.	18th January 1907.	..	..	5,656	3,135	Do.
8	M.L. 8	4.00	Do.	22nd August 1906.	23rd January 1907.	..	..	8,400	2,100	Do.
Guinea Grass.										
9	4	1.00	Guinea grass.	31st August 1906.	18th January 1907.	2,184	2,184	..	..	Crop is still yielding. Yield represents two cuttings.
10	5	1.50	Do.	16th November 1906.	16th February 1907.	7,196	4,797	..	..	Crop is still yielding. Yield represents three cuttings.
11	6	1.80	Do.	25th November 1906.	26th April 1906 to 30th March 1907.	44,744	27,965	..	..	Standing crop on 1st April 1906. Crop is still yielding. Yield represents 8 cuttings obtained during the year.
12	7	1.95	Do.	22nd August 1906.	11th October 1906 to 31st March 1907.	5,556	2,886	..	..	Crop standing. Yield represents three cuttings.
Horsegram.										
13	1	7.00	Horsegram.	23rd January 1906.	25th April 1906.	17,396	2,528	..	..	Rainfall of 4.73 inches between 16th and 18th January 1906 was utilized in sowing this crop. During its growth the rainfall was only 0.80 inch.
14	M. L.	7.50	Do.	31st July 1906.	4th October 1906.	6,776	936	..	..	Soil is pure sand. The crop was subject to trespass of cattle during nights.
Sunn Hemp.										
15	25	5.00	Sunn hemp.	3rd August 1906.	1st October 1906.	..	..	5,992	1,198.4	Soil is pure sand. The crop was subject to trespass of cattle during nights.
Lucerne.										
16	5	0.09	Lucerne	22nd November 1906.	11th June 1906.	125	1,389	..	..	Standing crop on 1st April 1906. Yield represents two cuttings and excludes last year's— Un-oculated. ocultated. Bed .. 37 lbs. 37 lbs. Ridge .. 24 1/2 .. 32 1/2 ..

Appendix III (c).

CROPPING statement—Miscellaneous (Industrial and Garden crops).

Serial number.	Field number.	Area.	Name of crop.	Date of sowing.	Date of harvest.	Yield.		Remarks.
						Quantity.		
						In lb.	Per acre in lb.	
<i>Groundnut.</i>								
1	3	1.00	Groundnut.	6th August 1906.	..	..	..	Crop was to a great extent damaged by crows, jackals and wild pigs. A portion was harvested, but the yield was very poor.
<i>Cotton.</i>								
2	3	0.48	Uppam cotton.	2nd December 1905.	30th April 1906 to 23rd July 1906.	176	387.5	Standing crop on 1st April 1906. Yield is good.
3	5	0.21	Caravonica cotton.	23rd November 1905.	..	..	..	Standing crop on 1st April 1906. Crop still stands in the field. Growth is poor and the plants were affected with stem borer and boll-worms. The plants were pruned in August and the new shoots were also affected.
<i>Sugarcane.</i>								
4	9	1.30	Sugarcane.	10th March 1905.	..	..	..	Ratoon crop that was standing on 1st April 1906. The value realized in auction was Rs. 55.
5	16	1.30	Do.	Do.	..	..	..	Ratoon crop that was standing on 1st April 1906. The value realized in auction was Rs. 55.
6	18	2.00	Do.	Do.	..	..	..	Ratoon crop that was standing on 1st April 1906. The value realized in auction was Rs. 65.
<i>Plantain.</i>								
7	11	1.50	Plantain.	10th August 1904.	..	..	..	Standing crop on 1st April 1906. The yield during the year was Rs. 13-13-2; crop standing.
8	11	0.50	Do.	27th June 1906.	..	..	..	Crop standing; has not commenced to yield yet.

Appendix III (d).

CROPPING statement—Green Manure and abandoned crops.

Serial number.	Field number.	Area.	Name of crop.	Date of sowing.	Remarks.
1	16	0.53	Hanko paddy	26th October 1906	Crop failed as there was not enough of water in the Mysore tank upon which it depended for irrigation.
2	24	0.42	Bangaru paddy	27th February 1906.	Standing crop on 1st April 1906. The variety was an introduced one from Bellary; it failed.
3	1	7.00	Horsegram	15th July 1906.	Ploughed in as green manure on 17th September 1906.
4	17	2.34	Do.	6th July 1906	Crop was poor and was grazed by cattle.
5	1	7.00	Sunn hemp	3rd December 1906.	Crop failed owing to heavy rain in the early stage of growth. Nearly 16.77 inches of rain fell during the first month of its sowing.
6	1	7.00	Do.	3rd January 1907	Crop failed entirely as there was no rain after sowing.
7	16	1.95	Do.	8th January 1907	Do.
8	25	5.00	Do.	4th January 1907	Do.
9	M.L.	3.00	Do.	4th December 1906.	Crop failed owing to heavy rain after sowing.
10	16	1.55	Do. and Indigo.	5th August 1906	Crop was ploughed in as green manure.
11	20	1.70	Sunn hemp	4th August 1906	Crop was ploughed in as green manure for paddy on 6th October 1906.
12	26	1.00	Do. and Horsegram.	8th September 1906.	Crop was ploughed in as green manure for paddy on 11th December 1906.
13	M.L.	6.00	Sunn hemp	17th July 1906	Crop was ploughed in as green manure for paddy on 23rd October 1906.
14	M.L.	1.50	Do.	25th August 1906	Crop failed in consequence of attack of insect (caterpillars).
15	26	0.02	Cotton (Pyson's)	..	Standing crop on 1st April 1906. The crop was abandoned as it was not required by Mr. Pyson for whom it was grown.
16	2	4.50	..	..	The area was left for field cultivation by students. The crops grown were black gram, green gram, varagu, dhali, etc.

Appendix III (e).

STATEMENT showing the results of Bombay varieties of paddy sown dry by drill in 1906-1907.

Number.	Name of variety.	Date of sowing.	Date of harvest.	Quantity of seeds sown.	Area sown in acres.	Yield.			
						Grain.		Straw.	
						Amount.	Per acre.	Amount.	Per acre.
2	Zina Columbia	6th Sept. 1906.	11th Jan. 1907.	7½	0.125	38½	310	160	1,230
5	Halwa gudiya	Do.	Do.	7½	0.125	38½	310	112	896
10	Sukhvel	Do.	Do.	5½	0.125	18½	150	56	448
14	Welchi (Surat)	Do.	Do.	5½	0.125	21½	175	53	448
17	Columbia	Do.	Do.	5½	0.125	31½	260	70	560
18	Dhakhani	Do.	Do.	5½	0.125	26½	215	70	560
20	Chennur	Do.	Do.	5½	0.125	17½	140	119	962
22	Banku	Do.	Do.	5½	0.125	12½	100	112	896

Appendix III (f).

STATEMENT showing the results of the Bombay varieties of paddy sown sprouted broadcast under puddle in 1906-1907.

Number.	Name of variety.	Date of sowing.	Quantity of seeds sown.	Area sown in acres.	Date of harvest.	Yield.			
						Grain.		Straw.	
						Amount.	Per acre.	Amount.	Per acre.
2	Zina Columbia	29th Oct. 1906.	LB. 4½	0.18	5th Feb. 1907.	135	843½	245	2,160½
5	Halwa gudiya	Do.	LB. 8½	0.18	Do.	112½	703½	260	1,532
10	Sukhvel	Do.	LB. 6½	0.18	Do.	125	781½	230	1,362½
14	Welchi (Surat)	Do.	LB. 6½	0.18	1st Feb. 1907.	282½	1,452½	300	2,350
17	Columbia	Do.	LB. 4½	0.18	5th Feb. 1907.	179	1,032½	460	2,875
18	Dhakhani	Do.	LB. 6½	0.18	16th Feb. 1907.	175	1,098½	550	3,437½
20	Chennur	Do.	LB. 7½	0.18	14th Feb. 1907.	230	1,555½	500	4,444½
22	Banku	Do.	LB. 7½	0.18	13th Feb. 1907.	245	1,361½	600	3,233½

Appendix III (g).

STATEMENT showing the results of the Bombay varieties of paddy transplanted in 1906-1907.

Number.	Name of variety.	Date of sowing in the nursery.	Area of nursery in acres.	Quantity of seeds sown in		Area transplanted.
				Madras Measures.	lb.	
1	2	3	4	5	6	7
2	Zina Columbia	10th September 1906.	.014	5	12½	.25
5	Halwa gudiya	Do.	.028	10	25	.60
10	Sukhvel	Do.	.014	5	12½	.25
14	Welchi (Surat)	Do.	.014	5	12½	.25
17	Columbia	Do.	.028	10	25	.50
18	Dhakhani	Do.	.014	5	12½	.25
20	Chennur	Do.	.028	10	25	.50
22	Banku	Do.	.028	10	25	.50

Number.	Name of variety.	Date of transplantation.	Date of harvest.	Yield.			
				Grain.		Straw.	
				Amount.	Per acre.	Amount.	Per acre.
		8	9	10	11	12	13
2	Zina Columbia	11th October 1906.	4th January 1907.	LB. 292½	1,170	LB. 560	2,240
5	Halwa gudiya	8th Do.	31st December 1906.	172½	287½	560	938½
10	Sukhvel	11th Do.	4th January 1907.	172½	680	520	2,080
14	Welchi (Surat)	11th Do.	4th Do.	210	960	540	2,160
17	Columbia	8th Do.	31st December 1906.	361	72½	501	1,008
18	Dhakhani	11th Do.	12th January 1907.	277½	1,110	660	2,640
20	Chennur	8th Do.	2nd Do.	490	1,120	1,120	2,240
22	Banku	8th Do.	2nd Do.	422½	845	1,120	2,464

Appendix III (h).

STATEMENT showing the results of single planting and ordinary planting experiment in paddy.

Particulars.	Single planting.	Ordinary planting.
Area of field	415 acre.	415 acre.
Area of nursery bed	.015 acre.	.03 acre.
Quantity of seeds sown in nursery	¾ Madras measure.	7 Madras measures.
Number of bundles of seedlings obtained	100.	302.
Number of days seedlings remained in nursery.	40 days.	40 days.
Labour engaged in transplanting	RS. A. P. 0 6 0	0 12 0
Do. weeding	0 4 0	0 4 0
Do. harvesting	0 6 0	0 9 0
Total	1 0 0	1 9 0
Yield { Grain	LB. 1,141.25.	LB. 1,150.
Straw	1,245.	1,245.

N.B.—The field received similar treatment in every respect. Sunnhemp was grown for green manure and was ploughed into the soil. Each plot received 1½ tons of green manure.

Appendix III (i).

STATEMENT showing the results of green manuring as Messrs. Parry & Co.'s paddy fertilizer.

Particulars.	Green manuring.	Messrs. Parry & Co.'s special fertilizer.
Area of field ...	41 acre	43 acre.
Nature of manure given ...	Sunn hemp was grown and was ploughed in (2 tons of green leaves).	Messrs. Parry & Co.'s special paddy fertilizer (182 lb.)
Date of transplanting ...	21st October 1906	21st October 1906.
Do. harvest ...	19th February 1907	19th February 1907.
Yield of grain ...	498 Madras measures or 1,245 lb.	452 Madras measures or 1,128 lb.
Do. straw ...	1250.5 lb.	1,032 lb.

N.B.—The other operations were performed alike to both plots.

Appendix IV.

STATEMENT showing the number of stock at the commencement and at the end of the year 1906-1907.

Description.	Commencement of 1906-1907.	Additions during the year.			Disposal during the year.			End of the year 1906-1907.
		By birth.	By growth and conversion.	By purchase.	By growth or conversion.	By death.	By sale.	
Cows ...	16	..	2	..	..	1	..	16
Heifers ..	3	..	..	..	..	..	..	4
Heifer calves ..	12	5	..	..	2	..	..	15
Bulls ..	12	..	1	..	..	..	..	13
Bullocks ..	10	..	..	..	..	..	..	10
Bull calves ..	8	3	..	..	1	..	2	8
Total ..	61	8	3	..	3	1	2	66
Rams ..	10	..	1	..	..	..	10	1
Ewes ..	51	..	..	..	..	1	25	25
Goats ..	5	..	..	..	..	1	..	5
Lambs ..	35	23	..	..	1	6	27	34
Total ..	102	33	1	..	1	5	62	65

Appendix V.

STATEMENT showing the yield of milk by the College farm herd during 1906-1907.

No.	Names of cows.	Age.	Yield in 1906-1907.		Number of days cow yielded.	Average per day in	
			Madras measures of 100 cubic inches.	Pounds.		Madras measures of 100 cubic inches.	Pounds.
1	Kamala	10	652.62	2,447.32	241	2.70	10.01
2	Seetha II	11	611.90	2,302.50	217	2.83	10.61
3	Govindu II	8	632.25	2,370.94	258	2.66	9.96
4	Alamelu	12	278.12	1,042.95	219	1.12	4.18
5	Consthabam	10	414.50	1,554.37	273	1.68	5.65
6	Lakshmi Bai	10	564.75	2,116.31	211	2.67	10.33
7	Meenakshi III	13	569.62	2,137.07	205	1.93	7.74
8	Meenakshi IV	8	569.12	2,242.70	201	2.38	8.95
9	Meenakshi V	5	540.87	2,028.26	216	1.70	6.38
10	Padmavati	10	544.50	2,041.87	259	2.18	8.16
11	Seetha III	5	394.75	1,482.31	238	1.65	6.27
12	Baghyam	9	1061.12	3,979.20	365	2.90	10.90
13	Mondothary	11	713.87	2,675.13	316	2.30	8.93
14	Kutti Kunju	12	748.75	2,867.31	230	2.27	8.52
15	Rama Bai	10	487.87	1,833.51	267	1.82	6.85
16	Duropadai	10	692.00	2,595.09	242	2.77	10.42
Total ..			9,608.21	35,555.75	..	..	..

Appendix VI.

STATEMENT showing the yield of milk between the last and previous calving of the Saidapet farm herd in 1906-1907.

No.	Names of cows.	Interval between last and previous calving.	Number of days in the interval during which milk yielded.	Quantity of milk yielded during the interval between calving.		Average quantity per day during the whole interval.	
				Madras measures.	Pounds.	Madras measures.	Pounds.
1	Kamala	454	304	932.50	3,523.12	2.06	7.76
2	Seetha II	427	276	774.25	2,903.43	1.81	6.79
3	Govindu II	377	250	551.87	2,068.51	1.57	5.49
4	Alamelu	369	351	1,002.00	3,757.50	2.72	10.12
5	Consthabam	417	340	929.25	3,484.89	2.23	8.36
6	Lakshmi Bai	405	252	681.87	2,557.01	1.65	6.31
7	Meenakshi III	554	363	784.75	2,942.81	1.42	5.31
8	Meenakshi IV	385	268	645.37	2,420.13	1.66	6.28
9	Padmavati	376	257	834.75	3,159.91	2.22	8.33
10	Baghyam	337	269	910.00	3,412.50	2.70	10.13
11	Mondothary	420	360	735.00	2,756.25	1.75	6.56
12	Kutti Kunju	522	342	813.50	3,050.52	1.55	5.84
13	Rama Bai	498	275	572.87	2,148.26	1.15	4.32
14	Duropadai	533	338	749.62	3,411.07	1.30	4.99

Appendix VII.

Value of services rendered by live-stock for the Botanical garden during 1906-1907. RS. A. P. 257 4 0

Value of services rendered by live-stock on the farm during 1906-1907. 437 6 0

Value of labour to be charged against live-stock ... 420 0 0

Value of manure obtained, 210 tons at Rs. 3 per ton ... 630 0 0

Value of farm-grown fodder consumed by stock ... 892 9 0

Fees realised by bull service (200 outside cows and 100 0 0 16 farm cows).

Appendix VIII.

FINANCIAL statement of the College Farm for 1900-1907.

Receipts.				Charges.			
Particulars.	Amount.	Amount.		Particulars.	Amount.	Amount.	
	RS. A. P.	RS. A. P.			RS. A. P.	RS. A. P.	
Yield produce { Botanical gardens.	458 1 4			Botanical gardens	759 14 2	759 14 2	
College farm	1,937 6 8	2,395 8 0		Ground-nut cake.	900 8 9		
				Gingelly cake	215 6 2		
				Dholl husk	387 11 3		
Live-stock { Sale of cows, calves and deers.	229 3 3			Cattlefood { Bran	1 0 0		
				Rice	1 0 0		
Sale of milk, butter, etc.	2,280 8 5			Salt	11 0 0	1,516 10 2	
Covering fees	100 0 0	2,619 11 3		Live stock	51 14 0	51 14 0	
				Manure	1 2 0	1 2 0	
Food and miscellaneous	642 2 11	642 2 11		Seeds and plants	14 1 7	14 1 7	
				Labour	2,483 14 7	2,483 14 7	
				Machines and implements	68 2 1	68 2 1	
				Work shop	63 2 11	63 2 11	
				Oil engine	542 13 9	542 13 9	
				Estate improvements	73 0 0	73 0 0	
				Contingencies	116 3 9	116 3 9	
Total ..	5,657 6 7	5,657 6 7		Total ..	5,690 15 9	5,690 15 9	

ENCLOSURE No. 2.

Letter—from M.R.Ry. T. V. NARAYANA RAO, Acting Fifth Assistant and Officer in charge of the Botanical Garden.

To—The Principal, College of Agriculture, Saidapet.

Dated—Saidapet, the 6th May 1907.

I beg to submit the report on the working of the Botanical Garden for the official year 1906-1907.

2. I held charge from the 1st of April to the 27th idem, when M.R.Ry. T. Mohan Lal, Acting Sixth Assistant of the College, who was on sick leave returned to duty and relieved me as officer in charge of the garden. When his acting appointment in the college ceased on 31st December 1906, he again handed over charge of the garden to me on the afternoon of that date.

3. The rainfall as registered in the garden was almost the same as last year, viz., 1905-1906, 47.98 inches; 1906-1907, 48.95 inches. Out of the 48.95 inches, 16.20 fell in September and 17.50 in December. The rain in September of which nearly seven inches fell on one day proved to be very injurious to seedlings of vegetables, etc., while the very unusual rain of 17.50 inches in December was detrimental to vegetable crops in general, some of which gave a very poor yield and others failed altogether.

4. Cattle dung and horse dung and castor cake to a very small extent formed the chief manures during the year. No further experiments were made with Messrs. Parry & Co.'s special manures.

5. The plots in the upper terrace were as usual utilised for the growth of specimen crops, the following being the chief groups:—

- | | |
|--------------|------------------|
| (1) Cereals. | (3) Oil crops. |
| (2) Pulses. | (4) Fibre crops. |

There is nothing special to be mentioned with regard to any of these; almost all were affected by the heavy rains in December.

6. The following crops as specimens and for purposes of demonstration were also grown:—

Rhea, arrow root and sisal hemp.
English and country vegetables, turmeric, tobacco, lucerne, plantains, sugarcane and soy beans.

The following were the vegetables grown:—

English.

- | | |
|-------------------|------------------------|
| (1) Goa beans. | (9) Carrot. |
| (2) Kidney beans. | (10) Beetroot. |
| (3) Butter beans. | (11) Radish. |
| (4) Long beans. | (12) Turnips. |
| (5) Celery. | (13) French beans. |
| (6) Tomatoes. | (14) Peas. |
| (7) Cabbage. | (15) Lettuce cabbage. |
| (8) Knol-khol. | (16) Vegetable marrow. |

Country.

- | | |
|--------------------|---------------------------------|
| (a) Brinjals. | (g) Tanjore and Poona chillies. |
| (b) Mango ginger. | (h) Chillies (ordinary). |
| (c) Snake gourds. | (i) Dioscorea. |
| (d) Sword beans. | (j) Telingana potato. |
| (e) Cow beans. | (k) Peas. |
| (f) Angular gourd. | (l) Cucumbers. |

As mentioned in paragraph 3 *supra* almost all the above suffered very much by the heavy rains in December as well as those in September. Compared with those of last year the cabbages of the present year presented a poor head and appearance. Tomatoes, knol-khol, French beans, peas, vegetable marrow, brinjals, snake gourds, angular gourds and cucumbers almost failed. All the others, except chillies which are still yielding, gave a very poor yield.

Turmeric also, compared with that of last year yielded a poor outturn. Tobacco was purely a specimen crop. Lucerne which was grown on a very small scale was sold green for horses.

Plantains.—The crop on 34 cents of land as mentioned in the last report as well as a few trees on the side of a water channel yielded Rs. 92 in all during the year, the amount having been realised from the sale of plantain fruits, plantains for curry, leaves, etc.

Sugarcane.—The different varieties of Samalkot canes and a few others were grown on about 33 cents of land, about 22 of which being under ratoon. By the sale in auction, of the crop on the whole area, Rs. 95 were realised.

7. Sugarcane and a collection of sorghums were exhibited at the Flower show held in January last, at the Agri-Horticultural Society's Gardens, Teynampet. The collection of sorghums was awarded a prize.

II

ANNUAL REPORT OF THE SUPERINTENDENT, CIVIL VETERINARY DEPARTMENT.

I

I have the honour to submit the annual report for the year 1906-1907, and I regret the delay which was unavoidable.

2. The subordinate staff of the Civil Veterinary Department remained the same as in last year. Three out of the four Veterinary Assistants who were on temporary employment were made permanent, and the other was allowed to resign his post at his own request.

3. The office establishment was strengthened by one clerk and a peon, and now that the work of the department has been considerably increased, as nine Veterinary Assistants have been recently entertained, it may be necessary to ask for a further augmentation.

4. During the year I was on combined privilege and furlough leave for six months and three days, between the months of May and November 1906 and Major Trydell was officiating during this period. Mr. Aitchison was appointed on probation and joined on the 30th April 1906 and it is hoped his services will be permanently retained in this Presidency.

5. I travelled for 48 days, and was at head-quarters during the remaining period. Opportunity was taken to inspect the Veterinary hospitals at Pithapuram and Bellary. I was present at the cattle shows held at Pithapuram, Ongole and Bobbili and Mr. Aitchison visited the one held at Ellore. I also supervised the work of the Veterinary Assistants. In March 1907 I paid a visit to the Taliparamba farm in connection with the question of starting cattle breeding. Major Trydell frequently inspected the Veterinary hospitals at Pithapuram, Madura and Trichinopoly and also visited Tinnevely, Tiruvannamalai, Rajahmundry, Vizagapatam and Vellore for the purpose of selecting suitable sites for the Veterinary hospitals. A few other centres, viz., Ongole, Addanki and Coimbatore were inspected by Mr. Aitchison for the same purpose. The sites were selected and it is hoped that the constructions of buildings will soon be started. The latter officer had also inspected the Government stallions stationed in the Coimbatore district and attended to an outbreak of cattle disease in Wynad taluk. He was also present at the Pithapuram and Ongole cattle shows.

6. Major Trydell also spent some time at Kodaikanal in selecting suitable sites for the Bacteriological Laboratory.

II.—VETERINARY COLLEGE.

7. There had been no changes in the staff of the College and the third lecturer has been nominated on a year's probation.

8. The final examinations of the students were held last year in December and the number of passes in each class was as follows:—

Class.	Examined.	Passed.	Percentage of passes.
A or 1st year	28	19	67.8
B or 2nd year	25	15	60.0
C or 3rd year	21	12	57.1

* Includes Swaminatha Aiyar of the Saidapet Veterinary hospital who failed to pass.

9. The Board of Examiners remarked that the results were fair, and I consider that the students, as a whole, had done creditably, considering that this was the first time that they were examined by the Board of Examiners; and that they were consequently somewhat nervous.

10. The total strength of the College at the end of March 1907 was 67, viz., class A-23, class B-25, and class C-19. Vacancies in class A were sufficiently advertised, and though more than 30 students were actually enrolled, most of them left the College subsequently, and in consequence of the low rate of pay, it seems rather difficult to obtain a good class of students. I have no doubt that the reduction in the initial pay has much to answer for failure to obtain the full complement of students, though the date of admission had been extended to the end of February 1907. The attendance in the classes, both at the practical and theoretical lectures, was fair except in the case of students who seemed uncertain whether they intended to undergo the course and who have since left the College. The final year students were given ample and repeated opportunities of performing operations on no less than 25 horses that had been sent to hospital for destruction. These horses were placed under the effects of chloroform and the operations were performed by the students under direct supervision and instruction of the lecturer.

on Operative Surgery. As many other operations as possible were performed by the students on the dead subject. The number of major and minor operations performed on hospital cases during the year was 544 which was 17 in excess of that of the previous year operations as detailed below:—

	Major.	Minor.
Horses	116	76
Bovines	74	25
Other animals	186	67
Total	376	168

The major operations include the suturing of wounds, amputations of the tail, penis, horn and limbs, castration, trephining, tracheotomy, excision of tumours, removal of worm in the eye, neurectomy, setting of fractures and dislocations, etc., whilst the minor operations are those of opening abscesses, nail-cutting, paring of corns, seedy toe, bruised soles, rasping of irregular teeth, etc.

11. During the year the students were encouraged to play the various field games; but it is very necessary that there should be appointed a teacher of physical exercises, as the lecturers find their time too fully occupied with their lectures and hospital practice to be able to devote much time to the students in their play hours. Nevertheless, it is very essential that they should be encouraged to go in for as much physical exercise as possible.

12. The hostel contained on an average 18 students and it would be a good idea to give effect to the proposals made by Major Trydell, making it compulsory for each student to remain at the hostel. This has to be worked out, however, gradually.

III (a).—CATTLE DISEASE.

13. During the year under review, the total loss of cattle from disease was 118,539 and from other causes 15,314 against 90,293 and 15,301 respectively, of the last year. The increase is particularly noticeable under "Rinderpest, Diarrhoea and Dysentery" and "unspecified diseases," the former contributing about 27.8 and the latter 47.3 per cent. of the total mortality. On the other hand, there was a decrease under "Anthrax," "Black quarter" and "Epizootic Apyha" which contributed only 10.6, 3.6 and 2 per cent., respectively.

14. The loss from rinderpest was heavy in Kistna, Kurnool, Guntur and Nellore, and prompt steps were taken to check this outbreak by inoculating a large number of cattle in these districts. It is gratifying to observe that anthrax would seem to be steadily on the decline. There has been a very decided decrease in Tanjore, while Kistna still maintains its bad reputation having suffered the greatest loss (2,432). For want of adequate and reliable information, inoculation against anthrax has not yet been attempted in Kistna. Arrangements are now being made to investigate the matter with a view to apply preventive measures. It is, however, regrettable that the vast increase of mortality among cattle, as compared with the last year, is after all only apparent and not real, as it might be due to a more accurate record of deaths. The large percentage of deaths (47.3 per cent.) exhibited under "unspecified diseases" betrays some want of discrimination in the registration of mortality under proper headings but this is only to be expected where the information is of the vaguest. This state of things, it is regretted, cannot be helped as the expert assistance at our disposal is nothing like sufficient for the demands of the Presidency. Inoculation against rinderpest is being carried on in 12 districts and that against anthrax in only 7. 11,043 heads of cattle were inoculated against rinderpest and about 8,856 against anthrax. Of those inoculated, only a few were afterwards affected.

15. The total number of deaths among horses and ponies caused by diseases was 235, by snake-bites 11, and by wild animals 103. Criminal poisoning accounted for 43 deaths.

III (b).—VETERINARY HOSPITALS.

16. There was no addition to the number of Veterinary hospitals during the year owing to there being no Veterinary Assistants available to be placed in charge of them. None of these hospitals are under the direct control of this department. It was proposed that the Saidapet Veterinary hospital attached to the Agricultural College may be placed under the direct supervision of the Superintendent, but final orders have not yet been received. The number of cases treated in each of these hospitals is shown in statement No. 5. More than 8,000 fresh cases were treated in all the five hospitals which give an average of 1,600 for each hospital or about 5 cases every day. It is observed that the hospital at Bellary has shown signs of progress more especially in the number of Bovine cases. In Trichinopoly, however, the daily attendance has shown a decline under each class but the number of in-patients has been fairly well maintained.

17. In Pithapuram though the hospital suffered to some extent on account of the change of Veterinary Assistants consequent on Abdullah, the permanent incumbent, proceeding to the Punjab, the total number of patients showed an increase over that of the previous year and more cattle were treated both as in-and out-patients.

18. The Saidapet hospital received, on the whole, 57 cases more than last year. The number of out-patients, excepting dog cases, reached the figures of last year, and in Bovine patients there was a slight increase. Among in-patients there were more cases of horses than cattle.

19. In Madura hospital, the number of fresh cases increased by 549 over that of the previous year, and it is reported that the total number of cases attended to was 22,200 as against 24,818 in the previous year. These figures represent the number of cases treated daily and would show an average daily attendance of 60. This shows that this institution has justified its existence and would indicate that similar institutions in other parts of the Presidency which are now in existence and those to be started hereafter have before them a large field of useful work. It will be necessary to offer treatment and advise free of charge until the popularity of these institutions is firmly established.

20. In the hospital attached to the Madras Veterinary College 2,249 cases were treated both under the heading of in-and out-patients. This gives an increase over the figures of the previous year by 36 cases.

21. The number of cases under equine patients was 955 as against 767 of the previous year. The number of Bovine patients suffered a decline by 10 cases. Every effort is made to increase cattle practice, as the students will have to deal more with this class of patients when they enter upon their work. There were many interesting cases among canine patients and, as a rule, it is found that students evince great interest in following the treatment of these cases.

22. It will be necessary to afford extended accommodation in the pharmacy as the present space is much too limited. The daily attendance has considerably risen and each section is under the charge of a lecturer.

23. Land has been purchased and plans submitted and it is expected that hospitals in Ongole, Rajahmundry, Vellore, Sivaganga, Tiruvannamalai and Coimbatore will soon be started.

24. The Pudukkotta and Vizianagram estates have recently started Veterinary dispensaries and obtained the loan of Veterinary Assistants. The District Board of Vizagapatam has also a dispensary of its own under the charge of one of the Veterinary Assistants of this department.

25. The total receipts of the Madras Veterinary College hospital amounted to Rs. 6,846-7-10 during the official year 1906-1907 as against Rs. 7,091-13-1 for the year previous.

IV (a).—PONY-BREEDING OPERATIONS.

26. At the commencement of the year 1st April 1906, there were 15 stallions on the rolls; "Tigris" having been ill for some time previously was brought to the Veterinary College hospital where he died in November. During the year 2 stallions were purchased. The stallions were stationed in Coimbatore, Salem and Madura districts. In Coimbatore there were 10 stallions at work. 1 stallion was stationed permanently each of the taluks of Dharmaparam, Erode, Kollegal, Coimbatore, Pollachi and Pallayakotta. There were two at Kangayam throughout the year. Of the remaining two, "Sheik" was working in Avanashi until the end of December 1906 and afterwards at Tiruppur; "Turk" was at Avanashi for three months and at Karur until the end of February and he was transferred again to Tiruppur in March 1907. The total number of coverings was 218 in the Coimbatore district as against 179 in the previous year. In the Salem district 4 stallions were at work. Three stallions, viz., "Selim", "Sunshine" and "Tigris" were stationed in the subdivision of Hosur and the other was stationed at Tirupattur till the end of November 1906 and afterwards at Harur. For all practical purposes "Tigris" may be excluded from our calculations as he was too ill to serve. In Hosur division 2 were at Hosur and one in Krishnagiri. The total number of coverings was 75 against 101 during last year.

27. In the Madura district there was one stallion as usual. He was located at Vedasandur till the end of June 1906 when he was transferred to Palni. He covered 22 mares as against 30 during last year.

28. On the whole, there were 315 coverings during the year against 310 in the one previous year and the average was therefore 22 per stallion. The service of stallion "Sheik" was very poor, while he was at Avanashi and till December 1906, he covered only five mares. After his transfer to Tiruppur in the early part of January 1907, his work improved a little. Similarly "Ali", "Ophir" and "Punch" had few mares brought to them. Stallion "Carbon" at Karur covered only 7 mares during 12 months. It is reported that want of mares in season accounts generally for the small number brought to Government stallions. Nevertheless, the number of mares brought shows a slight increase, and this is encouraging, and when the Tiruppur pony show again becomes an annual institution, we may look forward to increased interest among pony breeders. It is further hoped that, with the increase of Veterinary Assistants and Veterinary hospitals, the scope of pony-breeding operations may be extended to a few more centres. The prospect of keeping these operations under the direct supervision of Veterinary Assistants is anticipated to end in better results.

29. Results of coverings.—The total number of coverings in 1905-1906 was 310 in the three districts of Coimbatore, Salem and Madura. The results were reported only in a very few cases, viz., 33. Of these 8 were successful cases, 44 proved empty, 4 died and in 9 cases the whereabout were not known. The Tahsildars concerned have been reminded to expedite the submission of the reports on the cases that have not been reported by them.

30. *Castration.*—The total number of entires castrated came up to 85 against 35 last year. The Salustri at Salem performed 53 operations and the other two in Coimbatore 35. A number of bulls (294) were castrated in addition to the above and judging from the number of bulls castrated it is most encouraging, and would indicate that the ryots are now realizing the disadvantages of the indiscriminate service of cows by indifferent bulls. These men, in addition to the work of castration, supervised the grooming and feeding of Government stallions and administered to them medicines in common cases of illness. These duties will be undertaken by qualified Veterinary Assistants as the department develops.

IV (b).—CATTLE FAIRS AND SHOWS.

31. During the year it was only possible to lend the services of a Veterinary Assistant to some of the cattle fairs held in the Tinnevely district. There are 11 fairs in this district annually, each having a duration of nearly a month. He attended five fairs during which the Cattle Disease Act-II of 1860 was enforced. About 80,316 cattle were brought in altogether for the purpose of sale at these shows, and it was reported that a large number of animals changed hands. There were no cases of prosecution under the Act and the cattle, with the exception of a few cases of foot and mouth disease, were generally free from contagious disease. These, when noticed, were treated carefully by the Veterinary Assistant. The method of inoculation was demonstrated to people at each of these shows, and its harmlessness explained. Cattle shows were also held in Madurai, Kottacheruvu and Conjeevaram in conjunction with the Agricultural exhibitions held at the respective places. During the year four important cattle shows were held including the one at Ellore, Kistna district, which had been newly organised. Detailed reports regarding them have already been submitted to the Board of Revenue. The cattle shows held at Bobbili in the Vizagapatam district, Pittapur, and Ongole showed a decided improvement, and the exhibits of cows and heifers at Ongole and those of bullocks in Pittapur and buffaloes in Bobbili were remarkably good. The considerable interest shown by the members of the executive committees of the various associations no doubt tended to make these shows successful and this ultimately is beneficial to the ryot population. These shows have, however, been confined to the Northern districts, but there are indications that the members of the Southern district associations are bestirring themselves in the matter, and they should receive every encouragement. It is true that only certain parts of the Presidency have been identified as cattle breeding centres, but there is no reason why many other parts should not be suitable for a sufficient supply of cattle for their own needs without having recourse to purchase from cattle drivers.

32. At these shows it has been noticed that except in the Vizagapatam district very little attention has been paid to improve the breed of buffaloes. This is a matter for regret, and commercially a great mistake, and I have endeavoured to impress on the minds of the members of the District Associations the necessity to pay some attention to this class of animals. There are vast areas of land in this Presidency which are eminently adapted to buffalo breeding and rearing, and there are vast numbers of buffaloes but they are of a poor variety. In the Kistna district there are probably a greater number of buffaloes than cattle. If some influential body like the District Agricultural Association becomes interested, a great deal might be done to improve the breed of buffaloes. It is gratifying to note that some endeavour has been made to exhibit a better class of wool-bearing sheep, and if some further attention is paid to the colour of the fleece—it should be pure white—it would command a better market. There is a very useful field to be opened up here as wool always commands a fair price and there is always a market. There are a few points on which some improvement may be made, and these have been impressed upon the members of the various Agricultural Associations, whom the Member of the Board of Revenue has at various times addressed. No more bulls were purchased by Government during the year under review. There was one casualty among those purchased last year. The remaining six bulls kept good health. With the exception of two which are still young, the young bulls covered cows and they are much appreciated by the people.

V.—VETERINARY ASSISTANTS.

33. All the six Veterinary Assistants were chiefly concerned with the prevention of disease. Cattle in contact with those suffering from contagious diseases were inoculated as a preventive measure. The prophylactic treatment was carried in 13 districts of this Presidency, and the subjoined table—

	Malignant sore- throat.	Anthrax.	Rinderpest.	Total.
1901-1905	833	12,437	5,251	20,688
1905-1906	679	22,152	12,689	35,674
1906-1907		8,866	11,019	20,578

will show the number of cattle inoculated for each disease, and statement No III the number of cattle inoculated in each of the districts. In all these places the services of Veterinary Assistants were applied for and I am glad to be able to state that there has been no opposition.

in a few villages where people have not yet shaken off their prejudices to the progress of inoculation work. On account of paucity of Veterinary Assistants, a considerable portion of time of ours has been spent in travelling from disease centre to centre, but when more Veterinary Assistants are available, this will not be necessary. On the whole, I consider that there was confidence among cattle-owners and more co-operation on the part of the taluk officials, though the village authorities still try to shirk their attendance, when possible. This has been brought to my notice, and there is considerable truth in the statement that without the aid and help of these villagers, but very little work can be done. The treatment by inoculation has afforded undoubted immunity in a great many cases, and if steps are taken to inoculate cattle on the first appearance of an outbreak, much harm will be surely averted. This has become of similar importance to that of vaccination in the case of human beings, and in course of time it will be accepted everywhere without the least opposition. On their tours Veterinary Assistants have also treated some surgical cases, such as cases of tumours and other cases of illness among cattle. In the immediate future I trust that the itinerating Veterinary Assistants posted to districts will be equipped with a few useful drugs and instruments, and which they will invariably carry about with them to attend to cases other than inoculation work. This will be a sure means of gaining the confidence of the ryot population. On this subject I have addressed the Board of Revenue already. People have very frequently made use of their services for the castration of their young stock as well as old animals. All these are included in the duties of a Veterinary Assistant, and when he is given charge of a single district, he will have more opportunities for helping the people in the treatment of their live-stock and offering advice on feeding, breeding, etc., generally. As it stands at present the Veterinary Assistant has no permanent head-quarters, as he is liable to be constantly transferred from district to district in accordance with urgent demands. These difficulties will disappear gradually as more Veterinary Assistants are employed. The greater portion of the time of one of the Senior Veterinary Assistants M. Hassan Ali Sahib has been devoted to the work of organising cattle shows and this he has performed very creditably.

34. The other Senior Veterinary Assistant V. P. Subrahmanya Mudaliyar has done excellent inoculation work but some of his time was taken up with such duties as attendance at cattle fairs, inspection of stallions in times of illness, etc. He visited seven districts during the year, and inoculated 6,227 cattle against Anthrax, and 3,629 against Rinderpest, amounting to nearly one-half of the total number of inoculation performed by the remaining Veterinary Assistants. He also prepared a short paper on cattle breeding and rearing which was read at the cattle shows. He also translated it into Tamil for distribution.

35. A Veterinary Assistant was stationed in the Ganjam district for nearly the whole year, and in addition to attending to the inoculation of cattle he treated elephants belonging to the Agency. This latter duty occupied a considerable portion of his time somewhat to the detriment of his legitimate work. He inoculated 2,754 cattle.

36. The Veterinary Assistant at Gódvári S. A. Padmanabha Pillai was employed for the greater portion of the year in treating Government elephants, and for three months was in charge of the hospital at Pithapuram.

37. The other two Veterinary Assistants were employed on inoculation work and they inoculated 8,461 cattle.

38. During the year, cases of Charbon symptomatic were treated at the Remount Depot, Hosur.

39. Veterinary Assistants have also inspected cattle pounds during their tours and any irregularities that were noticed were brought to the notice of the Tahsildars concerned. They also paid attention to the sanitation of the cattle sheds, and gave useful advice to cattle owners regarding their proper management, feeding, etc. Four of the Veterinary Assistants were on privilege leave for a month each. During the year the following doses of serum were received from the Imperial Bacteriologist under each sort:—

	Doses.
Rinderpest	19,000
Anthrax	7,000
Hæmorrhagic septicæmia	3,000

MADRAS,
10th July 1907.

W. D. GUNN,
Supt., Civil Veterinary Dept.

APPENDICES.

TABLE I.—Statement showing the main results of Veterinary colleges and schools during 1906-1907.

Veterinary colleges and schools.	Name of college or school.	Number of students.	Admitted during the year.	Passed final examinations during the year.	Failed to pass final examination.	Remaining under instructions at the end of the year.	Student admitted during the year classed by educational qualifications.	In ordinary course.	Instruction prolonged by reason of failure to pass.	Matriculated with higher qualifications.	Knowing some English but not instructed.	Knowing no English or very little English.
1	2	3	4	5	6	7	8	9	10	11	12	13
Veterinary College, Madras.	..	10	Tuition is given free.	12	9	60	7	15	7	..	..	..

Veterinary colleges and schools.	Name of college or school.	Receipts.	Expenditure.	Employment of students passed out during the three years preceding.	Total number passed.	In service of Government or Local Board.	In services of other bodies or institutions.	In private practice.	Number unemployed.
12	13	14	15	16	17	18	19	20	21
Veterinary College, Madras.	..	..	Rs. 6,251 1 0	Rs. 3,351 1 7	Rs. 9,662 2 7	12	..	..	..

TABLE II.—Statement showing the number of deaths (from diseases) amongst animals during the year 1906-1907.

Province.	Equines.					Bovines.						
	Anthrax.	Sarc.	Dourine.	Other contagious diseases.	Total.	Rinderpest, diarrhoea and dysentery.	Anthrax.	Malignant sore-throat.	Black quarter.	Epizootic aphthae.	Other diseases.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13
Madras	20	..	..	..	20	31,671	12,062	5,550	4,168	2,794	53,798	118,539

TABLE III.—Statement showing the results of preventive inoculation during the year 1906-1907.

Districts.	Name of disease against which inoculation was carried out.	Method of inoculation followed.	Number of outbreaks in which inoculation was undertaken.	Rinderpest.		
				Equines.	Bovines.	Others.
				5	6	7
1	2	3	4	5	6	7
1. Ganjam	..	..	17	..	919	..
2. Godavari	..	..	20	..	752	..
3. Kistna	..	..	198	..	3,544	..
4. Guntur	..	..	35	..	2,324	..
5. Kurnool	..	..	6	..	783	..
6. Bellary	..	..	9	..	74	..
7. Anantapur	..	..	7	..	703	..
8. Nellore	..	..	5	..	337	..
9. Trichinopoly	..	..	1	..	39	..
10. Tanjore	..	..	34	..	1,025	..
11. Madras	..	..	33	..	..	..
12. Malabar	..	..	32	..	..	..
13. South Canara	..	..	6	..	143	..
Total	..	..	404	..	11,043	..

Districts.	Anthrax.			Hæmorrhagic septicæmia.		
	Equines.	Bovines.	Others.	Equines.	Bovines.	Others.
	8	9	10	11	12	13
1. Ganjam	..	1,540	..	..	..	..
2. Godavari	..	122	..	..	..	..
3. Kistna	..	..	..	..	133	..
4. Guntur	..	..	..	..	260	..
5. Kurnool	..	..	..	..	..	..
6. Bellary	..	815	..	..	191	..
7. Anantapur	..	..	..	..	..	..
8. Nellore	..	..	..	..	..	..
9. Trichinopoly	..	..	..	..	..	..
10. Tanjore	..	1,858	..	..	..	..
11. Madras	..	528	..	..	95	..
12. Malabar	..	641	..	..	..	..
13. South Canara	..	52	..	..	..	..
Total	..	8,556	..	..	679	..

TABLE IV.—Statement showing the number of animals treated and castrated by Veterinary Assistants and by salubricists on tour during 1906-1907.

Province.	Number of villages visited.	Number of Veterinary Assistants employed.	Castration performed.				Treated for contagious diseases.	
			Equines.	Bovines.	Others.	Total.	Equines.	Bovines.
			4	5	6	7	8	9
1	2	3	4	5	6	7	8	9
Madras (by Veterinary Assistants).	..	6	5	9	6	20	..	..
By salubricists	..	3	85	294	..	379	..	..

Province.	Treated for contagious diseases—cont.		Treated for non-contagious diseases.				Total number of cases treated and castrations performed.
	Others.	Total.	Equines.	Bovines.	Others.	Total.	
	10	11	12	13	14	15	
Madras (by Veterinary Assistants).	..	..	..	..	6	6	26
By salubricists	..	..	..	..	..	..	379

TABLE V.—Statement showing the number of animals treated at Veterinary Hospitals during the year 1906-1907.

Provinces.	Number of Veterinary dispensaries.	Number of Veterinary Assistants employed at dispensaries.	In-patients.											
			Remaining on 1st April 1906.			Admitted during the year.			Total.			Discharged during the year.		
			Equines.	Bovines.	Others.	Equines.	Bovines.	Others.	Equines.	Bovines.	Others.	Equines.	Bovines.	Others.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pithapuram	1	1	..	..	..	..	22	1	9	22	1	8	21	1
Bellary	1	1	..	..	..	69	170	104	69	170	104	68	168	73
Madura	1	1	1	..	..	51	40	8	52	40	8	50	40	8
Trichinopoly	1	1	2	3	1	338	368	153	340	361	151	331	349	150
Saidapet	1	1	7	2	2	106	65	7	113	67	73	105	65	69
Madras	1	4	12	14	16	520	184	400	539	198	416	523	183	401

Province.	In-patients— cont.			Out-patients.												Receipts.	Expenditure.
	Balance on 31st March 1907.			Number treated during the year.			Average daily attendance.			Total number of in- and out patients treated during the year.							
	Equines.	Bovines.	Other animals.	Equines.	Bovines.	Other animals.	Equines.	Bovines.	Other animals.	Equines.	Bovines.	Other animals.	Total.				
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
Pithapuram ..	1	1	..	97	483	179	3	7	3	106	505	189	791	Rs. A. P.	Rs. A. P.		
Bellary ..	1	12	31	446	625	554	1	2	2	515	795	658	1,968	3,454	6 3		
Madura ..	2	..	..	899	1,274	374	24	25	8	951	1,314	383	2,647	2,150	2 0		
Trichinopoly ..	9	12	4	3,934	7,215	898	11	36	6	4,274	7,576	1,052	12,902	996	7 9		
Saidapet ..	8	2	4	278	490	287	5	10	4	388	557	360	1,303	939	9 5		
Madras ..	16	16	15	416	88	592	7	2	12	955	285	1,008	2,249	6,846	7 10		
														16,314	9 6		

TABLE VI.—Abstract showing receipts and expenditure of Veterinary dispensaries during 1906-1907.

Province.	Receipts.							
	Last year's balance.	By Local Fund grants.	By Government grants.	By Municipal contribution.	By fees.	By other sources.	Total.	
	1	2	3	4	5	6	7	8
	RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.	
Pithapuram	..	..	..	..	..	1,101 0 0	1,104 0 0	..
Bellary	..	1,511 8 5	360 0 0	..	362 11 9	1,220 2 1	3,454 6 3	..
Madura	..	2,002 0 0	..	..	148 2 0	..	2,150 2 0	..
Trichinopoly	..	..	..	..	..	..	Not reported	..
Saidapet	..	..	2,011 6 7	..	884 7 8	85 1 9	2,981 0 0	..
Madras	9,030 4 8	..	..	..	6,846 7 10	..	15,926 12 6	..

Province.	Expenditure.						
	Pay.	Travelling allowance.	Medicines and instruments, etc.	Furniture, etc.	Contingencies.	Total.	Balance.
	9	10	11	12	13	14	15
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
Pithapuram	..	..	..	..	120 0 0	1,104 0 0	..
Bellary	1,307 10 8	..	996 9 11	715 0 8	435 1 0	3,454 6 3	..
Madura	1,381 5 11	96 0 0	178 6 8	168 0 0	201 9 3	2,025 5 10	124 12 2
Trichinopoly	..	..	..	..	..	..	..
Saidapet	876 0 0	..	388 14 1	..	421 7 8	1,686 5 9	9,129 10 3
Madras	10,293 3 2	272 8 7	1,583 9 7	816 0 4	2,846 3 10	16,314 9 6	..

* Information not furnished.

TABLE VII.—Statement showing total strength of Subordinate Veterinary staff employed during the year 1906-1907.

Province.	How occupied.	Whether paid from Provincial or Local Funds.	Veterinary Inspectors.	Veterinary Assistants.	Subordinate staff not included in previous columns.
1	2	3	4	5	6
Madras	Itinerating and attending cattle fairs and shows	Provincial	..	6	..
	In charge hospitals.	District Boards	..	2	..
	College work	Society for the Prevention of Cruelty to Animals, Bellary.	..	1	..
		Private bodies	..	1	..
		Provincial	..	..	..
		Provincial	..	..	..

† One Assistant Principal.
Three lecturers.

TABLE VIII.—Return of stud bulls for the year 1906-1907.

Province.	Property of Government.					Property of local bodies.				
	Number on 1st April 1906.	Obtained during the year.		Casualties during the year.	Balance remaining on 31st March 1907.	Number on 1st April 1906.	Obtained during the year.		Casualties during the year.	Balance remaining on 31st March 1907.
		Number.	Average price paid.				Number.	Average price paid.		
1	2	3	4	5	6	7	8	9	10	11
Madras	6	..	..	..	6	..	..	..	..	..

TABLE IX.—Statement showing the main results of the working of Provincial Cattle Farms during the year.—*Nil*.TABLE X.—Return of horse, pony and donkey stallions under local bodies for the year 1906-1907.—*Nil*.

TABLE XI.—Services and produce of each class of horse, pony and donkey stallions under local bodies during the year 1906-1907.

Horse, pony or donkey.	Province.	Stallions on register on 31st March 1906.	Stallions actually employed at stud.		Number of mares covered.		Average number of mares covered per stallion employed at stud.	
			Year under report.	Previous year.	Year under report.	Previous year.	Year under report.	Previous year.
1	2	3	4	5	6	7	8	9
The stallions at stud are under the Provincial Department of Government.								
Pony	Madras	15	14*	15	315	328	22	28

* One of the stallions "Tigris" died in November 1906.

TABLE XII.—Average cost of feed, keep, attendance, etc., of horse, pony and donkey stallions during the year 1906-1907.

Province.	Horse.		Pony.		Donkey.		Remarks.
	Year under report.	Previous year.	Year under report.	Previous year.	Year under report.	Previous year.	
1	2	3	4	5	6	7	8
Madras	..	..	RS. A. P. 24 14 7	RS. A. P. 23 14 7	..	..	The total expenditure for upkeep alone of Government stallions amounted to Rupees 4,484-9-2 and this has been distributed for fifteen stallions.

TABLE XIII.—Abstract of particulars regarding horse fairs and shows held in non-selected districts during the year.—*Nil*.

TABLE XIV.—Abstract of particulars regarding cattle fairs and shows held during the year 1906-1907.

Province.	Number of cattle fairs and shows held.	Total number of stock present.							Average price of animal sold.				
		Bulls.	Bullocks.	Cows.	Young stock.	Buffaloes.	Camels.	Others.	Bulls.	Bullocks.	Cows.	Buffaloes.	Camels.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Cattle fairs.</i>													
Tinnevely	6	16	76,506	1,060	750	2,000	..	..	RS.	RS.	RS.	RS.	..
Information not available.													
<i>Cattle shows.</i>													
Bobbili	..	45	172	68	..	167	..	68	..	60	90	..	..
Fittaparam	..	56	92	101	..	157	..	192	None sold.	75	70	..	..
Ongole	..	187	78	367	..	78	..	293	150	90	110	..	..
Ellore	..	3	110	104	..	32	..	214	150	80	75	..	..
Total	6	397	76,952	1,790	750	2,434	..	757	300	305	345	..	..

Provinces.	Amount realised in fees.	Total number of animals that competed for prizes.	Prizes awarded.					Amount actually awarded.	Number of medals awarded.
			From Imperial funds.	From Provincial funds.	From local bodies.	From other sources.	Total.		
	Rs.		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
<i>Cattle fairs.</i>									
Tinnevely			Information not available.						
<i>Cattle shows.</i>									
Bobbili		500	600	325	300	1,480	2,705	1,160	4
Pithapuram		595	400	...	...	600	1,000	695	2
Ongole		1,023	1,000	...	780	2,163	3,912	2,143	4
Ellore		453	...	...	...	(No information).	...	...	2
Total		2,581	2,060	325	1,080	4,242	7,617	6,021	12

TABLE XIV-A.—Statement showing the cost of Civil Veterinary department during the official year 1906-1907.

Major heads.	Amount.			
	Imperial.	Provincial.	Local.	Total.
1	2	3	4	5
1. Salaries of officers	RS. A. P. 34,851 15 0	RS. A. P. 8,317 12 4	RS. A. P. ...	RS. A. P. 34,851 15 0
2. Salaries of subordinates	...	4,540 5 0	...	4,540 5 0
3. Travelling allowance of officers	...	3,631 1 6	...	3,631 1 6
4. Travelling allowance of subordinates	...	595 12 5	...	595 12 5
5. Other allowances	...	5,045 13 9	...	5,045 13 9
6. Supplies and services	...	1,241 5 6	...	1,241 5 6
7. Contingencies	...	...	...	...
8. Prevention of diseases	...	20,778 11 9	...	20,778 11 9
9. Schools and colleges	...	...	...	...
10. Prizes at fairs and shows	2,000 0 0	325 0 0	1,050 0 0	3,375 0 0
Total	38,851 15 0	33,466 15 3	1,050 0 0	82,368 14 3

TABLE XV.—Comparative statement of cattle mortality for five years ending 1906-1907.

Causes of death.	Number of deaths among				
	Cattle for the official year.				
	1902-1903.	1903-1904.	1904-1905.	1905-1906.	1906-1907.
<i>Diseases.</i>					
Rinderpest, diarrhoea and dysentery	18,555	17,655	19,772	19,050	31,611
Anthrax	13,496	16,887	14,986	13,474	12,082
Malignant sorethroat	9,063	13,700	11,317	8,338	9,086
Black quarter	2,989	7,616	7,683	5,952	4,168
Epizootic apthia	11,446	4,683	2,767	4,071	2,794
Others	35,417	32,348	33,335	38,905	53,798
Total	84,976	93,168	89,871	96,393	118,539
<i>Other causes.</i>					
Snake bite	2,103	2,278	2,257	2,011	1,899
Wild animals	10,937	10,886	12,061	13,232	13,372
Criminal poisoning	71	71	52	59	43
Total	13,117	13,235	14,370	15,301	15,314
Grand total	102,093	106,393	104,241	105,594	128,853

STATISTICS of mortality among cattle, horses and ponies in the several districts of the Madras Presidency during the official year 1906-1907.

Districts.	Number of deaths among										
	Cattle.										
	From diseases.								From snake bite.	By wild animals.	From criminal poisoning.
	Rinderpest.	Diarrhoea and dysentery.	Anthrax.	Malignant throat.	Black quarter or other ill or evil.	Epizootic apthia.	Others.	Total.			
1	2	3	4	5	6	7	8	9	10	11	12
1. Ganjam	1,228	1,973	406	718	346	294	1,083	6,048	60	205	..
2. Vizagapatam	206	919	460	221	115	304	538	2,762	32	53	1
3. Godavari	674	746	1,217	386	114	107	12,314	15,528	75	28	4
4. Kistna	2,393	4,791	2,432	1,054	182	387	13,453	21,992	215	38	8
5. Guntur	1,747	980	354	1,637	174	59	821	5,771	51	46	2
6. Kurnool	2,516	1,257	876	277	364	211	3,497	8,998	81	380	..
7. Bellary	1,531	550	480	200	408	138	3,086	6,393	26	165	..
8. Anantapur	804	398	555	287	502	110	3,055	5,711	21	262	5
9. Cuddapah	1,113	596	416	195	814	116	1,098	4,348	63	506	4
10. Nellore	1,184	301	592	249	97	38	1,360	4,121	162	90	2
11. Chingleput	48	78	209	104	37	42	228	746	91	15	..
12. South Arcot	156	187	723	324	92	158	3,275	4,915	125	203	1
13. North Arcot	118	244	244	79	132	99	898	1,814	181	744	3
14. Salem	49	159	123	70	134	154	684	1,373	89	273	1
15. Coimbatore	68	334	189	135	167	208	2,553	3,654	51	669	5
16. Trichinopoly	212	155	337	181	61	51	2,345	3,342	57	31	2
17. Tanjore	405	130	652	425	100	19	399	2,130	106	2	4
18. Madurai	550	724	793	255	174	90	1,161	3,783	164	140	..
19. Tinnevely	191	286	283	44	1	2	512	1,267	81	32	1
20. The Nilgiris	13	8	576	...	6	20	108	1,572	15	261	..
21. Malabar	13	399	190	1,321	175	114	2,351	106	2,894	..	..
22. South Canara	431	140	27	83	13	1218	1,920	46	6,295	..	..
Total	16,286	15,325	12,682	9,086	4,168	2,794	53,798	110,599	1,599	13,372	43

Number of deaths among—cont.

Districts.	Cattle—cont.					Horses and Ponies.						
	Total.	Grand Total.	Total stock by the latest census.	From diseases.				From snake bite.	By wild animals.	From criminal poisoning.	Total.	Grand total.
				Diarrhoea and dysentery.	Anthrax.	Others.	Total.					
	13	14	15	16	17	18	19	20	21	22	23	24
1. Ganjam	265	6,313	...	1	...	...	1	...	...	...	...	1
2. Vizagapatam	86	2,848	...	...	...	...	...	...	...	...	...	...
3. Godavari	148	15,076	...	1	2	19	22	...	...	...	...	22
4. Kistna	261	25,253	...	3	3	20	26	...	1	...	1	27
5. Guntur	99	5,870	...	...	2	2	2	...	...	...	...	2
6. Kurnool	461	9,450	...	2	1	28	31	2	12	...	14	45
7. Bellary	191	6,534	...	2	8	38	48	...	4	...	4	62
8. Anantapur	258	5,939	...	2	...	25	34	...	14	...	14	48
9. Cuddapah	573	4,021	...	1	...	3	4	1	1	...	2	6
10. Nellore	254	4,375	...	...	...	1	1	...	1	...	1	2
11. Chingleput	106	852	...	...	1	...	1	...	...	...	...	1
12. South Arcot	329	5,244	...	...	...	5	5	...	...	...	...	5
13. North Arcot	928	2,712	...	...	...	4	4	...	3	...	3	7
14. Salem	353	1,735	...	...	2	3	5	3	3	...	6	11
15. Coimbatore	725	4,379	...	1	...	15	17	...	4	...	4	21
16. Trichinopoly	90	3,432	...	...	1	8	9	...	...	...	...	9
17. Tanjore	112	2,242	...	1	...	9	10	...	...	...	...	10
18. Madurai	304	4,087	...	3	2	8	13	5	33	...	38	51
19. Tinnevely	114	1,381	...	2	...	2	4	...	...	...	...	4
20. The Nilgiris	276	1,848	...	...	...	...	...	...	10	...	10	10
21. Malabar	3,000	5,351	...	...	...	...	...	...	6	...	6	6
22. South Canara	6,341	8,264	...	...	...	...	...	...	...	...	...	...
Total	15,314	1,28,853	...	26	20	191	237	11	92	...	103	340

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

Read—the following paper :—

Proceedings of the Board of Revenue (R.S., Sur., L.R. and Agri.), No. 289,
dated 20th August 1907.

The Hon'ble Mr. J. N. ATKINSON.

The reports of the Director of Agriculture and the Superintendent of the Civil Veterinary Department on the operations of their respective departments for the year 1906-1907 will be submitted to Government.

2. The report of the Director of Agriculture, which was due in the Board's office on the 15th July 1907, was received only on the 2nd August 1907. This delay, which has necessitated the late submission of the Board's report to Government, was due to the recent reorganization of the department and will not, it is hoped, recur.

5. There were ten agricultural stations at work during the year, including the newly opened one at Nandyal. The work on the *agave* farm at Hindur has been so poor and disappointing that the Board is now considering the question whether its closure should not be recommended.

Experiments in sugarcane, conducted in the Samalkota agricultural station, have shown that greater care in the selection of healthy sets and in cultivation renders the crop less susceptible to disease. It is encouraging that the new canes are less subject to disease and richer in sugar than the local varieties and are being adopted generally in the delta. The attempts made to improve cotton cultivation by distribution of selected seed appear to have aroused much interest among the ryots although they were not attended with any great success. Another step in the same direction was to award a prize of two annas per acre to ryots who had grown pure cotton in certain tracts in the Kurnool and Cuddapah districts. The Director shows in his report that improvement is to be looked for not so much from selection of seed as from the introduction of careful methods of cultivation and experiments will be made in this direction.

4. *Agricultural associations and exhibitions.*—The Board notes with satisfaction the useful work done by the several Agricultural associations in undertaking experimental cultivation and organizing shows and exhibitions and hopes that, with the financial and departmental help afforded by Government, the sphere of their activities will expand.

5. The Government Botanist was mostly engaged in the management of the agricultural stations in his charge. A study by Dr. Butler, the Imperial Mycologist, of the fungus disease attacking the palmyra and the coconut trees in the Godavari delta has led to the adoption of remedial measures which, it is hoped, will tend to its extirpation.

6. It is gratifying that there is a demand in private service for candidates who have been trained at the Agricultural College, Saidapet, and it is hoped that the new College to be started at Coimbatore will fully meet the demand. In accordance with the latest orders of Government, the first classes of the new college will be opened at Saidapet in January 1908 as the buildings at Coimbatore are not expected to be ready for the reception of students till the last quarter of the year 1908.

7. *Pumping experiments.*—The conduct of pumping experiments continued under the control of Mr. Chatterton, Director of Industrial and Technical Inquiries. Ten new installations for private persons were erected and got into working order in the year and eleven such installations were decided upon and machinery purchased. Loans under the Land Improvement Act aggregating to Rs. 19,500 were granted in six cases. The oil-engine, as a convenient method of lifting water for irrigation purposes, is gaining greater recognition. The work of the Special Deputy Collector appointed to conduct well-boring experiments for ryots in a part of the Chingleput district has disclosed the existence of extensive sub-artesian supplies in at least two of the tracts under investigation—a result which points to the desirability of making a systematic and scientific exploitation of the underground supply in other districts on the East Coast. The report (promised in paragraph 22 of Mr. Chatterton's memorandum at page 26 of the report under review) regarding the methods of utilizing the water in the sandy beds of rivers when visible flow has ceased will be awaited with interest.

8. *Meteorology.*—The rainfall registered at the various rain-gauge stations was tabulated as usual and the results published by the Meteorologist, Madras, and Deputy Director of the Madras Observatory. The total number of stations in the Presidency at the end of the official year 1906–1907 was 465 inclusive of 75 in the Native States or two more than at the end of the previous year; and of these 372 stations were inspected.

9. *Statistics.*—The following returns were published in connection with local enquiries under Provincial direction:—(1) Monthly season reports in three sections (rainfall, cultivation and prices of food-grains and salt); (2) Annual crop forecast reports in respect of cotton, paddy, ground-nut and gingelly; and (3) Quarterly reports of cattle mortality.

10. *The Madras Agri-Horticultural Society.*—The income of the society from various sources including the Government grant of Rs. 4,000 amounted to Rs. 21,183. The annual Flower show was held on the 24th February 1907 at the house of the society.

11. *Veterinary College.*—The work of the college continued to be satisfactory and twelve students graduated in the year. None of the classes are up to full strength, a circumstance which the Superintendent attributes to the low rate of initial pay of Veterinary Assistants.

12. *Veterinary Dispensaries.*—There were six dispensaries at work during the year, viz., two Government dispensaries at Saidapet and Madras, two dispensaries at Madura and Kichinopoly under the respective District Boards, one at Pithapuram in the Pithapuram Estate and one at Bellary under the Society for the Prevention of Cruelty to Animals. The work turned out indicates the growing popularity of these institutions and the need for the establishment of similar institutions elsewhere. The attendance at the Madura hospital was so large as to raise doubts regarding the correctness of the figures.

13. *Veterinary Practising Staff.*—There are only six itinerating Veterinary Assistants in the department and they are unequal to the large demand for their services throughout the Presidency. The Board has approved the Superintendent's proposal that they should carry with them in their tour useful drugs and instruments and has in its Reference, No. 1762, dated 27th June 1907, proposed to Government that they may be permitted to draw mileage in lieu of daily allowance so as to enable them to incur the necessary expenditure. The reorganization of the department providing for the ultimate appointment of three Deputy Superintendents, fifteen Veterinary Superintendents, and 132 Veterinary Assistants has been recently sanctioned by the Secretary of State for India in Council.

14. *Cattle Disease.*—There was a decrease in preventive inoculation against cattle disease, the cause of which has not been explained. More satisfactory results may be expected when the staff is strengthened and expert assistance is made available in all affected tracts of the Presidency.

15. *Hony-breeding operations.*—There was an average of 22 coverings per stallion against 23 in the previous year. Out of 310 coverings of the previous year, the results have been reported in only 65 cases, the proportion of success being one in eight—a very poor percentage. It is hoped that the direct supervision of the operations by Veterinary Assistants in future will yield more satisfactory results. The work of the department in castration is encouraging and is likely to show large improvement with the expansion of the staff.

16. *Cattle Shows.*—are increasing in popularity and will, it is hoped, increase in numbers likewise throughout the Presidency. The Government contribution towards the cost of prizes awarded amounted to Rs. 2,825 in the year.

17. *Cattle Breeding.*—The Superintendent makes no mention of the work of the six Government stud-bulls entrusted in the previous year to respectable ryots for breeding purposes. The Board presumes that their services are appreciated by the ryots. One more bull has since been purchased and stationed at the Madras Veterinary College and a few more will be purchased and distributed in the course of the current year.

(True Extract.)

L. D. SWAMIKANNU,
Secretary.

the Secretary to Government, Revenue Department, with an appendix.

Order—No. 2619, Revenue, dated 23rd October 1907.

Miscellaneous.

Recorded

2. The report embodies the result of the first year's working of the Department since its reorganization. The hope expressed in the review on the report of the previous year that the experts required for the Department would be speedily recruited has been realised. A whole-time Director has been appointed with two Deputies to assist him and all the specialists whose appointment has been sanctioned by the Secretary of State joined their posts within the year. The buildings required for the Agricultural College and Research Institute at Coimbatore are being pushed forward and it is hoped that they will be completed by September next. The large farm attached to the Institute at Coimbatore is also being brought into good order. In order to provide also for the due examination of local conditions, it is proposed to establish an experimental agricultural station in each important and distinctive agricultural tract. At these stations the agriculture of the tract will receive special study and improved and new varieties of local crops and improvements on local agricultural methods will be thoroughly tested. At present the extension of these agricultural stations is limited by the absence of a sufficient number of trained agriculturists but one new farm was opened during the year at Nandyal. It has thus been necessary to devote the largest amount of attention during the year that has passed to perfecting the organisation of the Department and for the next few years this subject must still occupy the first place until the Department is in a position to meet adequately the demands upon it.

3. Some useful practical work was also accomplished within the year. Experiments in sugarcane at the Samalkota agricultural station have been steadily directed to the production of canes which shall be proof against disease, and though no cane which is entirely immune has yet been discovered, it is said that with proper care and good drainage the amount of disease is steadily diminishing and the varieties now grown suffer very little. There was a keen demand from ryots in the Godavari delta for the new canes and the Director considers that there is no doubt that in a few years they will entirely replace the local varieties. The attempt, however, to distribute these seed canes through the southern districts by establishing a sugarcane nursery at Melrosapuram was not successful as the site chosen proved unsuitable and the local demand small. The nursery was therefore closed. In regard to cotton, the chief conclusion to which the year's work led was that seed selection is less likely to produce important results than careful cultivation, so that even if improved seed supplies were available they would be of little use unless the ryots' methods of cultivation are simultaneously improved. The methods of drill-sowing and hoeing practised at Kolpatti are said to have shown results which attracted genuine interest among the ryots of the district. The experiments with jute culture are promising, but further experience is requisite. There was an extensive demand for ground-nut seed from the Palur farm and the Director considers that this important crop will be grown much more widely in future. The work done on the pepper-vine at Taliparamba has failed as yet to produce any results. The experimental farm which was opened in 1900 at Hindupur to enable the investigation of various points connected with the cultivation of the agave plant has not been very successful, the inadequacy of the staff of the Department having prevented the conduct of systematic investigations. The Board of Revenue is considering the question of recommending the closure of the farm and the Government will be glad to have a full report from the Board on the subject.

4. Mr. Chatterton continued the work of promoting the extension of irrigation by pumping, and the Government note with satisfaction that ten installations were erected and brought into working order during the year, while in eleven more cases machinery has been purchased and is in process of erection. In six cases, loans under the Land Improvement Act were granted for this purpose, but it is reported that this method of obtaining capital is not popular and ryots are beginning to take advantage of the hire-purchase system which has been introduced by Messrs. Massey & Co. The practical efficiency of the pumping installations necessarily depends on the certainty of the supply tapped; hence the discovery of subterranean water-supplies is a matter of great importance. Mr. Chatterton's demonstration of the existence of sub-artesian water-supplies in portions of the Chingleput district is of much moment, and his report indicates that there are many localities in which pumps can be profitably erected. The experiments in cotton cultivation under irrigation provided by pumping which are being carried out by Messrs. Innes & Co. of Cocanada are also of considerable interest, and the progress made in the development of irrigation under motor-driven pumps is one of the most marked features of the year's work.

5. A comprehensive scheme for the reorganization of the Veterinary Department has received the sanction of the Secretary of State since the close of the year. This scheme contemplates the establishment of Veterinary dispensaries at 82 stations in this Presidency which have been carefully selected in consultation with the local authorities and the formation of a pensionable Provincial service consisting ultimately of three Deputy Superintendents and of fifteen Veterinary Inspectors and of a pensionable Subordinate service consisting ultimately of 132 Veterinary Assistants. Veterinary aid will thus be available to the agricultural population both in the dispensaries and, by means of itinerating Veterinary Assistants, in their villages also. The scheme can, however, only be given effect to gradually as the necessary staff is trained at the Veterinary College.

6. Ten agricultural exhibitions and cattle shows were held in the year, and were mostly very successful. The Director reports that several of the District Agricultural Associations are doing useful work, and the Government hope to see the sphere of usefulness of these Associations greatly extended in the next few years. His Excellency in Council commends to the attention of the Associations the Director's suggestions that demonstrations should be carried out on the ryots' own fields and with

their own cattle, in order to combat the idea that improved processes are too expensive. The Central Agricultural Committee and the District Associations might also with advantage note the Director's opinion that the apprentices sent for training on the Government farms should be practical agriculturists.

7. On the whole, the year shows progress and is the commencement, it may be hoped, of a new era in the history of the Agricultural Department.

(True Extract.)

A. G. CARDEW,
Ag. Secretary to Government.

To the Board of Revenue (Revenue Settlement).
" Public Department.
" Educational Department.
" Inspector-General of Agriculture.
" Inspector-General of the Civil Veterinary Department.
" Minister of Agriculture, Argentine Republic.
" Entomologist to the Government of India.
" Monsieur Chailley Bart.

Copy to the Government of India, Department of Revenue and Agriculture (with C.L.).
Editors' Table.

