

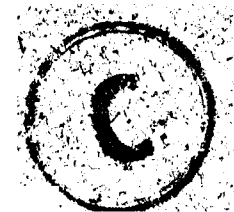
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REPORT
ON THE
OPERATIONS OF THE DEPARTMENT
OF AGRICULTURE

MADRAS PRESIDENCY

FOR THE OFFICIAL YEAR

1908-1909.



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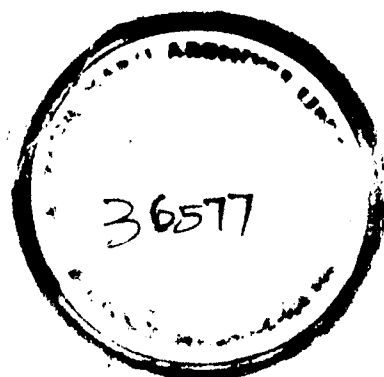
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Maximum number of pages prescribed—

Agricultural report	10
Administrative report of the Agricultural stations	4
Government Botanist's report	4
Report on the College of Agriculture, Coimbatore ..	
Civil Veterinary Department	

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I

REPORT

ON THE

OPERATIONS OF THE DEPARTMENT OF AGRICULTURE

FOR

1908-1909.

I.—STAFF.

With the arrival of the Government Botanist from furlough in September, the Coimbatore staff was completed. In the interval between the death of Rao Bahadur C. K. Subba Rao Avargal, referred to in paragraph 2 of last year's report, and Dr. Barber's arrival from England, the Principal of the Agricultural College was in charge of the Government Botanist's office. Until March 15th, the Government Botanist's head-quarters were in Madras pending the completion of his bungalow and office. Since the death of Rao Bahadur C. K. Subba Rao the post of Sub-Assistant Director has been vacant, and was abolished by Government in G.O., No. 1410, Revenue, dated 21st May 1909. Proposals have been submitted for the creation of two posts of Assistant Deputy Directors on Rs. 250—15—400. As the work of the department increases, the need for these appointments is increasingly felt.

2. The Director of Agriculture spent 194 days on tour, visiting the Agricultural Stations and making other local enquiries. He attended the Industrial Conference at Ootacamund in September and the Board of Agriculture at Nagpur in February.

3. Four new posts of Assistant Managers were sanctioned in G.O., No. 40, Revenue, dated 6th January 1909; but at present no suitable qualified men have offered themselves. One Assistant Manager has obtained an appointment under the Collector of Kistna as Manager of a Court of Wards' farm and another in the Forest Department. There are thus now ten vacancies in the sanctioned staff of the department which there is no prospect of filling up till the first batch of students complete their training at Coimbatore.

The Imperial Cotton Specialist made a short tour in the Presidency and visited the Koilpatti and Coimbatore farms.

II.—SCIENTIFIC AND NATIONAL ENQUIRY.

A.—ENTOMOLOGY.

4. Since the opening of the Coimbatore College in June last one of the Entomological Assistants has been stationed at Coimbatore and teaching Entomology. During the absence of Dr. Barber on leave the Imperial Entomologist has been directing the work of the Entomological Assistants and has very kindly revised the lectures of the teaching Assistant. The monthly diaries of both Assistants are being sent to him.

5. The two Assistants were deputed to attend a course of instruction at Pusa from March 15th to 30th to review the past year's work with Mr. Lefroy, to arrange for the work for the coming year, and to undergo a course of training in the rearing of Eri silk-worms—a promising cottage industry—the prospects of which are being investigated at Pusa.

6. The entertainment of a third Entomological Assistant was sanctioned in G.O., No. 316 P., dated 5th February, and he was deputed to Pusa for one year's training under Mr. Lefroy from June 1st.

B.—MYCOLOGY.

7. The Mycological Assistant, who had been working in the Gódávári Delta in connection with the palmyra disease, was deputed to Pusa for training under the Imperial Mycologist in November last. The difficulties experienced in dealing with this disease without adequate scientific advice have emphasised the need for a Provincial Mycologist. A proposal has accordingly been submitted to Government that the application for a Provincial Mycologist originally made in 1905 should be renewed.

8. In February the Imperial Mycologist and his Assistant visited the Amalapuram taluk and inspected the work going on there. In his report which has been submitted to Government, he expressed his opinion that the operations were having a well-marked effect in reducing the amount of disease. The latest reports are very satisfactory and show that the persistent cutting down of affected trees is eradicating the disease in Gódávári. Sporadic outbreaks having been reported from the adjacent taluks of the Kistna district, application has been made for the employment of a small special staff to deal with them.

9. Experience shows that in dry weather the fungus often remain in a dormant condition for considerable periods. With the return of wet weather it starts growing again. This explains the reappearance of the disease in localities from which it was believed to have been extirpated. It will, therefore, be necessary to maintain, for some time, a small inspecting staff to deal with such fresh outbreaks. Much credit is due to Mr. Green for the efficient arrangements he has made for dealing with the disease and the energy he has shown in inspecting and supervising the work. The total cost of the operations during the year was Rs. 14,109-6-9.

10. *Travancore cocoanut palm disease.*—The recommendations made by the Imperial Mycologist as a result of his enquiry in 1907 were communicated to the Collectors of the West Coast districts and to the Resident in Cochin and Travancore. A short pamphlet describing the symptoms and the steps to be taken to prevent the spread of the disease was also prepared by Dr. Butler and widely circulated on the West Coast. The Travancore Darbar has prohibited the export of cocoanut seedlings and roots to Cochin and Malabar, to prevent the fungus being introduced into new tracts. As the disease is a very slow-spreading one, it is hoped, by this means, that it will be possible to prevent its introduction into British India or at least to check it on its first appearance.

C.—SEED AND OTHER PRODUCTS SUPPLIED TO AND RECEIVED FROM OTHER PROVINCES AND ABROAD.

11. Some of the varieties of cow-peas received from America in 1907, which did not do well in the first season, have shown good results this year at Koilpatti.

New importations include Pearl Millet (*Pennisetum spicatum*) (cumbu) from the Transvaal, and Brazilian flour—corn, maize, and ragi. The cumbu and maize have done well so far, but the ragi was disappointing. A small quantity of ninety-day maize was received from the Hawkesbury College, New South Wales, and this will be tried during the present season. The fine ears of the imported cumbu attracted the attention of the ryots round the Palur farm, and small quantities have been distributed.

A selection of Madras millets was sent to the Director of Agriculture of the Transvaal in return.

An application was received from the Rhodesian Department of Agriculture for the seeds of *Pinus excelsa*, *Cedrela Toona*, *Cedrus deodura* and *Dalbergia Sissoo*, and the Forest Department was asked to supply these. Varieties of canes grown at Samalkota were sent to Peshawar and the Louisiana State University.

Varieties of Madras paddies were supplied to Spain, Uganda and the Bombay Agricultural Department, and some pepper cuttings to Java.

Other importations were a small quantity of "American Long Red" and "Golden Drop" chilly seed from Natal for trial in Parlákimedi, and Soy beans from Japan. Dhulia onion seed from Bombay were tried on the Koilpatti Farm and gave an excellent crop of 11,125 lbs. per acre against 5,819 lbs. yielded by the local variety. If they fetch as good a price as the local onions, the new variety will be a valuable introduction, as there is a large export trade in onions from the Tinnevely district.

III.—SCIENTIFIC AND LOCAL ENQUIRY UNDER PROVINCIAL DIRECTION.

A.—BUILDINGS AND LAYING OUT OF FARMS.

12. The Coimbatore College is finished and will be formally opened by His Excellency the Governor in July. Some of the hostels for students are still unfinished but arrangements have been made to accommodate the second year's students. The Chemical Laboratories are complete and were occupied by the Agricultural Chemist in March. Sanction for the Pot culture house has not yet been received.

All the College staff are now living in the quarters provided for them on the farm. It has been found necessary to widen the Lawley Road in consequence of increased traffic. The avenue trees planted on either side are growing well, and the road will soon present a fine appearance.

The Botanical garden on the Central Farm is being laid out and a new well dug to provide it with water.

13. In G.O., No. 1234, Revenue, of 4th May 1908, Government approved the abandonment of the Attur farm as it appeared that the work there was not likely to lead to any results of practical or scientific value.

14. Plans and estimates have been sanctioned for the construction of a seed store at Koilpatti.

B.—CROPS.

15. The administrative reports printed as an appendix to this report, and the separate Scientific Reports of each Agricultural Station give details of the work done at each station. The following is a short summary of the chief results.

16. *Sugar-cane introduction.*—Both in the Gódávári and South Arcot districts the new Mauritius canes introduced by the Government Botanist are rapidly ousting the inferior local canes grown before. In the former district it has been decided to give up growing the Mauritius canes for distribution in the district, as ryots can now always get them from their neighbours. In South Arcot Messrs. Parry & Co. planted a few acres of Mauritius cane on wet and dry land. The dry land canes watered by an oil-engine gave excellent results, and a larger area is being planted this year. This experiment will be watched with great interest. The numerous attempts which have been made from time to time in this Presidency to manufacture refined sugar direct from the cane have always been unsuccessful as it is impossible to secure a reliable supply of cane from the ryots. Under Mr. Neilson's capable management and with the improved canes now available, there is every prospect of success. The area under Mauritius canes in South Arcot has increased since last year from 60 to 247 acres, while there are only 130 acres under the old local cane.

The same canes are also doing well in Ganjam, Tinnevely and Malabar. In Malabar, where the crop is quite new, the people do not know how to obtain sugar from the cane. Jaggery-making was therefore demonstrated on the Taliparamba farm.

For the first time a small distribution has been made of the Barbados 208 cane introduced by the Government Botanist on the Samalkota Agricultural Station. This is a short sturdy plant yielding juice of exceptional richness. The ryots in the neighbourhood of the Samalkota farm are extremely anxious to have this variety, both because of the fine quality of its jaggery, and because it will require fewer bamboos to support it. The tall canes grown at present require supporting with strong bamboos, and this adds greatly to the cost of cultivation.

17. In spite of a succession of bad seasons the area under cane is increasing both in Górávari and South Arcot, and this must be ascribed mainly to the greater profit derived from the Mauritius canes. It is specially gratifying to read in Mr. Wood's report that there is no fungus disease in the vicinity of the Samalkota farm.

18. *Sugar-cane experiments.*—The attempt to shorten the period of rotation and to grow cane at more frequent intervals has failed and will be given up, as also the "dry" rotation. In the upland nursery the canes have remained free from disease. A larger area has been taken up there this year with the idea of using only canes from this nursery for planting on the farm. No results can be deduced from the manual experiments this year, on account of the damage caused by the severe storm at the end of September when many canes were damaged and had to be removed. Irrigation experiments will be undertaken in the current year. The most interesting work on the Samalkota farm this year has been the testing of new varieties. This has shown that several new importations, especially B. 1529, are very high class canes. The experiments in planting methods have proved that planting in rows with only 10,000 sets per acre is better than scattering them broadcast and using 25,000 sets or more per acre. It is gratifying to note that there are signs that the ryots are realizing this.

19. *Ground-nut.*—The ground-nut has taken a firm hold of the Palghat part of Malabar and it will spread rapidly from there. The attempt to introduce it into South Canara promises to be successful, if the people can be induced to sow it with the pre-monsoon showers. A grant of Rs. 500 was made by Government to assist its introduction, and help and advice was given by the Manager of the Taliparamba farm. The Director and Deputy Director visited some of the experimental plots in October. In most cases the crops had grown extremely well. The credit of the idea of introducing ground-nut into the district is due to Mr. Aziz-ud-din, the Collector. Ground-nut was introduced on the Taliparamba farm this year and attracted much attention. Further experiments are being made with a view of introducing it as a rotation crop on modan lands.

It has been proved that when ground-nut is grown after a bare fallow the yield is not so good as when a cereal crop has preceded it. Different crops are therefore being tested to see which has the best effect on the succeeding ground-nut crop.

Experiments show that the South Arcot methods of growing the ground-nut are hard to improve upon, and in districts where the crop is new some of these methods might be introduced with advantage. It is an interesting fact that when ground-nut is grown mixed with a cereal the percentage of kernel to shell and of oil in the kernel is higher than when it is grown by itself. None of the recently imported varieties have proved as good as the Mauritius nut now universally grown.

20. *Pepper.*—As stated in paragraph 20 of last year's report, no results can be expected for some years from the pepper experiments. The yield of pepper from the Taliparamba farm is steadily increasing, and this shows that ordinary care and attention to planting and cultivation is by itself capable of effecting a great improvement in the yield.

21. *Cotton—Seed distribution.*—In the Ceded Districts, where there is a much greater mixture of varieties than in Tinnevely, seed distribution on a large scale has not yet been possible. The subject is receiving most careful attention. Samples of the two varieties of white seeded cotton, viz., Gadag and white "Northerns," were sent to the Buckingham Mills and through the kindness of Messrs. Binny & Co., an expert opinion was obtained. Both varieties were well reported on and will produce yarn of 20s, with a strength of 80 lbs. The present mixture known to the trade as "Northerns" includes Yerrapatti (brown lint), and Nallapatti (black-seeded white lint).

Both of these are less prolific and their lint is inferior. It is, therefore, clear that the industry could be much benefited by the distribution of pure white-seeded "Northerns" and a start has been made by taking up 45 acres of land for growing seed of this variety. As the resources of the department develop, it is intended to expand this line of work with a view to raising the general type of cotton produced in this tract and maintaining it on a higher level. Experience in Tinnevely shows that the difficulties attending this can be overcome. In Bellary the Deputy Director is not yet satisfied that the farm seed represents a really superior strain, and seed distribution here on a large scale must, therefore, await the result of the efforts referred to below for producing such a strain by selection and breeding. Small quantities of the farm seed are sold every year without difficulty, but this is valued only because the ryots know that the seed is fresh and good, and not because it is of a better type.

In Tinnevely the problem is much simpler both because the ryots are more intelligent cultivators and because there are only two types of indigenous cotton, Uppam and Karunganni. The report of the British Cotton Growing Association, confirmed by spinning tests kindly undertaken by Messrs. Harvey & Co. of Tuticorin and Messrs. Binny & Co. of the Buckingham Mills, has established the fact that Karunganni is superior to Uppam. In its natural habitat, the southern portion of the Tinnevely District, it appears to be at least as prolific as Uppam. Seed distribution has therefore been taken up on a large scale. Seed for about 8,000 acres was sold last year. Much more could have been sold if available, and to provide for next season's requirements seed was grown for the department on 263 acres of ryots' land in the year under report. Pure Karunganni seed of the improved farm strain was supplied to the growers, only well-farmed land was taken, and thorough preliminary tillage and manuring was insisted on. Help was given by the department in drilling and after-cultivation. The crops sown with Government seed last year were decidedly better than the surrounding crops. Most of the owners of those crops are therefore preserving their own seed. One acre of good cotton will produce seed for 25 acres. The effect of the large annual distribution of seed by the department will, therefore, be cumulative, and should raise the proportion of Karunganni in the Tinnevely cotton as it comes into the market and hence give it an enhanced value. The success of the seed-farms is mainly due to the untiring efforts of M.R.Ry. J. Chelvaranga Raju, who has displayed great tact in dealing with the ryots.

In the Ceded districts where the use of the seed-drill is universal, the only improvement in cultivation which seems feasible at present is the introduction of the heavy iron plough already extensively used in parts of Bellary. It has been brought to the notice of the cultivators in the Nandyal valley, and seven orders have been received for ploughs. Considering the extreme backwardness and conservatism of the Kurnool ryots, this result is satisfactory. As it becomes more widely known its use is certain to spread.

22. *Cultivation.*—In Tinnevely as forecasted in paragraph 24 of last year's report, about 1,000 acres of privately owned land were sown with the drill, an entirely new introduction into this part of the Presidency. Mr. Sampson and I inspected the largest drill-sown areas in January. In a dry year like last the drill sown crops showed a great superiority over the broad-casted crops, owing to the seed being sown at a uniform depth, and the soil moisture being conserved by frequent after-cultivation. Sowing can, moreover, be done more quickly (an important point where the sowing season is usually short), and can be carried on for a longer time after the rains stop. An article contributed to the April number of the *Agricultural Journal of India* by Mr. Sampson describes the work done. There can be no doubt that the ryots are fully satisfied as to the advantage of drilling their cotton and that the small number of trained instructors available is the only obstacle to the rapid spread of the system. Arrangements are being made to hold classes in the villages in the hot weather, since many of the best cultivators have expressed their wish to learn the use of the drill, though they intimate that it would reflect on their professional skill if they were seen going to the Government farm to take lessons in their hereditary art of agriculture. Great credit is due to Mr. Sampson for his successful management of this useful piece of work, and also to M.R.Ry. J. Chelvaranga Raju, and the manager of the Koilpatti Agricultural Station M.R.Ry. A. V. Tirumuruganatham Pillai.

Irrigation of cotton.—The experiments in irrigating cotton at Hagari show that in a dry season irrigation increases the yield of country cotton, but not enough to cover the cost of laying out the land for irrigation and the payment of water-rate. In ordinary seasons it would not be any advantage.

The ryots whose land is commanded by the Kurnool Canal are said to never use the water for cotton.

Attempts to grow superior varieties of cotton with the help of irrigation have all failed.

23. *Cotton improvement.*—The steps which are being taken to obtain an improved strain of cotton are detailed in the scientific reports on the Bellary and Koilpatti stations. Briefly, the idea of importing superior varieties from other Provinces or other parts of the Presidency has been given up in favour of the attempt to improve the local varieties by selection. By "improved" cotton is meant a prolific plant the produce of which yields a higher percentage of lint to seed without any loss of quality. The ordinary Madras cottons give only about 25 per cent. of lint to seed. Both the Deputy Directors are devoting much personal attention to the selection of plants yielding a good percentage. Many good plants have been found, and continuous selection from the progeny of these cannot fail to evolve a plant superior to the existing types. The Government Botanist has begun similar work at Coimbatore on Mendelian lines. While the primary object of the department is to render cotton cultivation more profitable to the ryot, it is felt that attention should also be paid to the demand of the local weaving mills for a stronger and longer-stapled cotton to make India self-supporting. The study of the Bourbon cotton of Coimbatore, the only long-stapled cotton in the Presidency, is being taken up this year to see what can be made of it. At present it comes into the market mixed with an inferior short-stapled cotton, and thus loses its value.

24. *Premium for growing pure cotton.*—In accordance with G.O., No. 2326 Rev., dated 19th November 1907, a premium of two annas per acre was offered to ryots in the Ramallakota-Nandikotkur, Nandyal, Pattikonda, Koilkuntla and Sirvel taluks whose crops have less than 5 per cent. admixture of Yerrapatti and black-seeded cotton. The Collector has recommended the payment of the premium in respect of 159.39 acres. I am of opinion that the offer of the premium is ineffectual and may be withdrawn for the coming year.

25. *Paddy.*—The lines of work referred to in paragraphs 27—30 of last year's report are being pursued. The spacing experiments which are being conducted on all the farms where there is wet land show that time will be needed in all cases before the paddy plant develops or recovers its full power of tillering. The careful analysis of the spacing experiments at Samalkota given in Mr. Wood's Scientific Report shows that the tillering power of the plant increases with the space allotted to it on the ground. The problem, which varies with every variety of soil and species of paddy, is how to fully occupy the land while allowing sufficient space to the plant to attain its full development. At Samalkota the singly-planted plots gave the best yields. At Palur the plots planted in rows showed a large increase over the local method. Mainly owing to the seed being selected from singly-planted fields, there has been a striking increase in the paddy crops at Palur and Taliparamba. It seems, therefore, clear that one of the chief advantages of this system is the rapid improvement which it effects in the quality of the grain. Both at Palur and Taliparamba the neighbouring cultivators were struck with this and were anxious to obtain the seed of singly-planted crops. Comparing the seed rates adopted in the Godavari and Kistna deltas, where the cultivation of paddy is on a high level, with the rates common in the southern districts, it is clear that an immense waste of seed takes place in the latter districts. It is, therefore, satisfactory that both in Tanjore and Tinnevely the single planting of paddy is making good progress, among the cultivators. A lecturing tour was carried out this year by Mr. A. Rama Rao, Superintendent of the Sivagiri Farm, with a view to impressing on the Tinnevely ryots the importance of this and other improvements in paddy cultivation. It is reported to have excited much interest among the cultivators.

26. *Manuring of paddy—Green-manuring.*—In many places the best cultivators grow leguminous crops on the paddy fields in the dry weather. Generally they allow the grain to ripen and harvest the crop, but in some places they plough in the whole

crop. On all the farms experiments are being conducted with different leguminous plants to see if this excellent system is capable of extension or improvement. Two striking failures must be recorded this year. At Hagari on black cotton soil excellent green crops of cowpea, sunn-hemp and horse-gram were raised and ploughed in, but the resulting crop was a total failure. Horse-gram similarly failed at the central farm, where the land is a heavy clay. The success obtained at Sivagiri with *Tephrosia purpurea* (Kolinji) as a green manure was described by Mr. Lonsdale in an article in the April number of the *Agricultural Journal of India*. Usually this plant is collected on waste lands and carried to the wet lands. In the Karur valley it is said that the cost reaches as much as Rs. 10 per cart-load owing to the distance from which it is brought. The need for a cheaper source of the green manure which is everywhere used for paddy is therefore urgent, and these experiments will be continued on all the farms.

27. *Artificial manures.*—The Agricultural Chemist has investigated the Kistna system of applying old village-site earth, or pati mannu, to the paddyfields. Last season experiments made with various artificial substitutes for this fertilizer, the supply of which is running short, gave encouraging results. These experiments are being continued this year. They seem to indicate that under the Kistna system of cultivation potash is the chief requirement of the paddy crop.

28. The monthly sowings of paddy at Hagari have conclusively shown that the ryots are correct in their belief that paddy crops sown from September-December inclusive will not succeed. Mr. Wood explains that an actual waste of water would occur if the fields were sown earlier, as crops sown in those months have a prolonged period of growth.

It is the general belief of the Godavari cultivators that the second paddy crop cannot be sown before the middle or end of January. As the first crop is cut in the middle of November, a great amount of water is wasted in the two months which intervene. This question may have an important bearing on the Kistna Reservoir Project, and experiments are being undertaken at Samalkota to find if any variety of second-crop paddy can be sown successfully in November or December.

The paddy experiments at Hagari in irrigating black-cotton soil have conclusively shown that under the local conditions wet cultivation cannot succeed. The "no-manure" plot has never yielded any grain at all. Paddy on such lands needs heavy manuring, while sorghum will yield good crops year after year without manure. A detailed discussion of the experiments will be found in Mr. Wood's Scientific Report on the Hagari farm.

29. *Irrigation experiments.*—Satisfactory arrangements have been made at Samalkota to conduct experiments in the current season as to the amount of water required to raise a full crop of paddy. No accurate experiments appear to have ever been made before on this important point.

30. *Fibres.*—The Samalkota experiments with Bengal jute this year showed that the hopes which were at one time entertained that jute could be successfully introduced into the Godavari delta must be given up. Cultivation is difficult and costly, and the fibre itself is pronounced by the local mills inferior to the Bimlipatam jute already grown so extensively in the Circars.

It has also failed in Tanjore and Malabar. With the present high price of paddy there is no prospect of Bengal jute taking its place.

Another reason is that cultivators accustomed to growing paddy only have generally not sufficient skill to grow a crop like jute, for which the land needs careful preparation to secure the requisite tilth.

The Hindupur agave plantation was extended during the year. Trial cuttings show an annual yield of 430 lbs. of dry fibre per acre. Next year it is hoped to summarize the results and obtain some conclusions as to the possibility of establishing it as an industry.

31. *Ridge and furrow irrigation.*—At Koilpatti the monsoon ragi crop gave an increased yield of 140 lbs. of grain per acre, cost Rs. 7-1-4 less per acre to grow, and used 11,580 cubic feet less water. In the hot season, when the saving of water

is a more important consideration, the local system of flat beds gave the best result. Further trials will be made to investigate the reason for this.

32. *Irrigation of dry crops under the Ponnalur tank.*—The tank has been inspected three times by the Deputy Director, Northern Division, and twice by myself in the year under report. On my first visit I marked out a portion of the ayacut in the Ponnalur village amounting to 108 acres which was evidently unsuited for the cultivation of irrigated dry crops. Permission was accordingly granted in B.P., No. 4466, Mis., dated 15th October 1908, to grow wet crops on this area.

At the same time I took a number of samples of the soil and sub-soil in this village. The Agricultural Chemist reported that the analysis confirmed the contention of the ryots that the land was liable to suffer from the accumulation of salts on the surface if irrigated dry crops were cultivated. A full report will be submitted shortly when the Collector replies to a reference I have made to him in the matter.

33. *Experiments with the reclamation of saline land in the Periyar tract.*—The Deputy Director, Southern Division, and the Agricultural Chemist visited the Therkuthuru experimental plots in May 1908 in company with the Assistant Engineer. Their report showed that such local experiments could not lead to any useful result, and that the first requisite was to ascertain the nature and extent of the saline areas, and their position with reference to the possible lines of drainage. The Executive Engineer was asked if he could undertake this survey and his reply is still awaited.

34. *Bulletins.*—Occasional short notes on agricultural subjects are communicated to the Vernacular Press, but it is found that the actual cultivators are seldom reached by this means.

The Agricultural Calendar was brought out this year in a new and enlarged form, and issued in English, Tamil and Telugu. One copy was distributed to the headmaster of every school in the Presidency and many others to officials and members of Agricultural Associations. The notes were intended to convey simple information on well-tested improvements recommended by the department, and on the work of the department, and the nature of the help which it is in a position to give to private individuals. Excellent designs for the covers were prepared by Mr. R. C. Wood. In all about 42,000 copies have been distributed, a fair number being sold at Agricultural fairs, railway stations, festivals, and in the vicinity of the different Government farms. Mr. Sampson reports that since the issue of the calendar he has been receiving many more requests from private individuals for information on the agricultural topics dealt with in the calendar. It is, therefore, hoped that it has to some extent fulfilled its purpose and attracted some attention to the existence and work of the department. It will be issued again in the current year.

C.—AGRICULTURAL ASSOCIATIONS, SHOWS, ETC.

35. Agricultural exhibitions and cattle shows were held at Arni by the Jaghirdar, at Koilpatti by the Zamindar of Etiapuram, at Ongole, Tirupur, Kizhur, Pudukkottai, Berhampur, Madura, Pithapuram, Parvatipuram, and Ellore by the Agricultural Associations concerned, and at Trichur by the Cochin State. On the West Coast the Malabar and South Canara Associations are encouraging the planting of ground-nut with fair prospects of success. The Kumbakonam Association still displays the most activity. It has a farm of 8 acres and publishes a monthly journal on agricultural matters. It has drawn a good deal of attention to the single-seedling system of transplanting paddy which is reported to be gaining in favour there. Its experiments with sugarcane, ground-nuts and green-manuring for paddy should have a good effect. The Madura and Coimbatore Associations have hit on a really useful line of work in purchasing sets of boring implements and employing trained maistries to conduct boring operations. The operations in Madura have been successful. In many cases the supply of water to existing wells could be improved by this means. In Tinnevely several members of the Association have adopted the single-planting system of growing paddy with good results. I saw some good crops of Mauritius sugarcane near Tinnevely introduced by the Association. It is fortunate in having some

wealthy and intelligent members with a practical knowledge of agriculture. The Mauritius sugarcane introduced into Ganjam last year by the Association are doing well and will be a great acquisition to the district.

Most of the other Associations are in a dormant condition. They are recommended to seek the advice of the department more freely in regard to the lines of work suitable for them.

IV.—BOTANY.

36. The report of the Government Botanist is printed as an appendix. Since his return from leave much of his time has been occupied in preparing lectures and teaching. The Botanic Garden at Coimbatore has been laid out, a new well dug for it and experiments with cotton on Mendelian lines have been commenced.

V.—CHEMISTRY.

37. The Agricultural Chemist occupied his new laboratories in March last. During the year under report much time was devoted to the preparation of lectures and teaching. It will require several years' experience before a course of instruction suitable to the requirements and capabilities of the students can be devised. Mr. Harrison is sparing no pains to arrange a satisfactory course.

Under the head of analysis the work on the pati mannu of the Kistna district referred to above has opened up a useful line of work. The supply is falling short and the Agricultural Chemist is trying to devise a substitute. Thirty-one analyses were made of saline soils from the Periyar tract and the ayakat of the Ponnalur tank. The analytical work of the department already occupies the whole time of two assistants and all the most difficult work is done by the Agricultural Chemist himself.

38. Till the new laboratory was available little could be done under the head of Research. No suitable applicant has yet been found for the post of assistant in this branch, and Mr. Harrison has therefore to work single-handed. It is hoped that, in spite of the pressure of the other branches of work, time will be found for pursuing the lines of work detailed in the Agricultural Chemist's report. All of them are of far-reaching importance for this Presidency.

VI.—AGRICULTURAL EDUCATION.

39. In framing the rules for the admission of students to the Agricultural College a radical change was made from the policy followed at Saidapet. No scholarships were given, and no specific promise of employment in Government service was held out. It was, therefore, gratifying that 87 applications for admission were received. Only 20 students were admitted, and the guiding principle followed in making the selection was that students likely to be connected with the land as owners or, preferably, as actual cultivators were preferred, provided that their knowledge of English was sufficient to enable them to follow the lectures. The students worked fairly well, till the outbreak of plague in the town, accompanied by the usual alarmist reports, caused several of the students to be withdrawn by their parents. At first some difficulty was experienced in getting them to treat the practical work seriously. In view of the importance of the matter a general conference of all the officers of the department was held, and arrangements were made which should ensure better results. The subject will continue to receive the most careful attention. It is felt that much of the money spent on agricultural education in the past was wasted, as the students turned out did not possess enough practical knowledge of ordinary agricultural operations to command the confidence of the cultivators in any recommendations they might make. Marks are allotted to each day's field work, and the Deputy Directors have been asked to visit the College at least once a term and report on the results of the practical training of the students in the light of their experience of work on the different Agricultural Stations and among the cultivators in the districts.

In the teaching of Botany, Chemistry and Physics, special endeavours are made to give prominence to the relations which Science has to every-day agriculture and not to attempt too much. Further experience will be needed before the exact amount of pure Science, which can be profitably given to, and assimilated, by the students, is determined.

The students are being associated with all the experimental work conducted by the Agricultural Chemist and Government Botanist on the farms and the Botanical Garden, so that they may appreciate the bearings of Research on Practical Agriculture.

40. *Publications.*—The number of publications received from and sent to other countries and other Provincial departments was as follows:—

	Indian.	Foreign.
Journals	22	64
Bulletins	37	258
Reports	249	72

Two bulletins were issued during the year, viz., No. 58 on the cultivation of ground-nuts by Mr. Sampson, and No. 59 on Sunn-hemp by the late Rao Bahadur C. K. Subba Rao.

Tamil and Telugu translations of Bulletin No. 57 (on fig cultivation) were published, and a Telugu translation of No. 58 (on the cultivation of ground-nuts).

The Agricultural Calendar has been referred to above.

Several articles on agricultural subjects were contributed by the officers of the department to the Agricultural Journal of India during the year.

CAMP, TALIPARAMBA,
5th July 1909.

M. E. COUCHMAN,
Director of Agriculture.

APPENDIX I.

ADMINISTRATIVE REPORTS OF THE AGRICULTURAL STATIONS DURING THE YEAR 1908-1909.

ADMINISTRATIVE REPORT OF THE AGRICULTURAL STATIONS, NORTHERN DIVISION.

The headquarters of the Northern Division continued to be at Bellary during the year. Apart from the farms, district work during the year was mostly confined to the Northern Circars, where, with the present limited staff it is easier to take up problems which it is considered will lead to definite results. It is difficult to make progress in the Ceded districts with the extensive system of agriculture there adopted, with an uncertain rainfall, and with a people, who, though skilful in their own way, are indolent and conservative.

The Deputy Director was on duty the whole year, with the exception of six days' casual leave. Two hundred and forty-seven days were spent in camp involving journeys of over 8,000 miles by rail and 742 by road. All the Agricultural Stations in the Northern division were visited during the year—Hagari five times, Nandyal five times, Bezwada six times, Samalkota nine times, and Hindupur twice.

2. *Staff.*—The post of Sub-Assistant Director of Agriculture has been vacant throughout the year. The clerical staff have worked short-handed for most of the time. The executive staff has been increased during the year by the posting of a Farm Manager to take charge of the newly opened Agricultural Station at Bezwada, a Farm Manager for itinerant duty, an Assistant Farm Manager to the Samalkota station to look after the irrigation experiments to be conducted there, and an Assistant Farm Manager to be attached to the Deputy Director's office: the last has been employed up to the present in district work. The Manager at Samalkota has been changed; the Managers at Nandyal and Hagari have remained in charge of their respective stations throughout the year. The Assistant Farm Manager in charge of Bellary was away for three months on privilege leave. One Assistant Farm Manager has left the department for service under the Court of Wards, and another has just recently been appointed to the Forest Department. No public building is yet available for the location of the head office; the clerks work in the Assistant Manager's quarters at the Bellary station, and the records are kept in the seed store.

3. The year marks an extension of district work. The Deputy Director toured in the Gódvári district in June; in Ganjam in July and August; in Guntur and Kistna in September and October; in Kurnool in January and February; and in the Kistna delta in March. The Gódvári tour was to see the extent to which the practice of green manuring is carried out and to consider the possibilities of its extension. As a result further investigation on this important subject will be taken up at the Samalkota station. The result of the Ganjam tour was the recommendation to the Agricultural Association to increase the area cultivated with ground-nut, and to grow it more carefully; to grow green manuring crops before their monsoon paddy crops, and to practise thinner and more economical transplanting of paddy seedlings. The introduction of Mauritius canes into this district has been markedly successful, and they may be expected to spread rapidly in the near future: there was a fair competition for the sugarcane prizes at the Association's exhibition in January, and two or three of the gardens visited by the Deputy Director were excellent. A Farm Manager was deputed to assist the growers in adopting the Samalkota methods of cultivation. The Kurnool tour was to investigate the cottons of that tract: incidentally the introduction of sunnhemp on the wet lands under the canal in the vicinity of Kurnool, has been taken up, and seed supplied to several ryots with instructions as to its use: three visits have been paid by an Assistant Farm Manager to assist them and to report on the progress of the experiment. During the present hot weather, the demonstration of the big cotton soil plough is being carried out by the same Assistant Farm Manager in the Nandyal valley. It is exciting a certain amount of interest, and orders for six ploughs have already been received; an arrangement has been made with Messrs. Massey & Co. whereby some ploughs and spares are to be kept at the Nandyal station for sale.

4. In co-operation with the Agricultural Chemist an important line of work was during the year taken up in the Kistna district, with a view to the discovery and distribution of a cheap artificial substitute for the village earth (*pati mannu*) which is practically the only manure applied to wet lands in the delta, and the supply of which is rapidly becoming exhausted. Three Farm Managers were altogether employed in the distribution of the manures proposed, and in subsequently inspecting and reporting on the crops. This line of work is to be extended during the coming year.

5. The cultivation under the Ponnalur tank was inspected by the Deputy Director three times during the year, and a report submitted. A visit was also paid in company with the Director of Agriculture to Mr. Barry's lankas in the Gódvári district. The Deputy Director attended the Berhampore, Ellore and Ongole shows.

6. An improvement may be noted in the relations of the farm staffs with the surrounding districts; the number of visitors to the farms has increased: more touring, especially on foot in the neighbourhood of the farm has been done, and more interest is being shown by the ryots in the work going on. The number of applications for seeds, implements or advice has increased; 68 separate applications for seed and 4 for implements were complied with in nearly every case.

The Bellary Agricultural Station.

7. The season was up to a certain extent favourable, though it closed with a very trying period of drought which seriously affected the yield of jonna. Cotton, when sown with korra, was, where the latter grew well, a complete failure. The korra crop was the noticeable feature of the farm with an average yield of about 600 lbs. per acre; this must be regarded as a bumper crop, and is undoubtedly due to the more intensive cultivation which the farm lands receive, coupled with the compulsory fallow most of them had last year; the money value of this yield is over sixteen rupees per acre. An excellent crop of early sorghum (*mungari jonna*) was obtained off the new field [No. 8] which was cultivated for the first time. Late crop sorghum (*hingari jonna*) was only moderate. The experimental plots were all maintained, and have been fully discussed in the Scientific Report. Attention may here be called to the progress of the plantwar selection of cotton, which was first started at this farm, and which is now in its third year: the results are encouraging, and several healthy and prolific plants with over 33 per cent. lint have been raised. Further selection has been made this year.

8. The small stock of farm cotton seed found a ready sale at a price about 20 per cent. above the market rate. Of the total of 5,334 lb., 792 lb. was reserved for sowing this and the Hagari farm, while the rest was sold in lots of one rupee's worth at a shop in the bazaar rented for the purpose. Full enquiry has been made into the behaviour of the seed in the villages, where it was grown, and the opinion in which it was held by the ryots, but it seems clear that though it is appreciated for its vitality and cleanness, yet apart from the fact that the plants are of one type, the strain does not seem intrinsically superior to the ordinary country cotton. None will therefore be repurchased from the growers, though the stock of seed raised this year will be sold in the ordinary way. While touring in connexion with this question, the Assistant Farm Manager has taken the opportunity to bring the work of the Farm to the notice of a much larger number of ryots than formerly, by getting them seed, selling calendars, lending farm implements, and otherwise helping and advising them. A number of indents for Ceded district implements and tools were complied with. Just now several ploughs are being obtained for the Nandyal valley where an Assistant Farm Manager is demonstrating their use. A man was sent from Bellary to superintend the erection of a mhoite and ramp according to the local pattern at Coimbatore. The slope of the ramp of the well on the farm was also, on the suggestion of the Director of Agriculture made steeper, to make it correspond to slopes observed on ramps in the neighbourhood.

9. During the year the number of permanent coolies was reduced from five to three. Three bullocks were also sold. The Assistant Farm Manager, who is assisted by one clerk on the farm, prepared two notes, on onion cultivation, and the methods of extracting oil from safflower.

The Hagari Agricultural Station.

10. Investigations continued during the year to ascertain the feasibility of wet cultivation on the black cotton soils of Bellary have given fairly clear results. The experiments show that by growing a surface rooting plant such as paddy under swamp ('wet') conditions, the inherent fertility of the soil, which can produce very fair 'dry' crops year after year without manure being supplied, is neglected, and that practically all the food needed by the paddy crop must be supplied in the form of manure. This is unsound practice, as it should be the aim of every farmer to make the most of the natural fertility of the soil he cultivates.

11. A fairly definite reply based on the results of the seasonal paddy plots (i.e., plots planted every month throughout the year), may be given to the contention that the ryot of the Ceded districts wastes the water which often fills the tanks in September or October, by delaying his wet cultivation till January. The experiments show that by sowing before January, the period of growth of the plant is prolonged, at risk of injury by insect or fungus attack, the yield is diminished, and that the water instead of being stored in the tank exposed only to evaporation, is wasted owing to the longer period it is needed in the field, where it suffers loss from evaporation, absorption, and percolation. Local practice is in this instance fully justified.

12. The experiments dealing with the irrigation of cotton are not yet fully complete. They bear out the results noted last year that in a dry season, such as the present, a single irrigation will increase the outturn of kappas by 100 lb. worth Rs. 8. A second irrigation has this season resulted in a further increase of 80 lbs. of Kappas. This increase would be very much less evident in a good season. Attempts to grow a superior variety of cotton which under irrigation, would prove more profitable than the country cotton have not been successful. Egyptian cotton and Dharwar American were sown in the basins but both were poor. An attempt to lengthen the growing period of the country cotton by sowing it early, with the help of irrigation, failed completely. The effect of thinning the cotton crop was again tried: this

year in connection with the irrigation of this crop. Generally speaking, in a year of drought, the closer the cotton plants are left, the better is the crop, but if water is given, the thinned plants are enabled to take advantage of the extra room, and give then as good a return as the unthinned plants.

13. As at Bellary, the korra crop was excellent, and similarly the cotton crop was correspondingly poor. The main jonna crop was only moderate. Plantwar selection of cotton was commenced last year and the first crop of selected plants was grown during the present season. The engines worked satisfactorily during the year. The new engine installed at the secondary pumping station has been used for running a chaff-cutter, winnower and a cotton ginning machine as well as for lifting water for the needs of the paddy crop in Field No. 2. The chaff-cutter was particularly useful in making the most of the scanty supply of fodder: the amount of wastage if the straw is chaffed, being much reduced. The general aspect of the farm has improved. The many trees planted during the past two years are doing well except on the dunes, where the sandy soil and the short rainfall received for the period militate against their progress. The farm was visited in increased numbers and friendly relations were cultivated with the neighbouring farmers.

14. The Farm Manager, M. Mangesha Rao, who has been in charge during the year, toured through the villages on the river bank above and below the station, to ascertain the present extent to which garden cultivation is practised, and the possibility of its increase. Largely as a result of his report, a demonstration garden is to be laid out on the mixed soils in Field No. 12. He was awarded the special prize offered by the Director of Agriculture to officers of the Department for the best essay on "The needs of the cultivators in the vicinity of the farm."

The Nandyal Agricultural Station.

15. Investigations on the cotton crop of the Nandyal valley have been pursued during the year both by observation in the district and experimental work on the farm. The theory has been formed that this district has been the scene of a succession of introductions of cotton which, at first superior, have gradually degenerated in the existing environment to the level of the country "Northern" cotton. By selection on the farm, the standard is being rapidly raised, with the result that the differences between the Gadag—a comparatively recent introduction from the Southern Mahratta country, and the indigenous Northern, are being obliterated, owing to the more rapid improvement under this treatment of the more degenerate indigenous cotton. The result of spinning trials last year showed only slight differences between the cottons as grown on the farm while the yields obtained at the farm have shown a decided superiority each year in favour of the local cotton. Observations made during a tour in the principal cotton growing villages of the Nandyal valley, confirmed the opinion formed as to the mixture of types which forms the trade "Northern". The method of distributing seed under agreements has not proved a success: first sowings in many cases proved failures and the remainder of the seed was mixed with local cotton for the second sowing. It has been decided to rent land outright for seed growing purposes during the coming year.

16. The process of selection referred to above is proceeding with encouraging results, and in the course of a few years a strain of cotton superior from both the buyers' and growers' point of view ought to be available.

17. The experiments conducted this year on this crop comprised a comparative test of four varieties, a cultivation experiment to gauge the value of the local practice of growing horseshoe along with cotton, and another to see how far extra care in cultivation in the shape of topping and thinning would prove profitable. A spacing test was also laid out. The experiments were for the most part unsuccessful owing to the bad germination of the cotton, and the plots were in many cases full of blanks; undue importance must not therefore be attached to the results. In the variety plots, Northern were superior to Gadag in point of yield: ginning determinations have not yet been made: the biggest actual yield was obtained from Yerrapathi: the biggest yield per plant was given by a cotton known as IV, one of the types picked by the Government Botanist from a plot of local cotton at Bellary in 1903. Its real value cannot be estimated until the quality and value of the lint have been ascertained.

18. The early sown sorghum (*mungari jonna*) was devastated by a severe attack of the stem-borer which necessitated the destruction of the entire crop. While the severity of the attack was due to the unhealthy nature of the plants induced by the incessant rains in July and August, the sudden appearance of the pest in overwhelming numbers is a problem not easy to explain. The same four varieties sown in the late (*hingari*) season showed the superiority of the local variety, *cheruku patcha jonna*. It is unfortunate that in ordinary seasons the farm land is unsuitable for growing early sorghums. Two more varieties were introduced during the year, on a small scale; seed has been obtained for comparative trial next year. The rotation plot is being continued: the plots sown in previous years with indigo were this year cropped with jonna: cotton was grown on the two which carried jonna last year. District work has increased: the demonstration of the cotton soil plough conducted by Assistant Farm Manager Raghavachariar, the distribution of small quantities of seeds and manures, the sale of agricultural leaflets, visits paid by the staff to neighbouring villages have all tended to make

the farm better known in the district. Though the people are generally inclined to be apathetic, offers of assistance have been received from one or two landlords and readily accepted.

The farm has been in charge of Farm Manager S. Ragunatha Rao throughout the year, assisted by a clerk.

The Bezwada Agricultural Station.

19. As this farm was taken over from its previous occupiers, the District Board, Kistna, only in May last, there is very little to report in the way of experimental or scientific work. Fortunately the monsoon broke late as, owing to various difficulties experienced in obtaining funds, and taking over the stock, it was not until July that the first sowings could be made.

20. The farm is situated in the Bezwada Municipal area, and occupies a piece of land lying between the Ellore and Ryves' canals; on either side, the large spoil banks covered with rough bushes form the grazing ground for the cattle and goats kept by the townfolk, against the depredations of which the wire fence round the farm is but a poor protection. Yet another difficulty is felt in obtaining labour, owing to the steady demand at high wages for both male and female coolies in the numerous workshops, mills and factories of this busy town.

21. The soil is fertile, a black deep alluvial clay loam which like regada soil, cracks extensively in the hot weather. It has been allowed to become infested with grass (*Cynodon dactylon* and *Uppurus*), and is in an exceedingly foul state; not a matter for surprise, when one learns that much of the farm revenue used to be derived from the sale of grass to horsekeepers in the town. A good deal of sand has been carted, presumably to make roads; it has never been spread and now lies in unsightly heaps about the farm.

22. The season, though it started late was fairly favourable for the early sown crops, but there was not sufficient rain to bring the late sown crops to maturity. The climate of this locality bears an unfavourable reputation, and is characterised by excessive heat. The average rainfall is about 54 inches received from April to December. The season is thus a peculiarly long one, and unlike most localities in South India, there are three recognized periods of cultivation known locally as the *punasa* season (crops sown April to June) the *punta* or *puram* season (sown June to September) and the *para* season (sown October to December). Good early rains are as a rule needed for the first named: the *punasa* crops this year were sown late, but with the help of timely and well distributed rainfall in August and September grew well. Rain at the time of flowering practically destroyed the early gingelly crop, though *sazza* (*Pennisetum typhloideum*) was more fortunate and yielded very well. The rains began to fail later in the season, and September was characterised by a number of days of light rainfall which did no appreciable good. The middle crop *jonna* (*sorghum*) though it grew well enough at first and gave indeed a good yield of fodder, began later on in its growth to feel the lack of moisture and with the failure of the late (*para*) rains it was unable to push the flowering spikes freely out of the sheathing leaves and form well filled earheads. Bengal gram (*Cicer arietinum*), a *para* crop, was a failure.

23. A noticeable feature about the agricultural practice of the district is the cultivation of sorghum as a fodder crop. It is sown thickly in the early season, and yields in this way very heavy crops of thin-stemmed, succulent and nutritious fodder. It is largely to this practice, and to the method of handfeeding with small quantities of green fodder pulled daily from the field, that the excellence of the cattle in this district is due. A yield of more than 5 tons of dry fodder per acre of first class quality, was obtained from No. I-A. The same crop, sorghum, is also largely grown for seed, and in good seasons very heavy yields are obtained. Varying directly with the amount of grass in the fields, the yield of grain on the farm varied from 612 to 357 lbs. per acre. Including the straw the grass has caused a dead loss of about Rs. 16 per acre, and when one considers that most of this could have been avoided by a single deep cultivation with a big cotton soil plough at an outside cost of Rs. 10 per acre, it will be seen that there is room for the introduction of this implement. *Sazza* (*Pennisetum typhloideum*) gave a very good yield of nearly 1,000 lbs. of grain per acre. The straw of this crop is considered worthless, and it was used for thatching the quarters on the farm which were in a bad state of repair. Cotton which is a *para* crop was sown in fields Nos. 11 and 15, Cambodia cotton, and 12 and 16, local cotton. Both have suffered from the drought, and have up to the present yielded only moderately. Picking is not yet complete. The work of seed selection has been carried out on both these crops, as in all those sown on the station.

24. The few experiments designed were nullified by the season and the state of the land. Field No. 8 was sown with *jonna*, various subsidiary grams singly or in combination being sown in strips in order to compare their yields, their profit and their action in keeping down the grass. The land was left with so little moisture after the harvest of *jonna*, that there was no yield obtained from any of them. The other experiment was the wider spacing of *jonna* and maize: *jonna* grew slowly and was stunted though the heads formed were plump and of a good shape: the total yield was very low. Maize was a complete failure.

25. The station has been in charge of Farm manager, Natesa Iyer, who joined on the 20th June 1908. He has shown himself capable of quickly picking up local practices and opinions, and the reasons which underlie them.

The Samalkota Agricultural Station.

26. It is satisfactory to be able to report that at the time of harvest this year, the cane crop on the farm and in the neighbouring fields was practically free from 'Red Rot'. The canes suffered severely from a storm at the end of September, and it is not clear whether the damage was due directly to the injury to the root system done by the swaying of the heavy canes in the wind, or to the rapid spread of the disease in the weakened canes. In any case the absence of the disease later in the year, a fact about which there is no doubt, presents a problem which is not easy of explanation. Considering the freedom from disease enjoyed by the upland canes in the previous year, it was thought advisable to secure a further area of 'upland', and two and a quarter acres were taken on a year's lease and have now been planted up with all the farm varieties, the greater portion being devoted to the new seedling canes. Meanwhile on the farm all canes that showed symptoms of disease were cut out and mulled with the result that most of the experimental plots were spoiled. The plot planted with canes in trenches, which were gradually filled as the cane grew up, kept quite healthy, showed none of the symptoms which appeared after the storm and ripened later than the other canes. The situation at present is this. To the other precautions which cane growers were recommended to adopt in order to check the ravages of the 'Red Rot', namely, good drainage, careful selection and care in cultivation and irrigation, may now be added the adoption of a longer rotation. Experience on the farm has clearly shown that the three-year 'wet' rotation of wet paddy and cane does not allow of sufficient rest to the land between the crops of cane. The failure of the two-year 'dry' rotation has also shown that whatever be the cause, conditions are not sufficiently improved by this method of treating the land to warrant the shortening of the rotation by a single year: in other words canes grown in a two-year 'dry' rotation were worse than those grown in a three-year 'wet' one. Little progress has been made in testing cultural or manurial improvements. The land has been uneven and the plots have invariably suffered from disease and definite proof of the value of the practices introduced has not been obtained.

27. With regard to distribution it was observed last year that the local demand was small. The situation with regard to the five varieties previously distributed remains the same: growers in the delta can obtain them, even if at slightly higher cost, yet more conveniently, from each other. This year the new seedling cane B. 208 has attracted much interest in the neighbourhood. After meeting departmental needs, a few hood and many applications were received for seed. After meeting departmental needs, a few picked growers, who promised to plant the cane in lines, an improvement strongly recommended by farm practice, were given small quantities. Some were also sent north to Anakapalle where the Manager of the Deccan Sugar Company has kindly promised to distribute it to his clients, and some to Kavali, a village in Nellore. It maintained its reputation for richness and purity of juice and with the exception of B. 1753 is the best cane at present on the farm. From its habit and growth,—it is a short bunchy cane producing tillers freely,—its yield should be quite up to the mark. It is hoped that with the precautions now being taken, by the lengthening of the rotation and by the extension of the uplands area, a supply of new and rich varieties may be assured to the cane growers of the district, which will no doubt supplant the Mauritius canes as surely as they have supplanted the older varieties: Mauritius canes, it is stated, now occupy 70 per cent. of the total area under cane in the district. The demand for canes from growers outside the district is increasing as the farm becomes better known: canes were sent to Vizagapatam, Bombay, Baroda, the Punjab and Louisiana, U. S. A.

28. The paddy experiments initiated in the previous year were extended and the theoretical conclusions drawn from them are discussed in the Scientific Report. The possibility of a great economy in seed was indicated but it is recognized that the perfect spacing of seedlings depends on a great number of factors and varies almost from field to field.

The fibre plots were again unsuccessful: Bengal jute proved costly to grow and prepare, and gave only a moderate crop.

29. The scheme for improving the water supply has been carried out and through the courtesy of the Public Works Department the farm has now a privately controlled irrigation supply through a hitherto unused opening in the Raméswaram sluice. The water is conducted along one bank of the present Burreya's channel in a masonry flume from which measured quantities can be let into the fields. Accurate data for calculating the amount of water used on the farm will thus become available.

30. A pair of buffaloes were purchased during the year at the Pithapur market, and have proved extremely useful. The bullocks have worked well throughout the year.

Farm Manager Balakrishnamurthi relieved Farm Manager Muthuswami Aiyar of the charge of the station on the 1st of July and has been in charge since. Assistant Farm Manager N. Sitaramaswami Naidu was on duty throughout.

The Hindupur Station.

31. The year under report has marked an extension of the work at this station. In order to compare various methods of planting sisal agave (*Agave rigida* var. *Sisalana*), with a view to obtain a quick and regular start, a plot of land near the old plantation was laid out and planted in July. A small piece of rocky land near Somandapalle was also planted out with sisal at the

same time, to ascertain the minimum of attention which could be given to a plantation of this sort, and to compare the growth of the plant on this land with that at Hindupur. Cuttings to determine the yield per acre were continued at Hindupur. The plantation has been in charge of Assistant Farm Manager Raghavulu Naidu.

32. The first experiment was designed to test the effect of trimming off the old roots and the lower leaves of the young plant before putting it in the ground. It was thought that a more rapid formation of new roots would be formed from the clean cut base, and that the plant would thereby become more quickly established. In practice it was found that it is difficult to regulate the cutting by inexperienced coolies, and that in many cases the cut was made too deep, and the central butt damaged, with the consequent death of the plant. The second experiment was to compare planting on ridges with planting on the flat. The experiment from the present appearance of the plot indicates that planting on ridges is the more profitable practice, well repaying the extra expense; it also seems advisable, up to a point, to plant out as large plants as possible.

33. The plantation at Somandapalle is about 2 acres in extent and was planted in July last with about 2,000 suckers. The site of the plantation consists of a small hill of trap which appears as a "dyke" in the surrounding gneiss. It is covered with large rocky boulders with pockets of red gravelly soil in the interstices. The cost of planting was Rs. 26, most of which was paid for carting the suckers from Hindupur, a distance of 25 miles. Though the season has been extremely dry and unfavourable, comparatively few plants have failed to strike, such failures as there are being mostly due to damage by cattle and wild pig.

34. With regard to the yields last year's output is calculated at 130 lb. dry fibre per acre from the trial cuttings made in June and November 1908 and February 1909. This is from plants which had been regularly cut for the year previous, and the figure may be taken as accurately representing the annual yield to be expected from a healthy plantation of sisal agave such as the present in this district.

35. The experiment cannot be finally reported on until it is seen how long the plants will live without flowering or "poing," as it is called, as this marks the close of their life. About 80 have already flowered and died. The young "bulbils" as they ripen, are being planted out in nurseries, along with the suckers removed from the plantation, and a very large quantity of young plants is now available for sale or distribution.

36. With the exception of the watchman's pay, the cost of extracting and preparing a small quantity of fibre for exhibition, and the expenditure noted above, no other expense has been incurred during the year under report. It will probably be possible next year to write a complete account of the experiment from the start.

BELLARY,
8th May 1909.

R. CECIL WOOD,
Deputy Director of Agriculture, Northern Division.

ADMINISTRATIVE REPORT OF THE AGRICULTURAL STATIONS, SOUTHERN DIVISION.

The Koilpatti Agricultural Station.

The Koilpatti Agricultural station has been under my charge throughout the year under report and the work has been continued and extended on the same lines as last year.

2. *The season.*—This has again been exceptional but not altogether favourable. No rain was recorded for a period of 100 days from the end of May till September and again from November 6th till December 31st. In September three sowing rains fell with the aid of which the red soil crops were sown; and three sowing rains fell in October and the beginning of November with which the black soil crops were sown. Most of the cotton on the farm was sown only after November 6th and until the close of the official year—a period of five months—only 3.07 inches of rainfall were recorded, 2.29 inches of which fell in the first week of January, which helped the cotton crops considerably. The red soil crops, which were dependent on rain, suffered badly, but where seed was specially required some of them were helped out by irrigation from the wells.

3. *Crops on the black cotton soil.*—Cotton. The permanent manurial experiments under cotton every year were discontinued for the reasons stated in last year's report. The rotation and cultivation experiments were continued and spacing experiments were started with Uppam cotton this year. Similar experiments will next year be started with Karunganni cotton which has a different habit of growth. The work of seed selection is now developing. Last year some 3,000 plants were tentatively selected and this number was reduced to about 300 after the ginning test had shown the percentage of lint to kappas. The seed from each plant was sown separately and the crops are now being harvested. Of the ordinary pure Uppam and Karunganni it is too soon to measure any improvement. Of the Karunganni plants fertilised "inter se" a much greater vigour is shown. There are variations but in the main there are four

distinct types of this, and it seems probable that it will be possible to produce varieties of Karunganni which will suit the different climatic conditions of the district. Of the Uppam plants fertilised "inter se" besides a slight additional vigour in growth there is little visible difference between them and the ordinary self-fertilised plant. Of the hybrids between Karunganni and Uppam very few plants have been kept as these are either barren or nearly so or are too late in ripening to be of any use in this district. Most of the plants which have formed bolls have been unable to open these properly and they have very large seeds with a very little lint adhering to them. Kappas of some of the rows sown with the seed of individual plants have been collected altogether when it was seen that the habit and lint were uniform and these will be sown on large plots next year with a view to ascertaining the yield and to obtain seed to be sown on a field scale the year after. In other rows the kappas of each plant has been collected separately with a view to more rigorous selection now and improvement in the future. Besides the cotton and the usual rotation crops three of the pulses tried last year were this year tried on a field scale mixed with cumbu but they have not succeeded well as the season has been against them. The same was the case with Bombay varieties of cholam which were introduced at the suggestion of the Inspector-General of Agriculture. These grew well until they came to ear when they were attacked by stem-borer and yielded no grain.

4. *Crops on the red soil.*—At first these promised very well but they were unable to stand the continued drought of November and December. The experiments with the planting and irrigation of ragi have been continued and with assistance from the farm this method of cultivation is beginning to be taken up by the ryots. The superiority of the ridge system has again been shown; even in a trying season such as has been experienced 1,737 lbs. of grain grown with 16,117 c. ft. of water at a cost of Rs. 18-4-2 per acre for ridge planting against 1,597 lbs. of grain grown with 27,697 c. ft. of water at a cost of Rs. 35-8-6 for planting in beds in the ordinary way. The use of Neem cake, which is now largely produced and exported from the district, as a manure for irrigated ragi was also demonstrated, giving a net return per acre of Rs. 10-7-8 or an increased yield per acre of 505 lbs. Special attention has this year been paid to onion cultivation. This is a very popular money crop in the neighbourhood on land irrigated by wells and is largely exported from Tuticorin. The system of growing from seed has been introduced from the South Arcot district and the large Bombay onion which may suit the export market was also tried. So far these trials are a success; the local bulbs gave a crop of 5,918 lbs. per acre, South Arcot seedlings, 7,400 lbs. per acre, and Dhulia (Bombay) onions, 11,125 lbs. per acre. Several new varieties of local crops have also been tried notably cow-pea varieties some of which are very promising, cumbu varieties from the Transvaal and varieties of maize.

5. *Work outside the station.*—The work done with the allotment under cotton improvement is intimately connected with that of this agricultural station and a detailed report of the year's operations has already been submitted separately. To cope with this it has meant very severe work for all the staff, both officers and coolies. To the latter it has been specially severe as many of them went down with fever when away at distant villages. It has meant continuous touring for most of the staff which has however given them a deeper insight into the agricultural practices of the cotton tract.

6. *Miscellaneous.*—Visitors, chiefly black cotton soil ryots, now constantly visit this station while many others come for advice and assistance. Twenty-two fresh men and four women were trained in drill cultivation for work under cotton improvement and two men were trained for the Palghat Agricultural Association. Eight hundred and fifty copies of the Agricultural calendar (Tamil) have been sold around the station, chiefly to ryots, which shows a great advance in the confidence of the people. The cattle are all in good condition. One pair were sold being too old for black-soil work and they were replaced by a fresh pair. The revetment of the odais or field drains in the black soil is being steadily pushed on when time permits.

The Palur Agricultural Station.

7. The Palur Agricultural station has been under my charge throughout the year under report.

8. *The season and rainfall.*—The total rainfall has been about the average, viz., 50.95 inches. Half of this however fell within a fortnight at the end of October and beginning of November. The season for irrigated groundnuts (February-June) was not favourable. The weather was very dry and the showers were few and far between. The south-west monsoon season when dry cereals and rainfed groundnuts are sown was on the whole good. Sowing rains fell on June 10th and good rains were recorded on July 11th, August 11th and 20th, September 8th to 11th and October 3rd to 6th. A similar amount of rainfall if it had fallen in light showers would have been disastrous. The north-east monsoon, as already mentioned, opened with a fortnight's rain at the end of October which considerably damaged the dry crops and the newly transplanted paddy. Except for a further 7 inches in the first week of January practically no more rain was recorded. Irrigation difficulties were again experienced. Through want of co-operation among the different villages the channels were never properly cleaned and even that

work which was completed had to be done all over again as the channels again silted up with the heavy rains in October. This again delayed the planting of sugarcane and prevented its proper irrigation afterwards.

9. *Dry land crops.*—The groundnut crops grown under well irrigation in the hot weather were this year a failure and were badly attacked with "verpuchi" and "surul". The rainfed cereal and groundnut crops have however all done well. Only the cereal groundnut-rotation experiments and variety tests were continued this year as the rest of the area was last year found to be too foul with weeds to carry a double crop. The remaining portion therefore of the rainfed area was cropped with single crops, including two new varieties of cumbu (*Pennisetum spicatum*), two of maize (*Sea Mays*) and two of cowpeas (*Vigna catjang*). Some of these show promise already of being useful varieties to this country. A large area was also grown with fodder chulam, which was grown with the double object of supplying fodder to the farm cattle and, by sowing very thickly, of checking and destroying weeds. A yield of about 4½ tons per acre of dry fodder was obtained. Besides these crops, the area reserved for irrigated groundnuts in the hot weather was grown in the monsoon season with various crops, the objects being (1) to see how they affected the yield of the groundnut crop, (2) whether some crop could not be extensively grown on land commanded by wells which would pay the cultivator to grow rather than following an irrigated with a rainfed groundnut crop in the same year.

10. *Wet land crops.*—Sugarcane suffered considerably in the earlier stages of growth owing to scarcity of water as mentioned above. Latterly, however, it improved considerably and has given a very fair crop. The percentage of sucrose in the canes this year is abnormally high, the highest being "Ashy Mauritius" which contained 19.65. As most of the neighbouring sugarcane cultivators now have these Mauritius varieties of sugarcane, distribution of sets has been carried out further afield. In Perambalur taluk of Trichinopoly district and in the southern taluks of North Arcot, canes have been distributed in small quantities, for planting, to selected cultivators and these have been planted under direct instructions and advice of one of the officers of this Agricultural station. Many applications have also been received from cultivators of other districts, viz., Salem, Tanjore, Madura and Tinnevely. Where it was impossible for the applicants to obtain sets of these in their own district they have been supplied with a sufficient number of sets to enable them to establish the crop by the following year. As a result of last year's distribution from this agricultural station, excellent crops of these canes have been raised in the Tinnevely district and several of the cultivators exhibited these canes at the Ettiyapuram Exhibition.

The wet land experiments with paddy have this year attracted much attention. In fact the improvements with this crop are very noticeable. The experiments are the same as those started last year, viz., spacing and manurial experiments. In addition to this, several varieties, local and from other districts, were also grown and compared. As the spacing experiments amply demonstrated the superiority both of seed grown from single seedling crops and of the method of planting with single seedlings, many applications were made by the local ryots for seed of their local variety. Seed of this is being distributed in a small quantity of seven Madras measures to any cultivator who guarantees that he will transplant one acre with this amount, the local seed-rate being 42 Madras measures. It is hoped that this will rapidly extend this improvement and that it will also show the ryots the value of selecting their seed. It is unfortunate that the quality of these wet lands is so variable and that there is always a large error in the duplicate plots of an experiment.

11. *Staff and touring.*—The strength of the staff has remained the same as last year. More time however has been spent by the officers in touring. The manager has toured in the Tanjore delta and frequently in the villages neighbouring the farm. He has also attended the jamabandi camps in Kallakurichi and Tindivanam taluks with the Divisional officer and the Collector respectively and as a result considerable interest has been aroused in the work of this station in the district. The manager has also visited the Koilpatti Agricultural station and has attended the Ettiyapuram and Arni Jaghir shows. One of the assistant managers has toured through the Perambalur taluk for the introduction of Mauritius canes there, the names of suitable cultivators being taken when I toured through the taluk in July and August last. The other assistant manager is too inexperienced yet to send out and has confined his attention to making himself familiar with the local agricultural practice.

12. *Miscellaneous.*—The quarters for all the staff have been completed and are occupied. A further extension was made to the cattle shed to accommodate two more pairs of cattle transferred from the Attur Agricultural station. 14,000 lbs. of groundnut seed, 1,000 Madras measures of Banku paddy, 26,000 sugarcane have been distributed during the year.

The Taliparamba Agricultural Station.

13. *Charge, object, area.*—This station has been under my charge throughout the year under report. The object with which it was started is the study and cultivation of pepper, but there are many other important problems which require investigation and which have found a place in the work of this farm. The area of the station has remained the same as last year.

14. *Staff and touring.*—The sanctioned staff of this station is now one manager, two assistant managers, one farm clerk and a peon. The addition of another assistant manager to this station this year was rendered necessary as the manager has to spend a considerable amount of time on tour. This year he was on tour for 189 days, 59 days in the South Canara district advising and instructing people who were desirous of growing groundnuts—a new and so far successful introduction into the district; and subsequently to inspect and report on these crops. The rest of the time 130 days he was touring in the Malabar district where recently a considerable interest has been taken in agricultural improvement and many are trying new methods of cultivation and new crops. The main lines of these improvements are those recommended by this department, viz., the cultivation of groundnuts, the introduction of Banku paddy as a second crop and economic paddy planting. In Palghat the groundnut crop has become established and requires no further assistance except so far as growing it in a proper rotation. In the other taluks where care has been taken and instructions followed, this crop has given excellent results, while applications now received for seed show that there is every likelihood of this crop becoming established throughout the whole of the warmer taluks of the district. In the neighbourhood of the farm also both the manager and assistant managers have toured. Here the chief improvements in the local agriculture at present lie in improving the cultivation of wet lands. The sugarcane crop which was introduced on to the farm in 1906–1907 has now to some extent spread in the neighbourhood of Taliparamba though nowhere, as yet on a large scale. Many visitors of the ryot class have been brought to visit the agricultural station by exhibiting specimen canes at local festivals. But the crop is still quite new to the people and they do not know as yet how to obtain the sugar from it. Jaggery making is now being demonstrated on the Agricultural station with a view to showing the value of the crop. The results of the jaggery making are most successful, an average of ½ lb. of value of the crop. The system of paddy cultivation as practised on the farm has also attracted much attention and improvements by ryots in the neighbourhood may be expected this coming year if advice and instructions are given.

15. *The season.*—The usual showers which fall in April and May were this year few and far between and dry weather continued until the monsoon burst on the 12th June. This was most unfortunate not only on the farm but in the West Coast districts as a whole as it is most advisable that the groundnut crop, which is now being introduced, should be established before the monsoon sets in and this is what most of the people who tried this crop failed to accomplish as often as not from no fault of their own. From 12th June till the end of August 124.27 inches of rainfall were recorded, more than half of which fell in July, i.e., an average for that month of more than 2 inches a day. In fact, the last three weeks of the month the rain was practically continuous. Owing to the scarcity of rain before the monsoon which retarded the flushing of the pepper and the continuous rain in July which prevented much of the berry from setting it was at one time thought that very little crop would be left. However the weather broke in August and much of the crop was thus saved. This year November and December were practically rainless, only .30 inch of rainfall being recorded and as a consequence the pepper ripened prematurely, the picking being completed by 20th January 1909, while as is usual practically no rain fell from January until the end of the year.

16. *The pepper crop.*—In spite of the peculiar and generally unfavourable season the total yield of pepper has continued to increase year by year since 1907 as the following figures will show:—

	Total yield in Madras Measures.
1906	3,307½
1907	1,095½
1908	2,716½
1909	2,833½

As mentioned in previous reports, 1906 was an exceptional year when even the worst type of vines bore heavily. This refers to the general improvement of the gardens. A few of the earlier plantings of 1906 have this year commenced to bear a few spikes and from now onwards the vines planted since the farm was acquired will commence to come regularly into bearing. The improvements in planting referred to in last year's report have saved many of our cuttings. The death-rate in the hot weather being now only 20 per cent. instead of 40 per cent. in the case of Kalluvalli and 25 per cent. instead of 50 per cent. in the case of Balameotta.

17. *Other crops.*—The paddy spacing methods were again demonstrated, but as the seed was selected specially from the plots raised from single seedlings the plots where 3 and 5 seedlings were tried gave better results, although in every plot there is a marked improvement in the yield. This was to some extent due to green manuring, but the same was noticed in crops

outside the station which were planted by ryots with our surplus seedlings which were sold to them. The following figures show to some extent this improvement:—

	Seed rate per acre.	Yield per acre of the whole of the wet lands under paddy.
1906	40 Madras measures	54 ²
1907	25 do.	592
1908	15 do.	791

Details of this demonstration will be found in the scientific report of this station.

The sugarcane crop introduced from Samalkota in 1907 still continues to attract much attention. It is impossible at present to estimate the value of this crop to the West Coast districts. The ratoon crop of 1907 gave nearly equal results to the newly planted crop in 1908 and this is now being ratooned for a second year. That it is likely to become important can be inferred from the fact that the actual cultivators themselves are this year coming forward for sets for planting.

The fibre crops which were grown on a field scale this year were not a success. Sunn-hemp had to be ploughed in as green manure as it was badly infested with caterpillar. *Hibiscus cannabinus* was badly attacked by a weevil and every plant was stunted. Jute alone survived but gave only a fair crop, the soil evidently not being rich enough for this. The same was noticed in the case of jute in other parts of the district. In land near dwelling houses or where vegetable crops had been raised, the crop grew well but under ordinary field treatment and manuring it is doubtful if it will ever be profitable. Attempts have this year been made to improve the dry cultivation on the West Coast. The jungle land, referred to last year as having been broken up, has been utilised for the cultivation of ground-nuts. This has proved a great success; with ordinary manuring, i.e., with 12 loads of cattle manure a yield of 1,524 lbs. per acre was obtained and with 6 loads of cattle manure and 6 of ashes, 1,981 lbs. were obtained in spite of the fact that sowing could not be done until 6th June 1908.

Besides this, several of the indigenous West Coast grasses have been planted out on 5 cent plots for observation. Of these, Amban pullu (*Andropogon contortus*), Ingi-kana pullu (*Panicum repens*) and Kuthiravali pullu (*Andropogon annulatus*) have remained green through the hot weather. Another grass collected in South Malabar, Chora pullu (*Anthistria ciliata*) is also promising as also Guinea grass, but the last cannot from its habit be classed as pasture grass. This work will be extended this next year by mixing some of the best of those according to their habit. A further area of level jungle land has been cleared and other crops such as ginger and cassava and rotation cereals will be tried.

18. *Miscellaneous*.—The boundary fence has been handed over by the Department of Public Works. Four young bulls have been purchased at a cost of Rs. 29 and a new shed has been erected for them. These were bought with the object of utilising the hay and fodder grown on the farm and also to demonstrate the collection of cattle manure on the South Canara system. They will cost practically nothing to keep and may be sold or used to replace the present farm bullocks.

All the wells are being cleaned and repaired as well as stream and drain repletments.

TRICHINOPOLY.

8th May 1909.

H. C. SAMPSON,

Deputy Director of Agriculture, Southern Division.

THE ADMINISTRATIVE REPORT OF THE CENTRAL FARM AT COIMBATORE.

I have the honour to submit my yearly report for 1908-1909.

The weather during the year under report has been very unfavourable for agricultural operations.

The rains, which are usually received during April and May, were very slight, and the south-west monsoon set in late and gave very slight showers. The deficiency of rain began to be felt, however, during August, as the monsoon rains began to slacken on the hills and the water supply to the tank supplying the wet lands failed, and, from the beginning of September, the water was supplied by turns once every ten days. A considerable area under the next tank above the one supplying the farm lands was not cultivated at all, and much land on the south of the river Noyil was cultivated as dry, being cropped with Bengal gram.

On the dry lands the lack of rain resulted in the loss of the season for sowing the main crop cholam, although as much as possible was done by the aid of the two showers received in September.

The first good rains were received during the first week in October when 1 inch was recorded. The north-east monsoon rains began on October 19th, and during the succeeding fortnight 10 inches were recorded. This rain fell nearly every day, with the result that it was almost impossible to work the land. From the beginning of November to the beginning of January there was an absolute drought. About 2 inches were received within the first week of January, and from that time forward no more was received till March 31st.

STATEMENT of rainfall for the year 1908-1909.

Number.	Months.				1	2	3	4	5	6	7	8	9	10	11
1	2				3	4	5	6	7	8	9	10	11	12	13
1	April	..	..	..	..	0.17	..	..	0.25	..	0.02	0.19	..	..	..
2	May	..	..	..	..	..	..	..	..	..	..	..	..	..	0.02
3	June	..	..	..	..	0.01	0.01	..	..	..	..	..	..	..	..
4	July	..	..	..	..	0.05	0.03	0.06	..	0.18	..	..	..	0.04	..
5	August	..	..	..	..	0.14	0.21	..	..	..	..	..	..	0.39	..
6	September	..	..	..	..	..	0.34	..	0.34	0.48	..	0.02	..	..	..
7	October	..	..	..	..	..	0.34	..	..	..	..	..	..	..	..
8	November	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	December	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	January	..	..	..	..	0.62	1.25	0.48	0.12	0.02	..	..	..	..	..
11	February	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	March	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total					..	..	..	..	..	..	..	..	..	..	..

Number.	Months.				12	13	14	15	16	17	18	19	20	21	22
1	2				14	15	16	17	18	19	20	21	22	23	24
1	April	..	..	..	..	..	..	..	0.42	0.36	..	..	0.01	..	..
2	May	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	June	..	..	..	..	0.02	0.11	0.09	..	..	0.06	..	..	..	..
4	July	..	..	..	..	..	..	..	..	0.08	..	0.04	0.11	0.01	..
5	August	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	September	..	..	..	..	..	0.29	..	..	..	..	..	..	..	..
7	October	..	..	..	..	..	..	..	..	..	0.01	0.17	0.58	0.86	0.78
8	November	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	December	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	January	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	February	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	March	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total					..	..	..	..	..	..	..	..	..	..	..

Number.	Months.				23	24	25	26	27	28	29	30	31	Total.
1	2				25	26	27	28	29	30	31	32	33	34
1	April	..	..	..	..	..	0.06	..	0.30	..	..	..	..	1.09
2	May	..	..	..	..	..	..	0.01	..	..	..	..	..	0.69
3	June	..	..	..	..	..	0.01	..	..	..	..	..	..	0.31
4	July	..	..	..	0.07	..	0.10	0.13	0.06	..	..	..	..	0.62
5	August	..	..	..	..	..	..	..	..	0.02	..	..	..	0.36
6	September	..	..	..	..	..	..	..	..	..	..	..	..	1.05
7	October	..	..	..	0.11	0.08	..	1.20	2.83	1.36	0.90	0.88	0.28	10.83
8	November	..	..	..	..	..	..	..	..	..	..	..	..	0.34
9	December	..	..	..	..	..	..	..	..	..	..	..	..	0.06
10	January	..	..	..	..	..	..	..	..	..	..	..	..	2.49
11	February	..	..	..	..	..	..	..	..	..	..	..	..	0.06
12	March	..	..	..	..	..	..	..	..	..	..	..	..	0.00
Total					..	..	..	..	..	..	..	..	..	17.78

2. *Buildings*.—The staging for the grain store was fitted up during April and May and it has been found very convenient; the cranes asked for to enable heavy sacks and seed bundles to be easily hoisted up have not yet been fitted. The engine for running the machinery in the machine shed has been received, as have also the different machines to be installed, but they are still awaiting the necessary shafting which is being supplied by the Public Works Department.

The Government Botanist, on his return from leave in September, found that the one well existing in the Botanical Garden would not be sufficient to supply the whole of the garden; the Director of Agriculture was therefore asked to sanction the digging of a new well which would command the upper half of the garden; this was approved, and the site of an existing chucklers' drinking well being thought to be a suitable place, the well was dug. The result, however, was not as good as was anticipated; rock was met with at about 25 feet from the surface and water

was not reached for another 10 feet, and even then the supply was poor; the well was, however, taken down to a depth of 40 feet, and when left alone, contains about 15 feet of water. A bore hole will be put down in the bottom of this well as soon as the tools are available from the Public Works Department, when very probably a better supply will be struck.

Sanction for the construction of an additional byre for the cows was given by the Director of Agriculture, and plans prepared accordingly by the Public Works Department. The work was put in hand at the beginning of January, but has not yet been completed.

3. *Implements.*—The Ransomes R.L.S. plough continues to give good results in breaking up lands which are too hard for the country plough. On these soils it has so far not been possible to use the other deep working iron ploughs which have broad shares on account of the difficulty in getting them to enter the soil when it is at all hard. Massey's cotton soil plough has been used with good results.

The "beater drum" threshing machine, received towards the end of last year, has been used for all the crops on the farm with the exception of paddy. This machine, by allowing the work to be done more quickly, is of immense benefit when dealing with the produce of several fields and often several plots on one field, all of which have to be weighed, and the results recorded separately. It is, however, open to the objection that some of the grain is broken in the process; this appears to be due to the great dryness of the grain and consequent brittleness. The broken grain amounts to about 5 per cent. in the case of cholam and is readily separated by the winnowing machine; at the time when whole cholam was selling at the rate of Rs. 7 per salagie of 60 Madras measures, the broken cholam was valued at Rs. 5. Thus the monetary loss is about 1.42 per cent. In ascertaining the yield of the field the weight of broken cholam is added to the weight of the main portion. It may be possible to avoid this breakage by altering the speed of the machine, but in running with an oil engine there is not much latitude in the matter of speed, and, moreover, if the speed is much reduced, the threshing will not be complete.

For threshing paddy as it comes from the field the beater machine is not suitable as the straw tends to wind round the drum, causing the machine to block; therefore a "peg drum" machine was indented for and was received just in time for trial last paddy harvest. In this case again, the machine tended to husk the paddy to some extent, but this was evidently caused by the machine being speeded too fast; there was not however time to obtain the necessary now by the pulley, but by the next season one will be obtained, and better results are hoped for. The same remarks as to convenience when dealing with numerous small plots apply to this machine; on cholam, however, it does not work so well as the beater drum.

The small oil-engine and 3' centrifugal pump was found very useful this season owing to the shortage of water on the paddy fields. On these fields there is a well, of no great depth, but with a very good rate of inflow, sufficient to enable the pump to run all day, every day. The cost for oil per day of ten hours amounted to Rs. 2 and the area irrigated to about 1 acre. Some ryots who saw it at work expressed the opinion that it was worth the expense in the saving of the crop.

4. *Cattle.*—On 23rd August 1908 a bad attack of foot-and-mouth disease occurred which ran through the entire herd, fortunately without causing any deaths, although the cattle were much reduced in condition; the yard was not quite free until 5th October 1908.

On 5th July 1908 a bullock was found suffering from some internal complaint which evidently caused it much pain by the way it writhed about. The Veterinary Hospital Assistant from Coimbatore was sent for, and he diagnosed the case as one of anthrax, although he was somewhat uncertain. Thereupon, the rest of the working cattle were inoculated with anti-anthrax serum. The sick animal recovered, and no other attacks occurred.

During the year 24 pairs of working bullocks were purchased, but prices are now ruling very high in this neighbourhood for good cattle, some ryots having been known to give up to Rs. 400 for a good pair for working a mhote.

Cows.—At the end of the last financial year three cows and two heifers of the Kangayam breed were purchased from the Pattagar of Palayakottai, and during the year under report, two others were purchased from villages near Kangayam. These cows, however, do not give much milk, and in order to obtain the quantity required by the staff and students, recourse was had to hiring country cows in milk and returning them as soon as they run dry. The milk supply of the staff and students will necessitate the keeping of a considerable herd of cows, and if cows are purchased, it is considered that they should be as far as possible of "pure" breeds, either Kangayam, or of a small but active red breed; the milking capacity ought to be a secondary consideration, considering the great use that is made of cattle for draught purposes.

5. *Crops—Cotton.*—The results of the season 1907-1908, which were not available when the last report was issued, are given below.

There was practically only one picking as, owing to the scantiness of the rains received in April and May, the second flush of flowers which is usually obtained was very poor.

Experiments were made upon the following points: different mixtures of cotton and other grains, broadcast v. drill sowing, deep ploughing.

Results.

	Area in acres.	Yield per acre lb. kappas.	Value of crop.	Cultivation expenses.	Gain.
			RS. A. P.	RS. A. P.	RS. A. P.
Broadcast	3.33	435	31 5 0	7 12 0	23 9 0
Drilled	6.66	380	27 14 0	7 12 0	20 2 0
Deeply ploughed	47.0	378	27 7 0	5 15 0	21 8 0

The difference in the cultivation expenses is explained by the fact that the field in which the broadcast crop was grown was ploughed with the country plough and, previous to July 1st, 301 pairs of cattle were employed on the 47 acres whereas, on the deeply ploughed field, only 154 pairs were used on the same area up to the same date.

Results of the mixed crops.

	Area in acres.	Yield in lbs.	Value per acre.	Total value per acre.	Cultivation expenses.	Gain.
			RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
Cotton	16	296	21 5 0	34 13 0	7 12 0	27 1 0
Tenai		415	13 8 0			
Cotton	14	340	24 8 0	28 0 0	7 12 0	20 4 0
Horsegram		118	3 8 0			
Cotton	7	227	16 5 0	17 9 0	7 12 0	9 13 0
Coriander		42	1 4 0			

Yield of cotton is in lbs. of kappas per acre.

It will be noticed that the yield of the broadcast plot is more than that of the drilled. The plots were arranged along the field each one chain wide, the broadcast plot being between two drilled. With regard to the mixtures, it will be seen that, although the yield of cotton is much lessened by the presence of the other crop, and conversely, the yield of the other crop is lessened by the presence of the cotton, yet when the yield of both crops is taken into account, the financial result is better than in the case of growing cotton alone.

The field which had been deeply ploughed carried by far the best looking crop of cotton; the plants were all large and well grown but, as will be seen from the table, the yield was not commensurate with the growth. In the case of horsegram on the black soils here, it was noticed that the plants were more or less unable to form chlorophyll in their leaves and the leaves looked pale and sickly, and the whole plant looked stunted.

In this season 1908-1909 the rains failed practically till the first week in October, when the land was prepared as rapidly as possible using the Martins' cultivators more or less like country ploughs as they do more work in a day; but heavy rains set in on October 19th lasting up to the end of the month. Part of one field was sown with the gorru by the 25th, but the remainder of this field and all the others were sown only after November 1st, because the almost daily rain made the land unworkable. When the rains ceased it was found that the fields were too wet to sow with the gorru; therefore in order not to lose any more time, as much as could be was sown broadcast during the three or four days the land was drying sufficiently for the gorru. After this, the gorru was used for the remainder. As it happened, when once the rain ceased no more was received till the end of December, and the saving of time by not waiting for the land to dry is amply justified by the appearance of the crops, especially when in the case of the last field sown with the gorru fully half of the seed did not germinate till the rains at the end of the calendar year. It is, of course, true that the use of the gorru enables more land to be sown in a day by one pair of bullocks than can be done by broadcasting but, on the other hand, it is necessary to wait until the surface of the land has dried somewhat; otherwise the soil tends to clog the implement, and especially the guntika which is used for covering the seed. This waiting when the soil is full of water is very galling, especially when the season is already well advanced and when there are plenty of pairs of bullocks lying idle which could be put on the land to plough-in broadcasted seed. The rains received during the first week of January practically saved the cotton crop. At the time of writing the bolls are beginning to open, but the number of bolls is small and the yield of cotton will be poor. The results will be published in the next report.

6. *Cholam.*—Owing to the failure of rains no attempt could be made to sow the ordinary rain-fed yellow cholam on the black soils and the field intended for this crop on the black soils had to be sown with cotton. On the red soils attempts were made to sow it with the aid of the two showers received during September but in all but one field the sowing failed and re-sowing was necessary in the first week of October; this made the crop about six weeks late in starting, nevertheless the harvest occurred at about the same time.

Results—Rain-fed Cholam.

Field number.	Area.	Date of sowing.	Yield.		Value.	Cultivation expenses.	Remarks.
			Grain.	Straw.			
1	ACS. 1.33	7th October 1908.	LBS. 578	LBS. 3,216	RS. A. P. 29 15 0	RS. A. P. 11 5 3	First sowing failed.
2	2.55	7th October 1908.	580	3,201	30 4 3	9 13 3	First sowing failed.
4	4.80	7th October 1908.	692	3,113	33 12 0	10 15 7	First sowing failed.
7	1.75	8th October 1908.	460	1,659	21 12 0	17 8 2	First sowing partly failed.
10	7.56	11th September 1908.	327	1,808	16 6 9	10 0 8	Irrigated at a cost of Rs. 6-12-0 per acre.
31	3.85	6th October 1908.	346	3,087	21 15 8	7 11 9	
60-B	1.32	17th September 1908.	448	2,109	21 12 0	15 4 6	Irrigated at a cost of Rs. 4-9-6 per acre.

The yields of straw are those actually obtained but they are not comparable as, owing to the scarcity of fodder, some of the straw had to be weighed in a green state and given to the cattle instead of being allowed to dry in the field for the same time for each field. In the cases where the first sowing failed, reference is made to the attempts to sow with the aid of the two showers in September.

With irrigated cholam experiments were made upon the question of Ridge v. Bed transplantation and upon the quantity of water required by an irrigated crop of cholam upon soils similar to those on the farm. There was nothing particularly noticeable about the growth of the crop, but of course, it would have done better and would have cost less to produce if the usual amount of rain had been received.

Results—Irrigated cholam.

Field number.	Area.	Date of sowing.	Yield.		Value.	Cultivation expenses.	Irrigation expenses.	Remarks.
			Grain.	Straw.				
6-B	ACS. 1.73	26th April 1908.	LBS. 1,543	LBS. 3,484	RS. A. P. 51 4 0	RS. A. P. 35 12 0	RS. A. P. 11 10 0	Yellow.
5-C	1.70	9th April 1908.	1,138	4,229	38 15 5	22 3 6	12 5 8	Yellow.
6	2.10	28th March 1908.	1,197	..	42 1 8	29 13 3	12 6 0	White.
18	2.95	5th April 1908.	2,170	2,024	71 8 0	48 11 5	19 6 2	Yellow.
19-B	0.85	11th April 1908.	1,494	3,273	57 7 0	28 7 2	18 6 0	Yellow.
38	2.84	1st April 1908.	1,863	6,440	63 4 6	42 10 9	18 3 5	White.
43-A	2.27	5th April 1908.	1,253	3,830	43 14 0	35 4 9	16 11 10	Yellow.
52	2.27	27th March 1908.	1,520	..	52 5 10	29 3 0	11 3 6	White.

In the case of this cholam crop, owing to the want of fodder, the straw, as soon as the ears were removed was, in some cases, given to the cattle, without waiting for it to dry; hence the weights of straw are not comparable, but the value has been assumed at Rs. 4 per acre.

Ridge versus Bed transplantation.

Field.	Description.	Yield.	
		Grain.	Straw.
18	Sown on ridges	LBS. 2,933	..
18	Sown on the flat	2,817	..

Watering experiment.

Field.	Description.	Area of plot.	Date of sowing.	Number of waterings.	Number of cubic feet of water applied per acre.
18	Yellow cholam on ridges	ACS. 0.25	6th April 1908	3	30,606
18	Yellow cholam in beds	0.25	6th April 1908	3	37,396

In the case of cholam, there is evidence of considerable gain in sowing on ridges and watering in the furrows both in the increased yield of grain and in the less amount of water required; but the great difficulty is to sow on the top of a ridge on account of the usually poor tilth obtained at the season of sowing, it very often being the custom to moisten the land by means of the mhote before ploughing the first time.

7. Ragi.—The usual crop of irrigated ragi was grown during the season, July to October. It was grown both on the flat and irrigated in beds and also on the sides of ridges and irrigated in furrows.

Manuring experiments were carried out with the object of comparing the values of the common poonaes with cattle manure and with mixtures of superphosphates and nitrogenous salts having regard to the amount which local ryots are prepared to spend on the usual practice of sheep-penning. The plots were long parallel strips laid off from north to south down the slight slope of the field. Thus the irrigation water could be let into each plot without materially interfering with those next to it. At harvest the outer rows of the plots were ignored and only the central portion of the plot taken for record. As the growth of the crop progressed it was noticed that there was a gradual falling off in the general appearance of the field as one passed from north to south, which would to some extent spoil the result. The manures were applied as follows:—

Cattle manure was applied at the rate of 15 cart loads per acre just before the formation of the ridges, poonaes were likewise applied before the formation of the ridges at the rate of 400 lbs. ground-nut, 400 lbs. white castor, 500 lbs. black castor. Superphosphate and half the ammonium sulphate was applied in the same way, superphosphate 200 lb. per acre, ammonium sulphate 150 lb.; the remainder of the sulphate and the whole of the nitrate of soda 112 lb. per acre were applied during the growth of the crop just before the third watering. Very little effect could be observed during the growth of the crop which might be put down to the effect of the manures and, as the table shows, the results are fairly uniform.

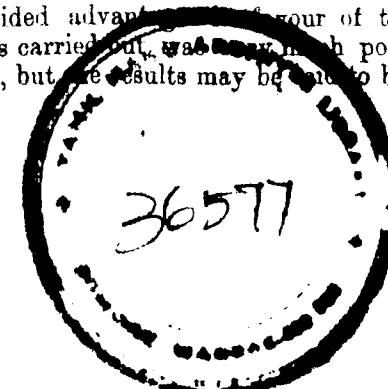
Ridge v. bed transplantation. This was carried out on two plots, each of 0.25 acres, which were at the same time the subject of watering experiments, i.e., the water supplied was measured.

The result is disappointing from the ridge-planting point of view. The plants on the ridges never seemed to tiller thoroughly well this year and land was always visible between the rows, the ears also were formed very irregularly and not, as in bed planting, practically all at the same time.

Watering.—This was to ascertain the amount of water usually applied to a crop of ragi on soils such as those of the farm. At the same time a comparative test was made between ridges and beds.

The initial watering for moistening the land has not been measured and the first watering given in the table was that given when transplantation was taking place. The chief rainfall of the year came just at the end of the period of growth, but had it not been received or had the crop been started somewhat earlier, a sixth watering would have been necessary. The other rains received were practically negligible. When the results of the harvest of these two plots is combined with the method of planting, it will be seen that the beds give an extra yield of 296 lb. of grain worth Rs. 9 and an extra 3,380 lb. of straw worth, say, Rs. 2-4-0, whilst they require an extra 7,768 cubic feet of water (representing 12 hours work) costing approximately Rs. 2. Thus the beds have a total advantage to the extent of Rs. 9-4-0.

Thickly sown v. thinly sown seed beds. Since the usual method of sowing seed beds produces a thick mass of more or less weakly seedlings, it was considered desirable to try the effect of sowing seeds much more thinly. The usual seed rate is 4 lb. for a seed bed sufficient to transplant one acre, and for the thinly sown bed 1 lb. was sown on a bed sufficient to transplant one acre. The results show a decided advantage to the thin sowing. The part of the field in which the experiment was carried out was much poorer than the rest and was somewhat badly attacked by insects, but the results may be taken to be comparative.



Ragi irrigated, transplanted Field No. 20.

Plot.	Manure.	Area.	Yield per plot.		Yield per acre.		Remarks.
			Grain.	Straw.	Grain.	Straw.	
2	No manure	0-12	241	789	2,008	6,575	
13	Do.	0-12	169	431	1,408	3,592	
1	Groundnut cake	0-114	272	846	2,386	7,421	400 lb. per acre.
4	Do.	0-112	245	781	2,025	6,508	
5	Black castor cake	0-116	235	752	2,025	6,483	500 lb. per acre.
11	Do.	0-112	168	472	1,432	4,214	
3	Superphosphate and sulphate of ammonia.	0-112	210	774	1,878	6,910	200 lb. super 150 lb. sulphate.
6	Do.	0-12	241	715	2,037	5,958	
7	White castor cake	0-116	219	681	1,886	5,698	400 lb. per acre.
9	Do.	0-12	220	649	1,837	5,408	
8	Superphosphate and nitrate of soda	0-12	226	711	1,888	5,925	200 lb. super 112 lb. nitrate.
10	Do.	0-12	203	604	1,692	5,033	
12	Cattle manure	0-12	176	522	1,467	4,350	15 cart loads per acre.
14	Do.	0-116	177	496	1,526	4,276	

Ridges v. Beds.

Method.	Area.	Yield per plot.		Yield per acre.	
		Grain.	Straw.	Grain.	Straw.
Transplanted on sides of ridges	0-25	510	1,761	2,160	7,044
Transplanted in beds	0-25	614	2,606	2,456	10,424

Difference in favour of beds 296 lb. worth Rs. 9.

Thickly sown v. Thinly sown seed beds.

Method.	Area.	Yield per plot.		Yield per acre.		Remarks.
		Grain.	Straw.	Grain.	Straw.	
Thickly sown seedlings	0-16	149	390	931	2,438	Seed rate 400 lb. per acre of seed bed.
Thinly sown seedlings	0-164	197	589	1,201	3,591	Seed rate 100 lb. per acre of seed bed.

Watering Experiments.

Method.	Area.	Number of waterings.	Number of cubic feet.	Total number of cubic feet per plot.	Total number of cubic feet per acre.
Transplanted on ridges	0-25	1st	1,491	7,632	30,528
		2nd	1,125		
		3rd	1,375		
		4th	1,193		
		5th	2,450		
Transplanted in beds	0-25	1st	1,758	9,574	38,296
		2nd	1,425		
		3rd	1,925		
		4th	1,725		
		5th	2,741		

Difference in favour of ridges per acre, 7,768.

8. *Wheat*.—This was grown as usual between November and March. Owing, however, to the drought it was entirely grown with irrigation. The results are shown in the table. Field No. 6 where the cultivation expenses run to Rs. 72-5-7 with irrigation expenses of Rs. 41-3-6 was irrigated by a mhote fitted in the Bellary manner, that is, two pairs of cattle are used for one cavali. The bullocks actually lifting the water run down a very steep slope, and when at the bottom, the rope is unhitched and the bullocks allowed to walk up a less steep, but longer, path, forwards to the top. The man himself is helped up the steep slope by the pull of the bucket descending into the well, when at the top a second pair of bullocks are hitched on to the rope and the process repeated. This method undoubtedly enables a bucket of water to be drawn out of the well in less time than in the case of the less steep Coimbatore slope, but the quantity raised per hour is not more than 25 per cent. greater than in the case of an ordinary mhote, and the expense is just double. Had this field been irrigated with an ordinary mhote it is probable the irrigation expenses would not have been much more than Rs. 30 as the well is somewhat deeper than the others on the farm. In the case of field No. 18, the high charge is due partly to the fact that extra men had to be employed when the quantity of water was measured in working the secondary lift of 4 feet, and partly due to the fact that the soil cracked rather badly and consequently a large quantity of water was required for proper irrigation; moreover this field was somewhat heavily manured with fish manure which did not give an adequate return.

Field 43 C is a very stiff clayey field inclined to be saline upon which rain water will stand for days before soaking in; irrigation on this field is therefore very efficient as regards the area covered per day. The field is one which is particularly suitable for wheat but for other crops such as cholam it is very poor.

Wheat.

Field No.	Area in acres.	Yield per field.		Yield per acre.		Value grain and straw.	Total cultivation expenses.	Irrigation expenses.
		Grain.	Straw.	Grain.	Straw.			
		LB.	LB.	LB.	LB.	RS. A. P.	RS. A. P.	RS. A. P.
6	2-10	2,647	5,070	1,260	2,415	59 7 3	72 5 7	41 3 6
(a) 18	2-95	5,823	8,690	1,974	2,946	81 12 3	80 12 4	37 13 5
(b) 38A	1-85	2,620	5,057	1,416	2,733	60 4 10	52 15 6	21 2 6
(c) 38B	0-99	1,138	2,825	1,149	2,853	49 8 5	52 5 0	24 15 5
39	1-10	1,812	1,972	1,647	1,793	68 4 10	50 6 4	27 14 4
40	0-44	758	1,550	1,723	3,523	74 4 4	50 1 3	27 11 2
43B	1-37	2,538	4,949	1,853	3,612	78 15 2	50 5 8	23 14 4
(d) 43C	1-12	1,994	3,242	1,780	2,895	75 1 10	41 9 7	17 8 9

(a) Cost of manure Rs. 16-3-4 per acre.

(b) " " " 10-10-0 "

(c) " " " 6-2-2 "

(d) This field is a peculiarly stiff one and well suited to wheat. In fact it is very difficult to grow cholam at all well up on it. The low irrigation expenses may be explained by the retentive nature of the soil.

9. *Paddy*.—Season.—Water was received about the middle of July and the work of preparing seed-beds and ploughing the land generally was pushed on. Water failed, however, at the beginning of September just when most of the transplantation was finished; about two acres, however, had to be left and this latter area was transplanted at the beginning of November with banku and manavari.

After the failure of the rains water was supplied to the farm lands by turns, twelve hours' supply every 10 days. In order to supplement this the portable engine and 3" pump was employed to irrigate, from a well, the area devoted to spacing experiments and to the thick v. thin seedlings experiments.

Owing to the failure of water-supply the yields this season are on the whole low.

Manuring experiment.—This was designed to compare the value of Koling (Tephrosia purpurea) with Errukam (Calotropis gigantea) as a green leaf manure, the latter being highly esteemed in this locality. At the same time white castor cake, black castor cake (which is cheaper but contains more oil), mixtures of bones and nitrate of soda, bones and sulphate of ammonia, ashes of sugarcane, ashes of sugarcane and ammonium sulphate were tried. The manures were all applied to plots which each received water direct from a channel, and the last field of the row devoted to a given manure was left unmanured to see if water running from manured fields had any appreciable effect on the next unmanured field. The basis of manuring was the cost of applying five cart-loads of green leaves per acre, the cost per cart-load being given as Rs. 3 including the collecting and fetching from often great distances. The cost of the poonace and bones alone and green leaf manures are thus approximately the same. The ammonium sulphate was added to the bones in one case to see whether paddy would respond to ammonium salts, similarly with nitre. The cost of these two manures, however, is prohibitive. The two plots manured with ashes of sugarcane were to test a statement often made that the ashes obtained from the furnace when making jaggery are of no use as manure. They must, however, contain a very considerable amount of potash and phosphates. In one case 1 cwt. per acre of ammonium sulphate was added to make up for the deficiency in nitrogen.

Manuring experiment with paddy variety "sinna samba".

No.	Manure.	Area of plot	Yield per plot.		Yield per acre.		Cost of manure.
			Grain.	Straw.	Grain.	Straw.	
		ACS.	LB.	LB.	LB.	LB.	RS. A. P.
C-1.	Erukham ..	0.303	931	1,948	2,369	4,955	15 0 0
	Do. unmanured ..	0.098	245	282	2,500	2,367	
C-2.	Kolingi ..	0.327	922	1,372	2,841	4,196	16 0 0
	Do. unmanured ..	0.12	301	428	2,608	3,664	
C-3.	Castor, white ..	0.355	1,103	1,748	3,107	4,924	11 14 0
	Do. unmanured ..	0.145	353	408	2,435	2,814	
C-4.	Castor, black ..	0.323	960	1,632	2,972	4,748	11 13 0
	Do. unmanured ..	0.091	180	192	1,978	2,110	
C-5.	Bones ..	0.281	726	1,132	2,584	4,028	13 6 0
	Do. unmanured ..	0.092	164	200	1,782	2,175	
C-6.	Bones and ammonium sulphate ..	0.271	740	1,204	2,730	4,445	29 6 0
	Do. unmanured ..	0.09	173	204	1,923	2,265	
C-7.	Bones and nitrate of soda ..	0.264	601	668	2,276	2,530	30 0 0
	Do. unmanured ..	0.139	298	324	2,144	2,330	
C-8.	Ashes of canes ..	0.282	779	924	2,762	3,275	
	Do. unmanured ..	0.139	311	368	2,237	2,647	Waste product. 16 0 0
C-9.	Ashes of canes and ammonium sulphate ..	0.276	737	682	2,670	2,470	
	Do. unmanured ..	0.069	176	168	2,550	2,435	

The manures applied were as follows in lb. per acre:—

Plot	LB.
1. Erukham leaves, green ..	4,000
2. Kolingi leaves, green ..	4,000
3. White castor poonac ..	400
4. Black castor poonac ..	500
5. Bones, ground, raw ..	500
6. Bones do. do. ..	500
Do. and ammonium sulphate ..	112
7. Bones, raw, ground ..	500
Nitrate of soda ..	150
8. Ashes of sugarcane ..	4 cart-loads.
9. Do. ..	4 do.
Ammonium sulphate ..	112 lb.

The unmanured plots given in the table are in each case the last field of a series through which the water must pass from the corresponding manured plot before draining away by a channel.

The manures have in all cases except erukham given an increased yield over the corresponding unmanured plot. The unmanured plots in the series of spacing experiments which have received no manure for the last four seasons give the following yields:—

No.	LB.
A-1 ..	2,238
A-9 ..	1,804
C-1 ..	2,500
C-2 ..	2,508
C-3 ..	2,435
Compared with C-4 ..	1,978
C-5 ..	1,762
C-6 ..	1,922
C-7 ..	2,144
C-8 ..	2,237
C-9 ..	2,550

It thus appears that in the case of the green leaves, white castor poonac, and ashes ammonium sulphate, there is evidence of a washing of manures on to the next lower field by the irrigation water. In the case of soluble salts, like ammonium sulphate, this is perhaps to be expected. The cane ash, it will be noticed, has given a yield which is only about 80 lb. per acre less than that given by Kolingi, but that the addition of ammonium sulphate has only had a depressing effect. The best results have been given by the poonacs, white being superior to black.

Age of seedlings and transplantation and thickness of sowing in seed bed.—Two experiments were conducted on each of these points. The "old" seedlings were 40 days old and in the case of all the other they were 24 days only. The "thin" sown seedlings were from a seed-bed sown at the rate of $\frac{1}{2}$ Madras measures per cent. of land, and the "thick" sown, from a bed sown at the rate of $\frac{1}{4}$ measures per cent. of land—

	Area.	Yield per plot.		Yield per acre.	
		Grain.	Straw.	Grain.	Straw.
	ACS.	LB.	LB.	LB.	LB.
Seedlings, 40 days old ..	0.179	533	992	2,977	5,540
Do. 24 days old ..	0.228	592	976	2,597	4,280
Do. from thickly-sown bed ..	0.215	494	740	2,298	3,442
Do. from thinly-sown bed ..	0.206	553	810	2,584	4,078

The older seedlings have given a much superior yield, but the thinly-sown bed shows a decided advantage over the thickly-sown bed. This would be explained by the greater strength of the seedlings from the former owing to the greater space for development of the seedlings.

Pati Mannu substitutes.—At the request of the Director of Agriculture a series of plots was set aside for the trial of the mixtures devised by the Agricultural Chemist as substitutes for the pati mannu used in the Kistna district. The results are shown in the following table:—

Number.	Description.	Area.	Yield per plot.		Yield per acre.	
			Grain.	Straw.	Grain.	Straw.
		ACS.	LB.	LB.	LB.	LB.
1	No manure ..	0.0375	119	96	3,173	2,560
2	Bone meal and potassium sulphate ..	0.0657	98	72	1,491	1,096
3	Castor poonac, bone meal and potassium sulphate ..	0.035	113	120	3,228	3,429
4	Do. do. ..	0.019	113	140	2,306	2,858
5	Castor poonac, bone meal, super phosphate sulphate of potash ..	0.042	94	112	2,238	2,664

The manures were obtained from Messrs. Stanes & Co., and Messrs. Pierce, Leslie & Co., and were made up according to the formulæ given by the Agricultural Chemist.

PADDY.—Yield of main crop and varieties.

Description.	Area.	Yield per plot.		Yield per acre.	
		Grain.	Straw.	Grain.	Straw.
	ACS.	LB.	LB.	LB.	LB.
Sinna samba ..	12.54	28,725	40,720	2,291	3,247
Sadai samba ..	12.74	26,717	27,435	2,019	2,153
Tuluka samba ..	0.072	153	301	2,125	4,181
Banku ..	4.34	3,355	5,375	773	1,238
Palagumavari ..	0.085	111	122	1,291	1,419
Turpu sanna akkulu ..	0.109	169	233	1,530	2,138
Sinna samba (selected white) ..	0.176	284	536	1,614	3,045
Sinna samba (selected from a prolific plan) ..	0.298	1,019	1,076	3,419	3,611
Rasangi ..	0.076	163	179	2,145	2,237
Atharali samba ..	0.086	101	121	1,174	1,407
Vellai Milagai ..	0.11	190	184	1,727	1,673
Sirumani (Tanjore) ..	0.107	234	364	2,187	3,589
Sirumani (Udamalpet) ..	0.088	263	368	2,989	4,182
Kinnabithu ..	0.047	95	156	2,021	3,319
Kayami ..	0.04	69.5	78	1,738	1,950
Athicari ..	0.037	21	32	1,647	865
Jeerasali ..	0.034	66	114	1,647	3,353
Goduni samba ..	0.073	222	296	3,041	4,055
Anna samba ..	2.305	3,764	3,898	1,633	1,691
Garika sanna vari ..	0.055	59	72	1,073	1,309
Banku (selected white) ..	0.06	52	58	867	967
Gandassali ..	0.058	100	231	1,724	3,983
Manavari ..	0.044	31	35	705	795
Anai kumban ..	2.7	4,962	4,612	1,838	1,708
Ramadhanam ..	1.8	2,636	3,320	1,464	1,844
Garudan samba ..	1.25	2,290	2,296	1,817	1,822

The result of the paddy-spacing experiments are shown in the following table:—

Number.	Description.	Area.	Yield of grain per plot.	Yield of grain per acre.	Yield of straw per plot.	Yield of straw per acre.
		Acs.	LB.	LB.	LB.	LB.
1	No manure	0.227	508	2,238	670	2,951
2	Single, 9" apart	0.303	680	2,244	972	3,208
3	Double, 9" apart	0.257	596	2,319	640	2,490
4	Treble	0.275	688	2,502	804	2,923
5	Single, 6" apart	0.302	672	2,225	780	2,582
6	Single distance of closed fist	0.325	859	2,643	1,248	3,840
7	Local method	0.362	726	2,006	1,040	2,873
8	No manure in alternate years	0.421	722	1,715	1,072	2,546
9	No manure	0.435	785	1,804	1,144	Manured last year. 2,630

The following is a comparative statement of the results of the spacing experiments for the years 1907-1908 and 1908-1909:—

Methods.	1907-1908. Grain in lb. per acre.	1908-1909. Grain in lb. per acre.
1. No manure	2,262	1,953
2. Local method	2,782	2,006
3. Single distance of closed fist	3,050	2,643
4. Single, 9" apart	3,208	2,244
5. Double, 9" apart	3,422	2,319
6. Treble, 9" apart	3,509	2,502

10. *Sugarcane*.—An area of 3.13 acres has been planted on the wet land with red, striped, ashy Mauritius canes and local Poovan, Namam and Vellai. At the time of writing the canes are not ripe, but it may be remarked that the growth this year has not been good. The Mauritius canes have been attacked with "serai" disease (a disease of unknown origin manifested in the enormous number of grass-like tillers and a few stunted canes at each stool). The local Vellai cane has grown better than any of the others.

On the dry land two fields having a total area of 3.3 acres were planted under well irrigation. The fields were somewhat lowlying but only in heavy rains could they be said to be water logged. The same varieties were planted as on the wet land, but the growth has been very poor. A considerable area has almost entirely died out, in fact the plants on this area died before they reached 3 feet in height. Ashy Mauritius was the variety planted on the area which died away. At the time of writing, the cane is not yet ripe and results must be deferred to the next report.

11. *Minor crops*.—The varieties of American cowpeas (*Vigna catieng*) have again done very badly due to the drought. They made very poor growth and further were very badly attacked by a Dipterous borer which made the stems hollow and infested the hollow space with numberless grubs. The local varieties of *Vigna catieng* were similarly attacked. Sufficient seed of each variety has however been saved for further trial.

The varieties of kaffir corn and milo maize from America have done very well indeed. The grains are large and the heads well filled. The plants have however a somewhat dwarf habit which may tell against them in the opinion of the ryots as the yield of fodder will be lessened. Next season sufficient land will be sown to enable some of the seed to be given to the maistries and others for cooking and report as to the flavour, etc.

Cajanus indicus.—On account of the dry weather in August this had to be sown in furrows 6 feet apart and water had then to be let in to cause germination. The seed was sown fairly thickly and afterwards thinned out. A very fair crop was obtained, but no cereal could be grown between the rows and the crop was grown at a loss. The varieties of *Cajanus indicus* received from the United Provinces likewise did badly. Sufficient seed has however been saved for further trial.

Ground-nut.—Mauritius and small Japanese were the two varieties grown in the north-east monsoon season on two of the lightest fields on the farm. They were both dibbled in immediately after the rain received in the middle of September. The early growth was fair and blanks were filled in during the first week in October. Owing however to the fact that no rain was received after 31st October till 31st December, the crops had a hard time. At Christmas the Mauritius variety was suffering very badly from airul and the plants were drying up. They had also scarcely covered the ground although sown 1 foot apart, and all flowers had ceased forming. At this time the Japanese did not look so bad, in fact it seems able to stand drought much better than Mauritius and doubtless had it been sown more closely would have

yielded a fair return. The rains at the end of December helped both crops immensely, but the yield at harvest was of course very poor. Mauritius only yielded 140 lbs. per acre but Japanese 543 lbs.

12. *Staff*.—On 18th June 1908, Assistant Manager L. S. Natesaiyar was transferred to the Bezwada farm as Manager and on 19th September 1908 Assistant Manager Muthusami Aiyar was appointed in his place. On the abolition of the Saidapet College and Farm the staff were transferred to Coimbatore. M.R.Ry. S. P. Swaminathan being appointed as Assistant Manager, before joining his post however he took leave and, at the expiry of his leave, resigned his appointment. On 23rd December Assistant Manager K. Krishnamurthi Rao was transferred to the Agricultural Chemist's office as Assistant, and M.R.Ry. Subramania Sastri, the late bailiff of the Saidapet Farm who had been appointed as clerk in the College office, was appointed Assistant Manager in his place. The Manager throughout the year was T. V. Rajagopalachari. The staff as a whole worked well during the year although no one can be singled out for any special notice.

COIMBATORE,
1st May 1909.

C. J. W. SHEPPERSON,
Principal and Superintendent.

APPENDIX II.

REPORT ON THE COLLEGE OF AGRICULTURE, COIMBATORE, FOR 1908-1909.

I have the honour to submit herewith my report on the working of the Agricultural College, Coimbatore, for the first session, 1908-1909.

The College of Agriculture, Saidapet, ceased working at the end of the term ending in December 1907 and Government sanction for the opening of the College at Coimbatore for teaching was received on 8th May 1908. During March and April the Chemical and Physical apparatus, College library, and Records were sent up from Saidapet and housed temporarily in a room in the new college which was sufficiently finished as to be available. The Principal's Clerks' office was handed over on 22nd October 1908, when it became possible to rearrange and assort the records of the Saidapet College which are very numerous. The library is at present accommodated in the room intended for the Principal's private room.

Owing to the fact that the college was not sufficiently completed for occupation in any other rooms and to the fact that the presence of students undergoing instruction would, in the opinion of the Engineers, seriously interfere with the progress of the building operations, it was decided to commence teaching temporarily in the unfinished quarters of the Government Botanist, who was on leave till September; on his return a move was made to the Rest House on the Farm, in three rooms of which the college work was conducted, two being fitted as a chemical laboratory and the other as a lecture room. This arrangement was fairly satisfactory, but the accommodation was somewhat cramped especially in chemical laboratory work: practical work in Physics had to be in abeyance and that in Botany and Entomology had to be carried on under great difficulties.

The class was opened on June 17th by the Director of Agriculture who delivered a short address on the occasion.

As the sanction for the construction of the hostels was not received till long after the class had been started, the students were accommodated in several of the "C" type quarters designed for the subordinates of the Government Botanist whose office was still in Madras. It is hoped, however, that by the beginning of the next session there will be sufficient hostel accommodation for the two classes, of twenty each, who will come into residence then.

Eighty-seven applications for admission were received out of which twenty were selected, of whom four non-matriculates, appearing to be such as had great interest in Agriculture as they all possessed large areas of land, were exempted by Government under rule 11 requiring candidates to have passed the Matriculation; all these students, it has been found by experience, are able to follow the lectures, although they may be somewhat slow in grasping some of the subjects.

The castes of the students are—

Native Christians	3
Mahomedan	1
Brahmins	11
Kshatriya	1
Vellala	1
Other Non-bramin caste Hindus...	3

The class as a whole worked well until the beginning of this calendar year, when plague broke out in the town of Coimbatore and, as it appears that somewhat alarmist reports were made in the newspapers, several students were recalled by their parents or guardians and the others shortly afterwards represented that they were afraid to go into the town to get their necessary provisions. Application was therefore made to close the college for the long vacation from March 1st instead of from April 1st. This request was granted and the college closed accordingly. The first year students will assemble on May 3rd next to complete the remainder of their course.

2. In *Agriculture* the work was purely practical, the students being from the first given work in the fields on three mornings in the week at various farm operations as they happened to be necessary.

At first they felt considerable difficulty in handling the plough and managing a pair of bullocks, but after a little time they became more or less proficient. Some little difficulty was experienced in arranging work under one supervisor for so large a number as twenty students at a time, whenever they were required to work with any implements beyond the plough and the hand hoe; arrangements have, however, been made by which it is hoped this difficulty will be avoided in future. In a few instances they appeared to work more or less perfunctorily, but on the whole they seemed to take interest in their work.

3. In *Physics* the work was done entirely by lectures as the accommodation was such that laboratory work was impracticable. The progress was satisfactory but suffered from being purely theoretical.

With regard to *Botany* and *Entomology*, the Government Botanist reports as follows:—

4. *Botany*.—"The Botanical teaching during the year consisted of 87 class meetings, 30 of which were lectures and 57 practical. The course was one of ordinary elementary Botany. The Morphology of the higher plants was discussed and demonstrated, the histology of the tissues briefly explained and somewhat full lectures and demonstrations given on elementary physiology of plants. The latter subject was not completed because of the sudden closing of the college. In the absence of proper appliances for dissecting and microscopic work and a suitable room for teaching, the work was conducted under considerable difficulties. An examination at Christmas showed that the students were keenly interested and the results were fairly satisfactory."

5. *Entomology*.—"Twenty-nine class meetings were held in Entomology during the year. Most of these were in the field.

Lectures were given on the general structure of the various types of winged insects, the life history of a butterfly and a grasshopper, the several orders into which the group of insects is divided, the mouth parts of insects and their division according to food habits. These lectures were aided by demonstrations and the students were trained in making sketches in their note books.

In the field the students were taught to look for insects and to observe their modes of locomotion and feeding habits, to note their organs and to place them in their natural orders. The students were taught to make field notes and their note-books were periodically examined. Young stages were sought for and collected and these were bred out, but, owing to lack of appliances, this was largely done by the lecturer and demonstrated to the students. The pests found on the farm were examined, as occasion offered, and the students were given short notes as to their general destructiveness.

An examination was held at Christmas but the projected one in March was postponed because of the abrupt closing of the college."

6. As to *Chemistry*, the Agricultural Chemist reports as follows:—

"During the whole of the year under review this work was carried out in temporary quarters at first in the bungalow constructed for the Government Botanist and latter in the rest house. Both the lecturer and the students were greatly handicapped by the very limited amount of space available and the want of a water-supply and efficient heating apparatus and much credit attaches to the lecturer M.R.Ry. M. R. Ramaswami Sivan Avargal, B.A., for the manner in which he carried out his duties under these circumstances. As the lectures were made as experimental as possible the students showed great interest in them.

7. *Inorganic Chemistry*.—Forty-seven lectures were delivered in this subject and these included the general principles and laws of chemistry, the occurrence, preparation and properties of the common non-metals and their chief compounds, and the source, preparation and properties of the metals of importance in agriculture, together with those of their chief oxides and compounds.

8. *Organic Chemistry*.—In this subject 41 lectures were given, dealing in a general manner with the preparation and properties of the more important classes of carbon compounds. The fatty compounds were dealt with in fair detail, but the cyclic compounds were only treated in a very general manner.

The lectures in both inorganic and organic chemistry were on the whole of an elementary character and they were amply illustrated with experiments.

9. *Practical Work*.—Altogether 92 class meetings of three hours duration each were held and the course of studies was carefully selected so as to give as much purely experimental work to the students as possible. Only the minimum instruction in analytic processes, sufficient to carry out the experiments, was imparted to the students.

At first individual attention is given to the students who are shown how to observe and make deductions and afterwards when they have become more self-reliant they are left alone to their own resources as much as possible. By means of printed sheets they are shown how to carry out the experiments upon which they must make and write down their own observations and deductions. By adopting this method of teaching it is hoped to make the students observant and show a greater interest in their work. The course of work included—

- (a) The methods of laboratory manipulations.
- (b) The preparation and the study of the properties of oxygen, hydrogen, nitrogen, ammonia, carbon-di-oxide, and the different phosphates of lime.
- (c) The composition of air and water and the testing of natural waters.
- (d) The recognition of bases and acids met with in soils and manure.
- (e) The carbo hydrates and the determination of cane sugar, glucose and starch. Oils fats and soaps and the recognition of the chief Indian oils.
- (f) Preparation of gluten and albumen and the properties of albumens generally.
- (f) The pore space and water absorbing power of soils. The retention of manurial constituents. The estimation of nitrogen in soils and manures. Available and non-available plant food conditions governing nitrification in soils.

Owing to the college closing one month earlier it was not possible for the students to study the composition of milk and dairy products and feeding stuffs. During the ensuing year an endeavour will be made to make this course even more purely experimental than at present.

It is not to be expected, nor is it claimed that this course of studies is in any way capable of producing analysts, but such a course should teach the students to be observant and enable them to understand the relations of Chemistry to Agriculture. A special course of studies will be arranged for students wishing to specialize in Chemistry.

During the ensuing year the Agricultural Chemist will give the lectures in "General Chemistry" and the First Assistant in "Agricultural Chemistry."

10. An athletic club has been started but owing to the chaotic condition of the land set apart for the playing ground, due to the building operations, the students have not been very enthusiastic in the matter of games this year. The college is fortunate however in having such an athletic enthusiast as M.R.Ry. M. R. Ramasami Sivan, the lecturer in Chemistry, and doubtless the Club will do great things in the future.

COIMBATORE,
6th May 1909.

C. J. W. SHEPPERSON,
Principal and Superintendent.

APPENDIX III.

ANNUAL REPORT OF THE GOVERNMENT BOTANIST, 1908-1909.

I have the honour to submit herewith the annual report of the Government Botanist for the year ending 31st March 1909.

Changes in the staff.—During the absence of the Government Botanist, M.R.Ry. Rao Bahadur C. K. Subba Rao Avargal continued to act until June 5 when, in his untimely death, already reported, the department suffered a very severe loss. The Director of Agriculture took charge of the office until 7th August, and then Mr. Shepperson, until he handed over charge to Dr. Barber on September 15.

There were no changes in the subordinate staff during the year.

2. *Work of the Government Botanist*.—The late Acting Government Botanist, who was in poor health, toured in the Anamalais in company with the assistants in systematic and economic botany and made a few collections, but the projected tour to the Nilgiris had unfortunately to be given up.

The following papers, written by M.R.Ry. Subba Rao, were published in the *Agricultural Journal of India*:—Fish Manure in Madras, Nendrum Plantain of the West Coast, Tobacco in South Canara, seed on *Nymphaea Lotus*.

3. Dr. Barber was on study leave for ten months during his stay in England and the chief part of this fell during the year under review. He visited Reading, Wye, Kingston, Kew, Cambridge, Oxford, various institutions in London, the Royal Holloway College, Manchester, Liverpool, New Castle, Leeds, Edinburgh, Glasgow and Dublin. He studied the farms and

botanical gardens at these places, the systems of agricultural education and the botanical and entomological laboratories. He carefully examined the implements at the Royal Agricultural Shows and acted on Mr. Gupta's Committee at the Franco-British Exhibition.

At the request of the Director of Agriculture a special study was made of fruit-preserving apparatus and the factory of Messrs. Chivers at Histon was gone over. Plans were drawn for the biological rooms in the Coimbatore College.

He attended courses of lectures at Cambridge in advanced physiology and the diseases of plants and continued his studies on root parasites. A paper was read before the Cambridge Philosophical Society on this subject and one on the Haustorium of *Canajera Rheedii* was published in the memoirs of the Agricultural Department of India. Materials were collected for a paper on *Ximenia americana* but this is unfinished.

At the Royal Gardens, Kew, the Madras Growias were studied with the assistance of Mr. J. R. Drummond, F.C.S., and the pepper collections were examined at Kew, Glasgow and Edinburgh.

4. Upon his return to India, the first few months were spent in touring round the farms of the Presidency. He spent 126 days on tour during the half year, most of which was devoted to Coimbatore, but Samalkota, Taliparamba, Bellary, Hagari, Nandyal, Palur, Trichinopoly, Kollipatti and Ettayapuram were also visited.

The office was finally transferred to Coimbatore on March 15. A considerable portion of time was spent during the latter portion of the year in making arrangements for the transfer of the collections, and this process is still going on continuously.

5. Some attention was paid to the library of the department. The work of the librarian was overhauled, a comprehensive list was prepared of all the missing parts of the periodicals, a new scheme was inaugurated for the distribution of papers to officers not at head-quarters and proposals were framed for the institution of separate small libraries for the Deputy Directors.

6. The teaching at the college was supervised and rough syllabuses were drawn up for the courses in Elementary Botany (first year) and Agricultural Botany (second year). Sets of prepared lectures were obtained from the Botanical and Entomological lecturers; these were criticised and the latter were forwarded to the Imperial Entomologist for remarks.

The work of the entomological assistants was closely followed, tours arranged for both, reports called for and examined and forwarded to the Imperial Entomologist. A report was prepared by the Government Botanist for the Board on the possibility of infecting with disease the scale insects attacking coffee.

7. The area of the farm placed apart for a botanic garden, a deserted village full of stones and prickly-pear, was early taken in hand and roads and paths laid out. Lattice-work trellises were erected for the protection of the plants from the scorching winds and a plant house was built. Seed and cutting beds were laid down and large quantities of plants were obtained from the Madras Agri-Horticultural Gardens. It is now thought that a better source of supply will be found in Bangalore whose climate is more similar to that of Coimbatore.

The land was got into order and numerous experiments were made in growing trees, shrubs, climbers, flowering herbs, and grass lawns for the proposed laying out of the College compound. The avenue of the Lawley Road was overhauled, sickly or missing plants were replaced and a system of propping and pruning was introduced. A scheme was prepared for the laying out of the college compound. This horticultural work, in the absence of any subordinate capable of undertaking it, occupied the bulk of the Government Botanist's spare time.

8. Scientific work was largely confined to the training of the Economic Assistant and subordinates in Mendelian crossing experiments and the study of De Vries's mutations.

For the former purpose, Gogu (*Hibiscus cannabinus*) was selected and, under instructions from the Director of Agriculture, a thorough study of the cottons of the Presidency was commenced. The ground-nut (*Arachis hypogaea*) was studied as to its mode of fertilisation and crossed, but these subjects will be referred to in more detail under the work in Economic Botany.

For mutations it was necessary to select some wild plant, and the choice fell upon *Euphorbia* of the section *Anisophyllum*. Numerous forms were collected in various parts of the Presidency, sown in the garden and their variations studied. A full set with drawings and descriptions has been sent to Mr. Drummond at Kew Gardens. There are indications of the need of a thorough revision of their systematic position and it appears probable that several new species have been collected.

9. *Systematic Botany*.—This work has been a good deal interrupted during the year. Owing to the absence of Dr. Barber, the Assistant, M.R.Ry. C. Tadulingam, was in charge of the office for most of the time and prepared the draft annual report for the previous year. Upon the transfer of the Economic Assistant to Coimbatore for teaching purposes in June, he had to deal with economic questions and, when the transfer of the office took place, he had to superintend the packing of the collections.

He was on tour for 41 days during the year. He accompanied the Acting Government Botanist on his tour to the Anamalais and made a few collections. He was also deputed to attend the Agricultural Show at Nagpur, and the preparations for this work took the best part of two months.

About 2,500 sheets were added to the collection and the number of sheets to be sent to Calcutta was materially increased. A number of plants were named for various correspondents, chief among whom were the Deputy Directors and Professor Ryson of the Presidency College. The valuable herbarium was kept in good condition during the year.

10. *Economic Botany*.—The Assistant, M.R.Ry. T. S. Venkataraman, accompanied the Acting Government Botanist on his Anamalai tour. He collected plants for the Reporter on Economic Products and made enquiries into gogu, agave and plantain fibres.

A fieldman was deputed to the Ganjam hills to obtain specimens of fibre known as "Labæ" (*Cryptolepis Buchananii*) and "Tamalæ" (*Dregea sp.*) for the Reporter on Economic Products, and spent two months on this work.

11. Upon the return of Dr. Barber to India the work in Economic Botany was pushed forward rapidly and the Assistant was kept hard at work for the rest of the year. His first duty, besides teaching, was the superintendence of the Botanic Garden. At the same time, as already mentioned, studies were commenced in the crossing of plants.

Four varieties of gogu raised from Vizagapatam seed were being grown in isolated plots on the farm by the Principal. These were closely studied and numerous crosses were effected. Altogether 90 flowers were crossed and the proceeds were planted in 11 plots in the Botanic Garden. These were reaped and a second series of crosses effected in which about 100 flowers were crossed. The plants were studied and drawn at five or six different stages and the results recorded.

The study of cottons was a more serious and difficult piece of work. About thirty varieties were collected and sown. In these plots some 400 flowers were crossed and 600 self-fertilised, most mornings and evenings being spent in the garden. Careful studies of the plants were made at different stages of growth and herbarium specimens added to the economic collection. Drawings and paintings were made of all the chief varieties and numerous seed and kappas analyses were made. The latter work was chiefly done by the Government Botanist who also studied the crops at Hagari, Bellary and Nandyal. A number of natural crosses were noted in the fields, marked and examined.

With the idea of possible improvements in the ground-nut crop a study was made of the so-called cleistogamic flowers and the natural mode of fertilisation. About 100 flowers were fertilised artificially, and the resulting fruits will be sown in the next experiment.

The teaching work of the Economic Assistant has been reported elsewhere. About 87 classes were held during the year.

12. *Mycology*.—The Assistant in Mycology, M.R.Ry. S. Sundararaman, continued to be on special duty in the Godavari district, investigating the palm disease, until 19th October. He was then recalled to Madras and on 15th November he was sent to Pusa for a two years' course of training under the Imperial Mycologist.

13. *Entomology*.—Work in this section was continued on the lines previously laid down. The following insects received special attention:—

The paddy stem-borer (*Sechenobius bipunctifer*), its sexual characters and habits.

A paddy seedling pest from Malabar (*Acylolepis chrysographella*).

A cocoanut pest from Cochin (*Parasa lepida*).

The natural enemies of the green scale (*Lecanium viride*) in the coffee plantations in the Nilgiris.

A pepper berry borer (a chrysomelid beetle) at Taliparamba.

A hairy caterpillar (*Cretonotus albistriga*) on cumbu in South Arcot.

14. The First Assistant, M.R.Ry. T. V. Ramakrishna Aiyar, had regular touring until July when he was transferred to Coimbatore to take charge of the teaching. He was 84 days on tour. Before his transfer he visited North Malabar, Lacavaram in the Kistna district, Bangalore in company with the Second Imperial Entomologist and the Government Entomologist of New South Wales, and the Ellore Cattle Show. During the Michaelmas and Christmas vacations he visited Nandyal, Bezvada and Samalkota farms.

15. The Second Assistant, M.R.Ry. Y. Ramachandra Rao, was 213 days on tour. He devoted the first two months of the year to the study of the paddy stem-borer at Hagari. He visited Palur, Cochin, Panikuppan in South Arcot, Taliparamba and, on two occasions, the Nilgiris in connection with tea and coffee diseases.

16. Three demonstrations in Entomology were given at shows during the year. The First Assistant was present at the Ellore Cattle Show and demonstrated the chief agricultural pests. At the Tinnevely Teachers' Exhibition a set of coloured plates with descriptions in English and Tamil was exhibited. At the Agricultural Show at Arni an important series of common pests

was displayed, paintings with descriptive letterpress exhibited and the most up-to-date remedies and instruments demonstrated. A fieldman was in charge of the exhibit during the whole of the show.

17. The entomological collections were constantly overhauled, new material was added and some new and interesting pests noted. Numerous small sets of insects were forwarded to the Imperial Entomologist. All reports, after perusal by the Government Botanist, were sent on to the Imperial Entomologist, whose help during the year has been invaluable.

18. The two entomological assistants went to Pusa in March to attend the annual gathering of Provincial assistants in this subject. They also received instruction in sericulture, cattle pests, lac cultivation and bee-keeping.

The teaching in entomology has been reported elsewhere. About 30 classes were held during the year.

19. The work of the artist has been on the whole satisfactory. He was deputed to Pusa for three months to undergo training in painting insects under the Imperial Entomologist. Upon his return he painted seven plates of insects in the collection. Three plates were prepared of plants attacked by insects and the chief varieties of cotton in the garden were painted.

COIMBATORE.
Dated 28th May 1909.

C. A. BARBER,
Government Botanist.

APPENDIX IV.

REPORT OF THE AGRICULTURAL CHEMIST FOR THE YEAR 1908-1909.

In submitting this the first annual report of the Agricultural Chemist, it is necessary to preface it with a historical account of this section of the Department of Agriculture so as to bring the whole up to date.

2. The Agricultural Chemist arrived in Bombay on November 14th, 1906, and reported himself in Madras on the 20th November 1906, when, as no laboratory was available, he was transferred to the Imperial Agricultural Research Institute at Pusa. The whole of the time spent at Pusa was given to the study of the methods of analysis in use there and the opportunity was taken to analyse several kinds of Madras soils. The Agricultural Conference held at Cawnpore in February 1907 was attended by the Agricultural Chemist.

In May 1907 the Agricultural Chemist returned to Madras and was placed in possession of a temporary laboratory at the College of Agriculture, Saidapet, and there he was joined by his assistant M.R.Ry. P. A. Subrahmanya Aiyar, B.A., who had previously been undergoing training at Pusa for a period of one year and four months.

Chiefly through lack of suitable apparatus and chemicals the laboratories at Saidapet were unsuited for carrying out much analytical work and in consequence the Agricultural Chemist spent much time in drafting out a course of lectures and practical work for the future students of the Agricultural College at Coimbatore. At this time it was understood that the course in chemistry would extend over three years, but since then the time allotted has been curtailed and it has since become necessary to redraft this work.

3. On December 27th, 1907, the office of the Agricultural Chemist was transferred to Coimbatore and as some of the apparatus ordered for a temporary laboratory was received early in 1908, it was found possible to commence work in the bungalow constructed for the Government Botanist who was absent on leave.

The staff was strengthened on 6th March 1908 by the engagement of M.R.Ry. M. Parameswara Aiyar Avargal as Second Assistant and this enabled the Agricultural Chemist to undertake the analysis of sugarcane at Taliparamba and Samalkota.

4. Notwithstanding the inconveniences attached to the Saidapet laboratory it was found possible to carry out several simple investigations:—

(a) *Saline soils*.—Samples of saline soils and sub-soils were taken from the Sivaganga estate and carefully analysed. As this land had been under experimental cultivation for many years the variation in the amount and composition of the saline salts were of great interest.

(b) *River silts*.—Samples of black and red silts brought down by the Hagari river were collected and examined both chemically and physically. The results showed that the black silt was identical in every respect with the black cotton soil around Hagari, but that the red silt was very different, and probably would have the effect of increasing the fertility of soil to which it was applied in quantity.

(c) *The effect of wet cultivation methods on soil*.—Samples of soil taken from various paddy fields in a very circumscribed area were analysed. The fields had been under wet cultivation for periods varying from two to more than a hundred years and as the soil of this area is remarkably uniform in character it was possible to get a fair comparison between the various samples. The results were embodied in a report submitted to the Director of Agriculture and it is hoped to carry on the investigation as soon as opportunity occurs.

(d) *The mechanical analysis of soils*.—A method of analysis was worked out which could be applied uniformly to all Madras soils.

(e) During the year ending 31st March 1908 the following analyses were made and reported upon:—

Soils	16
Manures	27
River silts	13
Saline soils	9
Sugarcane and cane products	48
Ground-nuts	32
Oil seeds	3
Miscellaneous	1
Total	149

5. *Tours*.—From May 1907 to 31st March 1908, the Agricultural Chemist was on tour for 32 days and the members of his staff for 18 days.

1908-1909.

6. During the whole of the period under review the work was carried on in temporary quarters at first in the Government Botanist's bungalow and after his return from leave in the rest-house. The new laboratories were handed over on 23rd March 1909 and by the end of that month most of the apparatus and chemicals had been removed into it.

Several changes occurred on the staff. M.R.Ry. M. Parameswara Aiyar Avargal left on the 30th September 1908 to take up an appointment as analyst at the "King Institute", Guindy, and much difficulty was experienced in filling the vacancy as time could not be spared for the training of a man who had no knowledge of the rudiments of agricultural analysis. Finally choice was made of M.R.Ry. K. Krishnamurti Row, an Assistant Manager on the Central Farm and an old student of Saidapet Agricultural College, who was appointed on probation on 23rd December 1908.

M.R.Ry. M. R. Ramaswami Sivan Avargal, B.A., the Chemical Assistant at Saidapet, was appointed to the post of First Assistant and his duties are solely connected with the teaching of the students.

The staff as at present constituted is as follows:—

Agricultural Chemist	W. H. Harrison, Esq., M. Sc.
First Assistant	M. R. Ry. Ramaswami Sivan, B.A.
Second	P. A. Subrahmanya Aiyar, B.A.
Third	K. Krishnamurti Row.
Head Clerk	P. A. Ragunathaswami Aiyangar.
Second Clerk and Storekeeper	K. S. Subrahmanyam.

7. During the year the following samples were analysed:—

Saline soils	21
Poonacs	10
Sugar canes and sugar products	25
Fodders and grasses	37
Manurial earths	15
Soils	15
Fish manures	4
Farm-yard manures	11
Miscellaneous manures	7
Ground-nuts	1
Miscellaneous	6
Total	162

8. The analytical work requiring special mention is as follows:—

(a) *Saline soils*.—In conjunction with the Deputy Director of Agriculture, Southern Division, Trichinopoly, a plot of saline soil in the Periyar Delta was thoroughly sampled and upon the results of the analyses proposals were made for dealing with the problem in the district.

Samples of saline soils were received from the Director of Agriculture from the land under the tank at Ponnalur and a report on the analytical features was submitted in due course.

(b) *Pati Mannu*.—The Director of Agriculture having drawn the attention of the Agricultural Chemist to the scarcity of this manurial earth and the consequent lack of manure in the Kistna Delta, an assistant was deputed to tour the district to obtain a series of samples of the earth and to get full information concerning it. From the information received and analytical data obtained from the samples, two different types of mixed manures were made and distributed by the Deputy Director of Agriculture, Northern Division, to selected ryots in the delta. These plots were inspected by the Agricultural Chemist just before harvesting and in March 1909 he toured through the delta in company with the Deputy Director of Agriculture, Northern Division, in order to obtain a piece of land suitable for experiments. In the ensuing year it is proposed to institute experiments having as their object the production of a cheap and efficient substitute for Pati Mannu. Mixed manures will also be distributed to a few selected ryots.

(c) *Fodder grasses*.—The nutritive values of a number of grasses at different stages of their growth were determined. These grasses were supplied by the Acting Government Botanist in May 1908.

(d) *Ground-nuts and ground-nut soils*.—The Manager of the Taliparamba Farm, when touring in South Canara, noticed at certain places that the ground-nuts, although large and apparently normal, were devoid of kernels. Samples of the nuts and soils were forwarded and the latter upon examination was found to practically contain no lime. As the soil in other respects was normal it is probable that this deficiency of lime is the cause of the non-formation of kernels and it is proposed to test this when a pot-culture house is available.

(e) *Central Farm soils*.—All the fields of this farm have now been sampled and a little analytical work upon them has been carried out. This will be continued during the ensuing year whenever other work permits.

(f) *Investigations*.—The temporary laboratories were small and offered few conveniences for such work and the staff was fully occupied with other work. Notwithstanding this, preliminary work was carried out on the following lines:—

- (1) The character and composition of South Indian black cotton soils.
- (2) The bacterial reactions of Coimbatore soils.
- (3) The fermentation changes occurring in soils under wet cultivation.
- (4) The role played by soil humus under South Indian climatic conditions.

These investigations will be continued during the ensuing year.

Teaching Section.

9. A separate report will be submitted in conjunction with the Principal's report upon the working of the Agricultural College, Coimbatore, but it is necessary to refer to the subject in this report as much time was given by the Agricultural Chemist to the drafting of a properly co-ordinated course in general and agricultural chemistry suited to students who are not making a speciality of the subject. The whole endeavour has been to frame a course which will give the students a sufficient grounding in the principles of chemistry and agricultural chemistry to intelligently follow future lectures in those subjects into which chemistry enters. In practical work the analytical processes have been reduced to a minimum sufficient to enable the students to work out experimentally such problems as the conditions affecting nitrification and de-nitrification, the retention and non-retention of manurial constituents by soil, etc.

10. *Tours*.—During the year 1908-1909 the Agricultural Chemist was on tour for 66 days and the members of his staff for 68 days.

COIMBATORE.
24th April 1909.

W. H. HARRISON,
Agricultural Chemist.

II

ANNUAL REPORT OF THE SUPERINTENDENT, CIVIL VETERINARY DEPARTMENT.

I

I have the honour to submit the Annual Report of the Civil Veterinary Department for the year 1908-1909.

2. The Office of the Superintendent, Civil Veterinary Department, was held by me throughout the year, and that of the Principal of the Madras Veterinary College until 1st February 1909, when it was handed over to Mr. D. Aitchison, i.c.v.d. (*vide* Board's Proceedings, No. 270, *Mis.*, dated 25th January 1909). In addition to my work at head-quarters I spent 130 days in camp, and travelled 13,035 miles by rail and 392 miles by road, paid three visits to the Veterinary Hospital at Coimbatore, two to those at Madura, Trichinopoly and Vizagapatam and one to those at Tiruvannamalai, Cocanada, Pithapuram and Vizianagram. I attended the cattle shows held at Madura, Tiruppur, Parvatipuram, Berhampur, Pithapuram, Koilpatti, Ongole and Ellore. I visited Kodaikanal on three occasions, and inspected the progress of work in connection with the Rinderpest experiment carried on by Mr. D. Aitchison, i.c.v.d. These experiments proved that the hill cattle experimented upon were partially immune to the disease, and were not sufficiently susceptible for the purposes for which it was proposed to establish a manufacturing laboratory. The results were reported to the Board. During the year under report six new veterinary hospitals were opened and four more (*viz.*) at Sivaganga in Madura district, Tinnevely Bridge in Tinnevely district, Ongole and Rapur in Nellore district will soon be started, the necessary buildings having almost been completed. I had occasion to inspect the Quarantine Depot at Tuticorin four times. After inspection of cattle at Virudupatti and Méttupalaiyam, I selected two stud bulls in Mysore for the use of Uganda estate.

3. Mr. D. Aitchison, i.c.v.d., was a probationer till 1st February 1909 when he was appointed Second Superintendent and Principal of Madras Veterinary College. He spent six months in Kodaikanal in connection with the Rinderpest experiments referred to above, one month in the inspection of Government stallions stationed at Coimbatore, Satyamangalam, Tiruppur, Kangayam, Palayakotta, Dhárapuram, Pollachi, Hosur, Kollegal, Veda sandur, Hosur, Krishnagiri and Madura and he also assisted me at the cattle show held at Berhampur. As was expected, the department was further developed by the entertainment of eighteen more Veterinary Assistants and one more Veterinary Inspector, and by the starting of six veterinary hospitals. It is however very necessary that there should be at least three Veterinary Inspectors, as the inoculation work is being conducted all over the Presidency.

II.—VETERINARY COLLEGE.

4. The only change in the staff of the Madras Veterinary College during the year was the appointment of Mr. D. Aitchison, i.c.v.d., who assumed charge on the 1st February 1909 as a full-timed Principal, in accordance with the recommendation of the Board of Examiners in their report, dated 19th December 1908.

5. The numbers of students on the rolls in January 1908 (*i.e.*) at the commencement of the calendar year were six in class A (first year's class), 21 in class B (second year's class) and 24 in class C (third year's class). The numbers were augmented in the beginning of the second session, *viz.*, 24 in class A, 21 in class B and 29 in class C. Of these 15, 20 and 29 continued till the end of the year and appeared before the Board of Examiners.

6. As this will be my last opportunity of reporting upon the working of the Madras Veterinary College, I beg to submit below a tabular statement showing the number and percentage of passes of each class since the opening of the college.

	Class A.			Class B.			Class C.		
	Number presented.	Number passed.	Percentage passed.	Number presented.	Number passed.	Percentage passed.	Number presented.	Number passed.	Percentage passed.
1906	28	19	67.9	26	15	60.0	21	12	57.1
1907	19	16	84.2	24	20	83.3	23	17	73.9
1908	16	11	73.3	20	16	80.0	29	24	82.8

7. It will be seen that the percentage in class C during the year compares favourably with that of the previous year. But in the case of classes A and B the Board of Examiners made the following remarks: "We regret to notice a falling off both in numbers and quality of the students in A and B especially in A and we do not consider that the material in this class can in any way compare with that in class C." The poor material referred to in class A is evidently due to want of sufficient inducement to passed men to seek admission into the college and the consequent enlistment of unpassed men.

8. I am pleased to be able to state that the attendance and discipline of students in all classes were satisfactory. The final year students were afforded frequent opportunities for making surgical operations and doing other practical work in the pharmacy, and students of all classes were required to attend to the treatment of sick animals under the superintendence of the senior students and lecturers.

9. During the year under report the hospital attached to the college has continued in popularity. The marked increase in the number of cases admitted, in the number of operations performed and the amount of fees realised during the year as compared with the previous year is strong evidence in point.

10. The tabulated statement below will give an idea of the progress made since the opening of the college:—

Year.	Total number of patients treated.	Receipts.		
		RS.	A.	P.
1903-1904 from October	778	2,238	4	6
1904-1905	1,981	6,364	12	1
1905-1906	2,213	7,091	13	1
1906-1907	2,249	6,846	7	10
1907-1908	2,313	8,438	0	0
1908-1909	2,873	11,462	0	0

The number of operations performed during the year is shown below:—

Animals.	In-patients.		Out-patients.	
Horses	258		100	
Dogs and others	112		288	
Bovines	114		48	

11. With a view to relieve the Resident Surgeon from a portion of his heavy work, Veterinary Assistant A. Douglas was appointed as Hospital Surgeon to assist him in the discharge of his hospital duties.

12. During the year, some valuable additions were made to the library and some beautiful veterinary specimens were contributed to the Museum.

13. The diplomas and prizes were distributed to veterinary graduates by the Hon'ble Mr. M. Hammick, C.S.I., C.I.E., I.C.S., who kindly consented to preside on the occasion. The cost of prizes was met by the handsome and voluntary donations received from certain private gentlemen and ladies, some of whom have evinced keen interest in veterinary matters.

14. Several students manifested special aptitude for gymnastic exercises and sports, and some won prizes in inter-collegiate sports.

15. The hostel attached to the college had the full complement of 23 students throughout the year, but further accommodation for students who were anxious to live in residence is urgently needed. The health of the students was good throughout the year. Two small plots afforded a supply of guinea grass and lucerne for the in-patients of the hospital and was of great benefit to the sick and delicate animals.

III (a) - CATTLE DISEASE.

16. During the year under review the total loss of cattle from disease was 216,451 and from other causes 13,063 against 152,534 and 14,552 respectively shown in the previous year, but I do not consider that these figures are at all to be relied upon. A glance at the comparative statement shows that the number of deaths have steadily increased since 1904. This can only be accounted for by the fact that the village officials take more pains to report deaths of cattle. It is frequently reported by Veterinary Assistants that cattle death registers have not been kept up, and as greater attention has recently been directed to cattle epidemics, more reports have been submitted; but it will be a long time before we can rely with any certainty upon accurate reports being sent in. The loss was particularly heavy under Rinderpest, Anthrax, Epizootic Aphtha and unspecified diseases. Rinderpest alone contributed 65.2 per cent. of the total mortality. On the other hand, there was a falling off under the heading of Malignant Sore-throat and Black Quarter.

17. Outbreaks of rinderpest were of very virulent type in South Arcot, Madurai, North Arcot, Coimbatore, Tinnevely and Chingleput districts, and caused deaths of 23,393, 23,049, 15,695, 13,519, 11,715 and 10,242 animals respectively. The total mortality due to this outbreak was 149,666 against 97,214 in the previous year. With a view to curb it by means of preventive inoculation and treatment, a Veterinary Assistant was permanently posted to each of these districts. Anthrax, epizootic aphtha and unspecified diseases were responsible for the deaths of 12,511, 1,575 and 38,100 cattle, respectively. To criminal poisoning were attributed 26 deaths, and to wild animals 11,412.

18. Preventive inoculation against rinderpest was undertaken in 22 districts and that against anthrax and hæmorrhagic septicæmia in five and two districts, respectively. Fifty thousand four hundred and eighty-seven head of cattle were inoculated against rinderpest, 2,353 against anthrax and 477 against hæmorrhagic Septicæmia as against 28,914, 8,461, 1,179 of the last year.

19. The total loss among horses and ponies was 288 from diseases, 10 from snake-bite and 109 from wild animals.

20. In this Presidency, inoculation as a preventive measure against rinderpest has come to be generally recognised as a useful prophylactic, and this is shown by the increasing number of animals which owners have voluntarily permitted or asked to be inoculated. At first the greatest obstruction was experienced, but this stage may be said to have definitely passed. The following figures will show the steady increase of inoculation work, with the exception of the year 1906-1907, during which year I was on leave in England for six months.

Year.	Rinder-pest.	Anthrax.	Hæmorrhagic septicæmia.	Total.
1902-1903	377			377
1903-1904	2,805	6,329		9,134
1904-1905	8,251	12,437		20,688
1905-1906	12,689	19,631	833	33,153
1906-1907	11,043	8,856	679	20,578
1907-1908	28,914	8,461	1,179	38,554
1908-1909	50,487	2,353	477	53,317

21. During the year the Imperial Bacteriologist has devised a new process by which the special vaccine for charbon symptomatique or quarter ill may be inoculated into animals, and this department has indented upon the Muktesar Laboratory for 5,000 pillules and five sets of instruments specially designed for inserting these hypodermically.

III (b)—VETERINARY HOSPITALS.

22. At the commencement of the year there were eleven hospitals at work and during the year six new ones have been opened, one in each of the following towns:—Cocanada, Rajahmundry, Trichur, Ellore, Tiruvannamalai and Tanjore.

Of these hospitals, four located in Madras, Saidapet, Rajahmundry and Ellore are maintained by Government; eight (viz.) in Madura, Tanjore, Trichinopoly, Vellore, Coimbatore, Vizagapatam, Cocanada and Tiruvannamalai are supported by, and are under the management of, the local Boards concerned, four in Vizianagaram, Pithapuram, Trichur and Pudukkottai are carried on by their respective Rajahs and one in Bellary is carried on under the auspices of the Society for the Prevention of Cruelty to Animals.

23. The total number of in-patients and out-patients treated in these institutions is shown in statement No. V, and the amount of Receipts and Expenditure in statement No. VI. It will be seen from these statements that the total number of animals treated in all these institutions, with the exception of Pudukkottai and Trichur for which figures are not available, is 35,231 and the average patients for each institution is 2,349 or about 7 patients per diem. As compared with the previous year, there was an increase in the number of attendances in almost all the hospitals, and this may be particularly noticed in those of Madras, Trichinopoly, Vellore and Coimbatore. It may thus be inferred that the benefit of Veterinary Institutions is becoming more widely recognised and popular.

IV (a)—PONY BREEDING OPERATIONS.

24. At the commencement of the year there were 13 stallions at work, "Ophir" having been destroyed in January 1908. They were all located in the Coimbatore, Salem, and Madura districts as in the previous year.

25. Eight stallions were stationed in the Coimbatore district. Of these, Hector which was located in Kollegal covered only 3 mares up to November 1908. He was then attacked with lameness and was brought down to Madras for treatment. As the disease was found incurable, he was destroyed in December 1908.

26. "Junna" and "Punch" were stationed at Kangayam throughout the year, and covered 23 and 28 mares respectively as against 17 and 27 during the previous year.

27. "Ali" was at Coimbatore for the most part of the year and covered only 8 mares against 9 in the previous year.

28. "Rahiman," "Turk" and "Mustapha," whose services were required in Pollachi, Satyamangalam, and Tiruppur, covered 25, 10 and 22 mares respectively against 17, 17 and 21 during the previous year.

29. "Ahmed," who was stationed at Dhárápuram, had 34 coverings to his credit against 33 in the previous year and thus maintained his reputation for the highest number of coverings in the Coimbatore district.

30. In the Salem district, stallions "Carbon" and "Selim" stationed in Harur and Krishnagiri, respectively, served fewer mares while "Sunshine" showed a decided improvement over last year covering, viz., 29 against 21.

31. In the Madura district "Sheik" located at the Veterinary Hospital was not at all in favour, and I would recommend that he be disposed of.

32. "Samawy's" services were in great requisition both at Palni and Vedsandur where he served 36 mares against 35 in the previous year.

33. The total number of coverings made by the 8 stallions in the Coimbatore district was 153 against 186 in the previous year. The decrease is probably due to loss of stallion power caused by the death of "Ophir" and the stallion "Hector" becoming unserviceable in the latter portion of the year.

34. In the Salem district the total number of coverings was 47, i.e., 10 less than in the previous year. This was due to the fact that only 3 stallions worked in the district during the year, while 4 worked last year. In the Madura district, the total coverings were 39 against 41.

35. On the whole, there were 239 coverings against 284 in the previous year, which gives an average of 17.5 per stallion approximately against 21 last year.

36. *Results of coverings.*—Of 284 coverings made during the previous year in the Coimbatore, Salem and Madura districts, results of coverings have been reported only in 185 cases, although the certificates of coverings were returned in time to the Tahsildars concerned for report. From the reports received, it would seem that 30 foaled, 5 aborted, 47 were in foal, 78 proved empty, 10 doubtful, 5 foals were dropped dead, 1 mare died, 9 were sold or their whereabouts not traceable.

37. *Castrations.*—These operations were carried on in the districts of Coimbatore, Salem and Madura by the three Salustries, Abdul Sathar, Sheik Ahmed and Abdul Rahiman. Two ponies and 161 bulls were castrated in Dhárápuram and 28 ponies and 15 bulls in Kollegal taluks in the Coimbatore district. Eighty-one bulls were castrated in Hosur in Salem district and 4 ponies and 5 bulls in Madura. The total number of the operations performed during the year was 296 against 301 in the previous year.

38. *Cattle-breeding.*—At the commencement of the year, there were 19 bulls employed at stud, of which 8 were purchased only in March 1908, at the Ongole cattle show. They were distributed among 5 districts as shown below:—

- 3 in Tinnevely.
- 1 in Madura.
- 2 in Madras (Veterinary College)
- 11 in Guntur.
- and 2 in Vizagapatam.

One of the bulls No. 11 stationed in Tinnevely district died during the year. Arrangements are being made for recording the number of stock obtained by the remaining bulls in the mufassal. For the 2 bulls located in the Madras Veterinary College a register of coverings has been maintained and it would seem therefrom that they covered 126 cows during the year. It is hoped that the results of these coverings may be obtained for next year reports.

IV (b)—CATTLE FAIRS AND SHOWS.

39. A number of cattle fairs were held during the year in several districts. Only a few important fairs noted below were Veterinary Assistants deputed to enforce the Cattle Diseases Act 11 of 1866:—

1. Sivalaperi in Tinnevely district.
2. Kanniseri "
3. Thimmarajapuram "
4. Kazhugumalai "
5. Tiruchendur "
6. Melmalayanur in South Arcot district.
7. Subrahmaniyapuram in South Canara district.

According to the reports submitted by the Veterinary Assistants deputed to watch these fairs, about 68,950 animals were gathered and exhibited for sale, and it is satisfactory to note that no epidemic broke out amongst them. Occasion was nevertheless taken to show to the people assembled the method and benefits of preventive inoculation.

40. As full reports have already been submitted concerning the several cattle shows, I now only propose to deal briefly with each:—

Berhanpur Cattle show (Ganjani) was held on the 27th, 28th and 29th January 1909. These shows are now held annually and have become popular with the cultivating classes. The number of entries was 537 against 244 shown in the previous year, and the great feature of this fair was the large number of pairs both of bullocks and buffaloes. The Government medal was awarded to the best Brahmini bull.

41. *Pithapuram Cattle show* was held on the 6th, 7th and 8th March 1909. There were 413 exhibits. The cows exhibited showed much quality and were mainly of the Ongole type. Eighteen Brahmini bulls were brought in for exhibition,

and it is to be hoped that many of them may be exchanged for better ones. There was also a large show of poultry, chiefly consisting of game fowl. The Raja of Pithapuram takes great interest in this show and is also a large exhibitor.

42. *Vizagapatam District Cattle show*.—The show which is held annually at different centres in the Vizagapatam district, was held this year at Párvatipur. The show was a most popular one, and the number of animals exhibited, (viz.), 517 was very satisfactory. The cows were of good quality, but the feature of the show was the magnificent lot of pairs of bullocks and buffaloes. Some of the buffaloes were over a hundred inches in girth. One of the finest breeds of buffaloes in India is raised in this neighbourhood.

43. *Ellore Cattle show*.—It was held in April 1908 and was an improvement on that of last year. In all 290 animals were exhibited, and the most notable feature was the large number of cows exhibited. This may be explained by the fact that cattle dealers from Ongole brought a large number in the hope of making good sales and securing some of the prize money. The District Board, however, were sufficiently progressive as to buy two bulls for the members of their Agricultural Association.

44. *Madura Cattle show* was held on the 17th and 18th April 1908 in connection with the great Chitral festival. It is computed that upwards of 10,000 head of cattle were present, but only a certain number were selected from them for exhibition. The only animals worthy of note were the pairs of the Mysore type. There were large numbers of the small Pulikolam breed shown from which are selected the celebrated "Jellikut bulls," used for "baiting," a sport much in vogue in the Madura district. The cows exhibited were beneath contempt.

45. *Tiruppur Cattle and Pony show*.—This old show was resuscitated after being for several years in abeyance. There was a very large number of exhibits comprising the Kangayam breed of cattle and those of the Mysore type which are largely bred in the Bagor Hills in the north of Coimbatore. But the feature of the show was the large—for Madras—number of ponies exhibited which were largely the produce of the Government pony stallions.

46. *Ongole Cattle show*.—The date of the holding of this celebrated show was postponed owing to an outbreak of foot and mouth disease in the neighbourhood, but as it was originally fixed for the early part of March it is included in this year's report. The number of animals exhibited was somewhat less than formerly—probably owing to the show being postponed a month and possibly due to the fear of contagious disease. The quality, however, left nothing to be desired, and the hearts of the breeders were gladdened by the presence of large buyers.

Philippines—Government	12
Java—Government	140
Brazil	320

Report says that for the above alone Rs. 60,000 exchanged hands. I trust that every encouragement may be given to breeders in this locality, and I hope that they will not sell their best cows but keep them for breeding.

47. *Koilkatti show*.—The Zamindar of Ettayapuram held an Agricultural exhibition at which prizes for cattle and ponies were given, but the numbers exhibited were very small and of so many types that it cannot be considered to be at all satisfactory from a breeder's point of view.

V.—VETERINARY ASSISTANTS.

48. The main duty of Veterinary Assistants consisted in attending outbreaks of cattle disease, in instructing the ryots concerning the utility of preventive inoculation, and in carrying on by means of persuasion the work of inoculation in the villages affected by epidemics. There were 608 outbreaks during the year. The districts that suffered most were South Arcot, Madura, North Arcot, Coimbatore, Tinnevely and Chingleput to each of which a Veterinary Assistant was permanently posted. Other districts, particularly Tanjore, Salem, Malabar, the Nilgiris, Guntur and Cuddapah, submitted direct reports of outbreaks, when veterinary aid was at once despatched. The difficulties which this department had at first to contend with were

very considerable, and it was with the greatest caution that we had to proceed using infinite tact. As this is the last annual report which I shall write, I take this opportunity of stating that the present success of the inoculation operations is mainly owing to the tact displayed by Veterinary Inspector V. P. Subrahmaniamudaliar and Mr. Sampath Aiyangar, now second lecturer in the Madras Veterinary College, who carried out the first inoculations.

49. During the year there was only one Veterinary Inspector working in the whole Presidency.

(1) Veterinary Inspector V. P. Subrahmaniamudaliar in addition to his work of inspection inoculated against attacks of rinderpest 220 cattle of the Corporation of Madras, attended the cattle fair at Sivalaperi, and the cattle shows held at Berhampur, Párvatipuram, Pithapuram, Ellore, Tiruppur and Madura. He also delivered in English a very interesting and instructive lecture on the improvement of local cattle at the Berhampur cattle show.

(2) Senior Veterinary Assistant M. Hassen Ali Sahib, whose services had been lent to the Corporation of Madras, was relieved on 8th March 1909, when he rejoined his work in the Civil Veterinary Department. He has since been promoted to the post of Veterinary Inspector, and he attended cattle shows held at Koilkatti in the Tinnevely district and Ellore in the Kistna district.

(3) Veterinary Assistant S. C. Jeyasing Raj assisted Mr. D. Aitchison, I.C.V.D., in carrying out rinderpest experiments in Kodaikámal for three months, from May to July. He was placed in temporary charge of Veterinary Hospitals at Bellary and Coimbatore during the absence of the permanent incumbents on privilege and casual leave. He inoculated 930 cattle and 58 sheep in Bellary, Anantapur, Salem, Coimbatore and Malabar. He was on privilege leave for one month.

(4) Veterinary Assistant M. P. Kanniah Nayudu assisted Mr. Aitchison, I.C.V.D., for three months on the Kodaikámal Hills in carrying out the rinderpest experiments and spent one month in medically attending No. 27 stallion "Samawy" at Vedaśandur. He took leave for two months on loss of pay. He inoculated 4,503 head of cattle against rinderpest.

(5) Veterinary Assistant A. Rajappa worked in North Arcot, Anantapur, Kistna, Górávari and Ganjam districts. He inoculated 2,522 head of cattle against rinderpest, treated the Government elephants for about five months and attended the cattle show held at Berhampur.

(6) Veterinary Assistant W. A. Douglas was attached to the Madras Veterinary Hospital for seven months and was in charge of the Cocanada Veterinary Hospital for the remainder of the year. He inoculated 1,075 head of contact cattle against rinderpest both in the city of Madras and in the district of Górávari. He took no leave during the year.

(7) Veterinary Assistant V. Aiyaswami Pillai was on inoculation duty in the districts of Madura, Salem and Tinnevely and attended cattle fairs at Timmarajapuram, Kazhugamalai and Tiruchendur in the Tinnevely district. He inoculated 5,145 animals against rinderpest and treated 27 sick animals. He had no leave during the year.

(8) Veterinary Assistant William J. D'Costa was working at the Veterinary Hospital, Madras, for seven months. He inoculated 836 head of cattle against rinderpest in the districts of Trichinopoly, Coimbatore, Malabar and Chingleput. He castrated two ponies and treated 200 sick patients. He availed himself of one month's privilege leave.

(9) Veterinary Assistant K. Doraisawmy Nayudu inoculated 5,287 head of cattle in Bellary, Guntur and Nellore districts. He also treated 219 animals suffering from wounds, worm in the eye, fever, colic and tumours and castrated one pony. He has taken no leave.

(10) Veterinary Assistant P. Velayudha Mudaliyar worked in Bellary, Vizagapatam, Chingleput, Salem and Madura districts and inoculated in all 1,230 animals against rinderpest. He also assisted Mr. D. Aitchison, I.C.V.D., in conducting rinderpest experiments at Kodaikámal. He took privilege leave for one month.

(11) Veterinary Assistant P. Veerabhadhrudu inoculated 2,005 cattle against rinderpest in the districts of Ganjam, Cuddapah, Guntur, Coimbatore, South Arcot and the Nilgiris. He was on sick leave for 1½ months, and on leave without allowances for two months.

(12) Veterinary Assistant A. Ramachandra Aiyar worked in Chingleput, Kurnool, Coimbatore, Malabar, Trichinopoly, North Arcot, South Arcot and South Canara, and inoculated 3,355 cattle against rinderpest. He treated 317 sick animals. He took leave on loss of pay for one month.

(13) Veterinary Assistant M. Abdul Gaffar inoculated in the Chingleput district 1,177 cattle against anthrax, 1,176 cattle against rinderpest and in Madura district 507 cattle against rinderpest, making up a total of 2,860 head of cattle. He was subsequently placed in charge of Ellore Veterinary Hospital.

(14) Veterinary Assistant A. Ramalinga Mudaliyar was on inoculation duty for about two months in the beginning of the official year and inoculated 1,110 head of cattle against rinderpest in Tanjore and Tinnevely districts. He was then ordered to take charge of Vellore Hospital and act for V. G. Narasimha Chari, who went on leave on medical certificate.

(15) Veterinary Assistant C. Brown worked in South Arcot, Tanjore, Salem, North Arcot and Coimbatore districts, and inoculated 3,056 animals against rinderpest. He was placed in charge of the Rajahmundry Veterinary Hospital from 5th October 1908.

(16) Veterinary Assistant S. Sankaramurthia Pillai inoculated 243 animals belonging to the Corporation of Madras, attended the Ellore cattle show, assisted the Resident Surgeon in the Madras Veterinary College Hospital for a period of two months. He also rendered valuable assistance to Mr. D. Aitchison, I.C.V.D., in carrying out rinderpest experiments to Kodaikanal, and treated the Government stallions at Kollegal and Kangayam which were then reported to be sick. He was then appointed to take charge of the Veterinary Hospital at Vizianagram.

(17) Veterinary Assistant S. Kesayulu Nayudu inoculated 3,378 head of cattle against rinderpest in Guntur, the Nilgiris, Coimbatore and Chingleput districts. He was on leave on loss of pay for three months.

The following Veterinary Assistants having qualified for the College diploma in December 1908 were entertained in the Madras Civil Veterinary Department from January 1909:—

(18) Veterinary Assistant V. M. Subbarama Aiyar inoculated 1,249 cattle against rinderpest in North Arcot district.

(19) Veterinary Assistant A. Castolino inoculated 83 cattle and treated four equines, seventeen bovines, and four dogs in South Canara district.

(20) Veterinary Assistant K. S. Natesa Aiyar inoculated 301 animals against rinderpest in Kurnool district.

(21) Veterinary Assistant M. Hussain Hazari worked in Chingleput district and inoculated 492 animals for rinderpest.

(22) Veterinary Assistant K. Seshagiri Rao attended the cattle show held at Ongole and inoculated in Guntur district 469 head of cattle and treated seven cattle for other diseases.

(23) Veterinary Assistant T. S. Alagappa Pillai worked in Tanjore and Tinnevely districts and inoculated 1,889 cattle.

(24) Veterinary Assistant S. S. Theetharappa Mudaliyar inoculated 595 cattle against rinderpest in the Tinnevely district. He treated two cases of rinderpest successfully.

(25) Veterinary Assistant P. Chidambara Nadar worked in the Trichinopoly and Coimbatore districts and inoculated 401 cattle for rinderpest.

(26) Veterinary Assistant V. R. Sangameswara Sastri inoculated 600 cattle in Trichinopoly and South Arcot districts.

(27) Veterinary Assistant C. Suryanarayanamurthi inoculated 640 cattle for rinderpest, and treated four cattle suffering from black quarter and thirteen suffering from rinderpest.

(28) Veterinary Assistant C. Venkatarathnam Chetti worked in Cuddapah district and inoculated 400 cattle against rinderpest.

(29) Veterinary Assistant M. James inoculated 138 head of cattle on the Nilgiris against rinderpest.

(30) Veterinary Assistant M. Thandeswara Aiyar attended the cattle fair at Melmalayanur in South Arcot district and treated nine animals. He was on leave on loss of pay for 14 days, inspected the mares covered by Government stallions stationed in the Madura district, and reported the results of coverings.

(31) Veterinary Assistant A. L. N. Somayajulu worked in Vizagapatam district and inoculated 334 cattle against rinderpest.

(32) Veterinary Assistant M. Audimula Mudaliar attended outbreaks of rinderpest, anthrax, and foot and mouth disease in the Chingleput district.

(33) Veterinary Assistant K. R. Krishna Aiyar worked in the Trichinopoly district and attended outbreaks.

(34) Veterinary Assistant V. Krishnamurthi inoculated 340 head of cattle belonging to the Corporation of Madras.

50. Ninety-two thousand doses of rinderpest serum were received from the Imperial Bacteriologist during the year.

W. D. GUNN, Lt.-Col.,
Superintendent, Civil Veterinary Department.

TABLE I.—Abstract showing main results of Veterinary Colleges and Schools during the year 1908-1909.

Veterinary College and Schools.	Name of course of instruction if more than one course followed.	Number of students.						Students admitted during the year classed by educational qualifications.			
		Admitted during the Collegiate year 1908.		Passed final examination in December 1908.	Failed to pass final examination in December 1908.	Remaining under instruction at the end of the year 1908.		Matriculated with higher qualifications.	Knowing English but not matriculated.	Knowing very little English.	
		Scholarship holders.	Others.			In ordinary course.	Instruction prolonged by reason of failure.				
1	2	3	4	5	6	7	8	9	10	11	
Veterinary College, Madras.	..	10	16	24	5	61	5	7	19	..	

Veterinary College and Schools.	Receipts.			Expenditure.			Employment of students passed out during three years preceding.					
	From fees.	From other sources.	Total.	Salaries of instructing staff.	Other expenses.	Total.	Total number passed.	In the service of local bodies or Government.	In the service of other bodies.	In private practice.	Number unemployed.	
	12	13	14	15	16	17	18	19	20	21	22	
Veterinary College, Madras.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	53	40	9	..	4
	11,462 12 2	..	11,462 12 2	7,452 2 10	3,410 (stipends).	10,862 2 10	53	40	9	..	..	4

* One Minor Zamindar of Sivagiri and three died.

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Table III.—Statement showing results of preventive inoculation during the year 1908-1909—*cont.*

TABLE IV.—Statement showing the number of animals treated and castrated by Veterinary Assistants and by Sanitaries on tour during the year 1908-1909.

[illegible]

Districts.	Name of disease, against which inoculation was carried out.	Method of inoculation followed.	Number of outbreaks in which inoculation was undertaken.	Number of animals which died in inoculated in course of outbreak.			Number of animals inoculated.			Number of animals which died after inoculation.		
1	2	3	4	Horses.	Bovines.	Others.	Horses.	Bovines.	Others.	Horses.	Bovines.	Others.
1. Ganjam	"Rinderpest."	By serum alone.	3	..	39	..	..	331	..	..	..	..
2. Vizagapatam			6	..	154	..	..	792	..	..	..	..
3. Gôdavari			2	..	97	..	..	338	..	..	..	..
4. Kistna			12	..	534	..	..	1,716	197	..	..	..
5. Guntôr			15	..	849	15	..	2,076	1,079	..	..	..
6. Nellore			66	..	1,726	..	..	4,047	695	..	1	..
7. Chingleput			9	..	8	..	..	2,009	..	..	..	..
8. Madras			36	..	1,419	9	..	1,708	66	..	..	..
9. North Arcot			69	..	1,721	..	..	3,150	147	..	1	..
10. Salem			21	..	184	..	..	1,575	..	..	5	..
11. Coimbatore			43	..	678	..	..	4,114	12	..	4	..
12. Trichinopoly			13	..	421	..	..	661	..	..	2	..
13. Tanjore			32	..	683	..	..	8,734	..	..	4	..
14. Madura			62	..	3,683	..	..	6,229	..	..	..	..
15. Tinnevely			43	..	1,315	..	..	6,188	..	..	..	..
16. Nilgiris			13	..	683	..	..	753	..	..	..	..
17. Bellary			11	..	804	..	..	2,726	30	..	1	..
18. Anantapur			52	..	1,360	..	..	2,595	4	..	9	..
19. Cuddapah			24	..	501	56	..	1,239	..	..	..	..
20. Kurnool			5	..	96	..	..	1,617	..	..	37	..
21. Malabar			44	..	1,531	..	..	83	..	..	..	..
22. South Canara			3	..	..	..	..	..	..	..	..	..
Total	..	..	574	..	18,996	80	..	48,257	2,230	..	64	..

TABLE V.—Statement showing the number of animals treated at Veterinary Hospitals during 1908-1909.

Province.	Number of veterinary dispensaries.	Number of Veterinary Assistants employed at dispensaries.	In-patients.												Discharged during the year.		
			Remaining on 1st April 1908.			Admitted during the year.			Total.								
			Horses.	Bovines.	Others.	Horses.	Bovines.	Others.	Horses.	Bovines.	Others.	Horses.	Bovines.	Others.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
Madras	1		25	22	125	500	260	157	625	291	582	599	259	569			
Saidapet	1		7	1	5	78	22	77	85	23	82	81	28	71			
Vellore	1		3	1	1	49	14	17	55	14	17	50	35	16			
Madura	1		3	1	1	59	14	17	66	28	14	61	27	14			
Trichinopoly	1		12	15	1	391	396	254	313	111	259	308	394	267			
Coimbatore	1		10	1	1	1	1	1	10	1	1	10	4	3			
Vizianagram	1		3	1	1	1	1	1	88	15	3	84	15	3			
Vizagapatam	1		10	1	1	1	1	1	37	29	60	34	25	58			
Pithapuram	1		1	1	1	1	1	1	1	1	1	1	1	1			
Bellary	1		1	1	1	10	18	110	101	229	111	100	225	112			
Rajamundry	1		1	1	1	1	1	1	1	1	1	1	1	1			
Cochin	1		1	1	1	1	1	1	1	1	1	1	1	1			
Elore	1		1	1	1	1	1	1	1	1	1	1	1	1			
Tiruvannamalai	1		1	1	1	1	1	1	1	6	3	1	6	3			
Tanjore	1		1	1	1	1	1	1	1	1	1	1	1	1			
Pudukkottai	1		1	1	1	1	1	1	1	1	1	1	1	1			
Trichur	1		1	1	1	1	1	1	1	1	1	1	1	1			
Total	17	21	74	59	148	1,311	1,025	997	1,388	1,085	1,146	1,332	1,016	1,114			

Province.	In-patients conf.	Balance on 31st March 1909	Out-patients.												Receipts.	Expenditure
			Number treated during the year.			Average daily attendance.			Total number of in- and out-patients treated during the year.							
			Horses.	Bovines.	Others.	Horses.	Bovines.	Others.	Horses.	Bovines.	Others.	Total.				
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Madras	2632	13	318	145	342	740	300	100	943	155	1,491	2,873	11,462	12	20,237	
Saidapet	4	11	206	175	226	646	110	638	285	198	308	1,091	566	2	969	
Vellore	5	4	183	181	213	1090	740	610	238	225	260	723	120	0	1,279	
Madura	51	1	221	470	125	1038	1154	290	287	498	139	924	58	2	1,774	
Trichinopoly	517	2	1,001	8,381	1,230	11,000	21,000	3,000	13,311	8,792	1,489	14,595	838	14	0	
Coimbatore	2,920	3,876	1,128	800	10,013	3,900	2,300	3,880	1,431	8,241	1,500	0	1,160	8	0	
Vizianagram	1	88	123	120	1,001	1,000	306	101	126	539	1,494	12	1,144	15	11	
Vizagapatam	3	4	179	155	324	770	5,000	950	216	185	384	785	1,736	5	0	
Pithapuram	1	1	213	431	578	734	8,669	557	243	131	578	1,259	2,269	0	0	
Bellary	1	4	110	814	164	1,000	5,000	544	1,073	578	2,195	4,182	910	10	0	
Rajamundry	1	1	16	109	78	130	9,605	96	18	100	78	194	277	4	10	
Cochin	1	1	89	277	258	1050	89	277	258	824	3,000	0	1,624	0	0	
Elore	1	1	102	887	16	100	800	102	887	46	1,035	13	8	1	194	
Tiruvannamalai	1	1	8	59	20	0.70	7.60	2.20	9	65	28	97	1,400	0	0	
Tanjore	2	1	11	32	14	0.03	0.05	0.01	15	37	20	72	231	5	4	
Pudukkottai	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Trichur	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total	5669	31	9,119	16,400	5,067	8,445	850	5,611	17,185	7,212	35,234	26,001	7	2	46,853	

TABLE VI.—Abstract showing receipts and expenditure of Veterinary Dispensaries during 1908-1909.

Receipts.																
Province.	Last year's balance.	By local fund grants.	By Government grants.	By Municipal contributions.	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.	RS. A. P.									
1. Madras ..	7,811 11 9				11,462 12 2		11,462 12 2									
2. Saidapet ..	1,202 7 0				486 5 9	80 12 6	566 2 3									
3. Vellore ..	814 11 1		120 0 0				120 0 0									
4. Madura ..	Not reported.				58 2 0		58 2 0									
5. Trichinopoly ..	Do.			Debits not furnished.			* 838 14 0									
6. Coimbatore ..	Do.	1,390 0 0		100 0 9		100 0 0	1,500 0 0									
7. Vizianagram ..	839 3 7	1,494 12 0			76 5 6		1,494 12 0									
8. Vizagapatam ..	952 12 5	1,660 0 0					1,736 5 6									
9. Pithapuram ..	Not reported.				352 1 2	21,715 8 9	4,182 9 10									
10. Bellary ..	Do.	1,717 15 4	360 0 0													
11. Pudukkottai ..	Do.			Information not available.												
12. Rajahmundry ..	Do.						3,000 0 0									
13. Cocanada ..	Do.	3,000 0 0				12 8 1	13 8 1									
14. Ellore ..	Do.						1,400 0 0									
15. Tiruvannamalai ..	Do.	1,400 0 0					231 5 4									
16. Tanjore ..	Do.	231 5 1														
17. Trichur ..	Do.			Information not available.												
Total ..		10,831 0 8	480 0 0	100 0 0	12,441 11	21,909 13 4	26,604 7 2									
					* 838 14 0											

Expenditure.																
Province.	Pay.	Travelling allowance.	Medicine and instruments.	Furniture.	Contingencies.	Total.	Balance.									
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.	RS. A. P.									
1. Madras ..	12,099 15 8		591 9 0	731 10 8	15,211 4 4	29,237 7 8	25,566 7 3									
2. Saidapet ..	894 0 0				75 9 7	969 9 7	798 15 8									
3. Vellore ..	1,091 0 4	31 0 0	56 8 0		101 1 0	1,279 9 4	1,974 4 5									
4. Madura ..	1,068 9 11		309 11 3		395 15 0	1,774 4 2	1,716 2 2									
5. Trichinopoly ..	Not reported.															
6. Coimbatore ..	740 13 11			140 9 0	279 1 1	1,160 8 0	339 8 0									
7. Vizianagram ..	401 14 2	53 6 0	231 10 0		58 1 9	1,144 15 11	1,188 15 8									
8. Vizagapatam ..	1,156 10 11	36 2 0	845 10 6		230 8 11	2,269 0 4	420 1 7									
9. Pithapuram ..	1,100 0 0	310 0 0	500 0 0		180 0 0	2,120 0 0										
10. Bellary ..	1,711 6 11		1,046 8 7	1,034 4 7	390 5 9	4,182 9 10										
11. Pudukkottai ..	Do.			Information not available.												
12. Rajahmundry ..	239 3 7	17 2 0			20 15 3	277 4 10										
13. Cocanada ..	964 0 0	99 0 0	80 0 0		181 0 0	1,624 0 0	1,376 0 0									
14. Ellore ..	129 13 5	14 4 0			50 5 1	194 10 6	181 2 5									
15. Tiruvannamalai ..	143 13 11	13 14 0	60 13 0	144 8 0	21 0 8	384 1 7	1,015 14 5									
16. Tanjore ..	222 1 11	4 8 0			9 3 5	236 13 4	4 8 0									
17. Trichur ..	Do.			Information not available.												
Total ..	22,963 8 8	609 4 0	03,722 6 4	2,054 0 3	317,504 11 10	46,863 15 1										

* The details for this amount have not been furnished.

† This amount was spent for building construction.

‡ Including furniture also.

TABLE VII.—Statement showing strength of subordinate Veterinary staff employed during the year 1908-1909.

Province.	How occupied.	Whether paid from Provincial or from Local funds.	Veterinary Inspector.	Veterinary Assistant.	Subordinate teaching staff.	Remarks.
1	2	3	4	5	6	7
	Itinerating and attending cattle-fairs and shows	Provincial	2	28		* No. 28 includes two Veterinary Assistants who resigned. † 13 includes one Veterinary Assistant in charge of the building of the Ongole hospital which was started in April 1909 and four Veterinary Assistants having no lien on Government Service. ‡ Four includes one Veterinary Assistant having no lien on Government service. § Having no lien on Government service.
		Local Funds and Provincial.		† 13		
Madras	In charge of hospitals.	Rajapet		† 4		
		Society for the Prevention of Cruelty to Animals, Bellary.		‡ 1		
	In charge of quarantine depot.	Foreign (Ceylon) Government.		1		
	College work	Provincial			4	One Assistant Principal and three Lecturers.
	Total		2	47	4	

NOTE.—Six Veterinary Assistants at Coimbatore, Bellary, Trichinopoly, Tanjore, Madura and Trichur have no lien on Government service.

TABLE VIII.—Return of stud bulls for the year 1908-1909.

Province.	Number on 1st April 1908.	Property of Government.				Property of local bodies.			
		Obtained during the year.		Balance remaining on 31st March 1909.	Number on 1st April 1909.	Obtained during the year.		Balance remaining on 31st March 1909.	
		No.	Average price paid.			No.	Average price paid.		
1	2	3	4	5	6	7	8	9	10
Madras	19			1	18				

* The bulls are posted thus—Two in Vizagapatam, eleven in Guntūr, two at the Madras Veterinary College, one in Madura, and two in Tinnevely district.

TABLE IX.—Statement showing main results of the working of provincial cattle farm during the year 1908-1909—Nil.

TABLE X.—Return of horse, pony and donkey stallions, local bodies, for the year 1908-1909.

Horse and pony stallions under local bodies.														
Details	Horses.						Ponies.						Total horses and ponies.	
	Arab.	Persian.	Thorough-bred English.	Country-bred.	Australian.	Total.	Arab.	Persian.	Country-bred.	Deh.	Shan.	Total.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Balance on 31st April 1908	..	..	..	..	..	..	13	..	..	..	..	13	13	
Increase.	{	By transfer.	..	..	..	..	..	..	..	..	..	..	..	
		Purchased in India.	..	..	..	..	..	..	..	..	..	..	..	..
		Received from Europe by purchase.	..	..	..	..	..	..	..	..	..	..	..	..
Total	..	..	..	..	..	..	13	..	..	..	..	13	13	
Decrease.	{	Died	..	..	..	..	..	..	..	..	..	..	..	
		Sold	..	..	..	..	..	..	..	..	..	..	..	
		Destroyed	..	..	..	..	..	1	..	..	..	..	1	1
		Transferred to.	..	..	..	..	..	..	..	..	..	..	..	..
Total decrease	..	..	..	..	..	..	1	..	..	..	..	1	1	

Donkey stallions under local bodies.										
Details.	Italian.	Cyprian.	Country-bred (Punjab).	Persian.	Catalonian.	Arab.	American.	Sicilian.	Total.	
	15	16	17	18	19	20	21	22	23	
Balance on 1st April 1908.	..	..	..	..	..	..	..	..	..	
Increase.	{	By transfer.	..	..	..	..	..	..	..	
		Purchased in India.	..	..	..	..	..	..	..	..
		Received from Europe by purchase.	..	..	..	..	..	..	..	..
Total	..	..	..	..	..	..	..	..	..	
Decrease.	{	Died	..	..	..	..	..	..	..	
		Sold	..	..	..	..	..	..	..	..
		Destroyed	..	..	..	..	..	..	..	..
		Transferred to.	..	..	..	..	..	..	..	..
Total decrease	..	..	..	..	..	..	..	..	..	

TABLE XI.—Services and produce of each class of horse, pony and donkey stallions under local bodies during the year 1908-1909.

Horse, pony or donkey.	Province.	Stallions on register on 31st March 1909.	Stallions actually employed at stud.		Number of mares covered.		Average number of mares covered per stallion employed at stud.		Remarks.
			Year under report.	Previous year.	Year under report.	Previous year.	Year under report.	Previous year.	
1	2	3	4	5	6	7	8	9	10
Pony	Madras	12	13	14	239	284	17.5	21	One of the stallions No. 17 "Hector" was destroyed in December 1908.

N.B.—The stallions at stud are under the Provincial Department of Government.

TABLE XII.—Average cost of feed, keep, attendance, etc., of horse, pony and donkey stallions during the year 1908-1909.

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
Madras ..			Rs. A. P. 397 9 7	Rs. A. P. 280 10 0				The total expenditure for upkeep alone of 12 Government stallions for the whole year and one for eight months amounted to Rs. 5,036-4-2.

TABLE XIV.—Abstract of particulars regarding cattle fairs and shows held during the year 1908-1909.

Province.	Number of cattle fairs and shows held.	Total number of stock present.							Average price of animals 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
Cattle Fairs.													
Sivaperi	1	..	14,000	100	..	30	..	870	..	..	..	..	..
Kanniseri	1	..	12,000	200	200	600	..	..	..	..	..	..	..
Thimmarajapuram ..	1	..	3,250	35	125	65	..	..	..	..	..	..	..
Tiruchendur	1	..	7,300	65	500	125	..	10	..	..	..	..	..
Kashugumalai	1	..	19,000	60	600	330	..	15	..	..	..	..	..
Subramania	1	..	659	..	..	114	..	..	..	..	..	..	..
Melmalaianur	1	..	7,000	..	..	..	..	..	..	..	..	..	..
Cattle Shows.													
Madura	1	118	370	26	10	9	..	39	..	..	..	..	..
Tirappér	1	456	..	..	..	4	..	23 and 220 ponies.	..	..	..	..	..
Ellore	1	31	83	150	9	53	..	64	..	..	..	..	..
Berhampur	1	9	282	38	17	153	..	38	..	..	..	..	..
Parvatipuram	1	29	264	41	27	160	..	6	..	..	..	..	..
Pittapuram	1	29	147	57	44	39	..	26	..	..	..	..	..
Ongole	1	127	29	231	119	46	..	67	..	..	..	..	..
Total	14	799	64,274	1,008	1,651	1,728	..	1,368	..	..	..	..	..

	Amount realised in fees.	Total number of animals that competed for prizes.	Prizes awarded.								Number of medals.
			From Imperial funds.	From Provincial funds.	From local bodies.	From other sources.	Total.	Amount actually awarded.			
15	16	17	18	19	20	21	22	23			
<i>Cattle Fairs.</i>											
Sivalaperi	Rs. A. P.	Rs.	Rs.	Rs.	Rs. A.	Rs. A. P.	Rs. A. P.	Rs. A. P.	..		
Kanniseri	..	15,000	..	..	..	..	..	..	..		
Thimmarajapuram ..	..	18,000	..	..	..	..	..	..	..		
Tiruchendur (a) ..	..	5,475	..	..	..	..	..	..	..		
Kashugumalai	..	8,000	..	..	..	..	..	..	..		
Subramania	..	20,005	..	..	..	..	..	..	..		
Melmalsayanur	..	673	..	..	..	..	..	..	..		
<i>Cattle Shows.</i>											
Madura (b)	..	572	..	300	500 0	50 0 0	850 0 0	319 0 0	2		
Tirappér (c)	..	708	..	..	Figures not reported.			1,078 0 0	2		
Ellore (d)	..	390	..	500	475 0	3,433 12 3	4,408 12 3	918 4 0	..		
Berhampur (e)	..	537	..	500	250 0	2,338 1 3	3,088 1 3	605 0 0	5		
Parvatipuram (f) ..	248 10 6	517	..	500	1,050 0	150 0 0	1,700 0 0	1,033 0 0	9		
Pittapuram (g)	..	842	..	500	706 0	600 0 0	1,806 0 0	706 0 0	4		
Ongole (h)	..	609	..	1,600	1,185 0	1,102 0 0	3,787 0 0	2,450 0 0	2		
Total	248 10 6	70,823	..	3,800	4,165 0	7,673 13 6	15,639 13 6	7,109 4 0	24		

REMARKS.—(a) One Venkatachalam Chetty was prosecuted under the Act.

(b) Gold medals worth Rs. 60.

(c) Two Silver medals by Government.

(d) Total includes opening balance of Rs. 1,917-13-9.

(e) All silver medals.

(f) Two German Silver, two Gold and five Silver medals by 3 others.

(g) Two Silver medals, two Gold medals and 1 Silver cup. (h) Government medals.

TABLE XIII.—Abstract of particulars regarding horse fairs and shows held in non-selected districts during the year 1908-1909—Nil.

TABLE XIV (a).—Statement showing the cost of the Civil Veterinary Department in the Province of Madras during the financial year 1908-1909.

Major heads.	Amount.			
	Imperial.	Provincial.	Local.	Total.
	1	2	3	4
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Superintendence	28,423 8 0	15,639 6 4	..	44,062 14 4
Veterinary instruction	..	29,237 7 8	..	29,237 7 8
Subordinate establishment	..	13,805 13 11	..	13,805 13 11
Hospitals and dispensaries	..	2,633 10 9	..	2,633 10 9
Breeding operations	..	5,036 4 2	..	5,036 4 2
Prizes	..	4,806 0 0	..	4,806 0 0
Fairs and shows	..	..	3,764 0 0	3,764 0 0
Total ..	28,423 8 0	71,157 10 10	3,764 0 0	1,03,345 2 10

* Includes Rs. 2,314-10-9, the cost of rinderpest experiments.

TABLE XV.—Comparative statement of cattle mortality for five years ending 1908-1909.

Causes of death.	Number of deaths among cattle for the year ending				
	1904-1905.	1905-1906.	1906-1907.	1907-1908.	1908-1909.
<i>Diseases.</i>					
Rinderpest	19,772	19,050	31,611	97,244	149,686
Anthrax	14,996	13,474	12,082	10,977	12,511
Malignant sore-throat	11,317	8,838	9,086	7,190	6,888
Black quarter	7,683	5,952	4,168	6,148	4,708
Epizootic apthia	2,767	4,974	2,794	3,544	4,678
Others	33,336	38,905	53,798	27,731	38,100
Total ..	89,371	90,293	113,539	152,834	216,451
<i>Other causes.</i>					
Snake bite	2,257	2,011	1,899	1,885	1,625
Wild animals	12,061	13,232	13,372	12,611	11,412
Criminal poisoning	52	68	43	56	26
Total ..	14,370	15,301	15,314	14,552	13,063
Grand total ..	104,241	105,594	128,853	167,386	229,514

TABLE XVI.—Statistics of mortality among cattle, horses and ponies in the several districts of the Madras Presidency during the year 1908-1909.

Districts.	Number of deaths among											
	Cattle											
	From diseases.											
	Rinderpest.	Diarrhoea and dysentery.	Anthrax.	Malignant sore-throat.	Black quarter or quarter ill or evil.	Epizootic apthia.	Others.	Total.	From snake-bite.	By wild animals.	From criminal poisoning.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Ganjam	3,441	..	673	531	199	290	1,455	6,589	44	162	..	3
2. Vizagapatam	688	..	377	144	166	139	294	1,788	40	92	..	3
3. Gódvári	763	..	1,210	410	195	56	2,154	4,788	83	260	..	3
4. Kistna	1,410	..	1,168	888	252	307	1,843	5,868	201	44	..	3
5. Guntur	1,334	..	130	674	316	13	219	2,683	82	1	..	2
6. Kurnool	1,524	..	672	271	329	95	3,485	6,378	38	365	..	3
7. Bellary	2,507	..	465	220	494	83	3,937	9,869	28	330	..	6
8. Anantapur	8,697	..	434	235	581	170	3,449	13,536	33	516	..	3
9. Cuddapah	4,815	..	588	229	300	97	3,840	9,869	38	516	..	3
10. Nellore	2,577	..	1,488	1,245	246	101	1,873	7,520	149	80	..	3
11. Chingleput	10,242	..	558	306	156	198	733	17,193	110	7	..	3
12. South Arcot	23,893	..	791	155	139	234	2,392	27,104	115	171	..	1
13. North Arcot	15,695	..	360	153	305	85	1,894	18,492	176	72	..	1
14. Salem	4,772	..	207	103	253	276	964	5,575	49	286	..	1
15. Coimbatore	13,519	..	235	180	305	934	2,572	17,745	78	669	..	2
16. Trichinopoly	2,614	..	375	106	33	479	2,073	5,580	75	2	..	2
17. Tanjore	4,805	..	606	397	39	50	447	6,373	75	2	..	1
18. Madura	23,049	..	887	201	344	339	1,703	26,523	134	117	..	3
19. Tinnevely	11,715	..	421	75	44	241	2,281	14,777	38	27	..	3
20. Nilgiris	2,790	..	..	30	..	5	80	2,905	5	273	..	3
21. Malabar	7,686	..	841	333	1	357	806	10,024	85	2,238	..	3
22. South Canara	1,660	..	26	12	11	2	486	2,187	6	4,754	..	3
Total ..	149,686	..	12,511	6,888	4,708	4,578	38,100	216,451	1,625	11,412	..	26

Districts.	Number of deaths among—cont.											
	Cattle—cont.			Horses and ponies.								
	From diseases.			From diseases.								
	Total.	Grand total.	Total stock by the latest census.	Diarrhoea and dysentery.	Anthrax.	Others.	Total.	From snake-bite.	By wild animals.	From criminal poisoning.	Total.	Grand total.
13	14	15	16	17	18	19	20	21	22	23	24	25
1. Ganjam	209	6,798	..	..	..	2	2	..	..	..	..	2
2. Vizagapatam	134	1,922	..	..	1	..	16	..	..	..	..	19
3. Gódvári	333	5,121	..	..	1	15	16	..	2	..	3	19
4. Kistna	248	6,116	..	..	1	16	16	..	..	..	..	37
5. Guntur	3	2,686	..	..	..	..	..	..	..	..	..	60
6. Kurnool	469	8,845	..	3	1	25	28	..	12	..	17	46
7. Bellary	210	7,016	..	3	3	22	28	..	15	..	2	9
8. Anantapur	363	13,949	..	6	1	5	7	..	2	..	2	21
9. Cuddapah	549	10,418	..	3	1	7	19	..	1	..	..	1
10. Nellore	232	7,752	..	12	..	7	19	..	..	..	..	11
11. Chingleput	117	12,310	..	..	..	..	..	..	..	..	..	3
12. South Arcot	286	27,390	..	..	..	9	10	..	1	..	1	3
13. North Arcot	909	19,401	..	..	1	..	..	..	..	..	..	59
14. Salem	345	6,920	..	..	..	..	..	..	..	..	..	2
15. Coimbatore	748	18,493	..	33	1	16	50	..	9	..	..	73
16. Trichinopoly	160	5,840	..	..	..	..	..	..	..	..	..	22
17. Tanjore	77	6,450	..	..	..	2	2	..	..	..	..	22
18. Madura	262	26,775	..	10	2	11	23	..	45	..	..	6
19. Tinnevely	65	14,842	..	1	2	19	22	..	..	..	..	6
20. Nilgiris	281	8,186	..	12	..	4	16	..	..	..	..	5
21. Malabar	2,313	12,337	..	..	..	..	..	..	..	..	..	..
22. South Canara	4,760	6,947	..	..	..	..	..	..	..	..	..	..
Total ..	13,063	229,514	..	83	16	189	268	10	109	..	119	467

conveyed in G.O., No. 1-
 ral Department while the farm at
 Agricultural stations looked after by the depart
 end of the year. The season at the Central Agricultu
 is unfavourable for agricultural operations, but at the remain-
 xperimental and demonstration work was carried on during the
 turned out was on the whole satisfactory.

periments towards improving the cultivation of cotton were con-
 tinued at Nandyal, Koilpatti and at Hagari. The Board notes that by a careful
 process of selection at the Nandyal farm, the standard of the cotton crop is being
 raised and shares the hope expressed by Mr. Wood that, as a result of this process
 of selection as well as of work on mendelian lines which is being carried on at Coim-
 batore by the Government Botanist, a strain of cotton superior to the existing varieties
 from both the buyers' and growers' points of view and yielding a higher percentage
 of lint may be evolved in the near future. At Tinnevely, the superiority of the
 Karungunni variety over the only other variety of cotton common in the district,
 viz., Uppam, appears to have been well established. Seed distribution was taken
 up on a large scale and the effect of the extended distribution of seed by the depart-
 ment will, as observed by the Director of Agriculture, go far to enhance the value of
 Tinnevely cotton. The Board notes with pleasure that the seed drill is becoming
 more and more popular in the Tinnevely district. As remarked last year, the system
 of paying a premium of As. 2 per acre to ryots who grew pure cotton does not appear
 to have met with much success. There has been a steady decline in the areas
 cultivated with pure crops of cotton, so much so that it has fallen from 1,459 a-
 cres in 1907-1908 to 159 in 1908-1909 and the Director of Agriculture has recomm-
 ended the discontinuance of the payment of premia in future for growing pure
 cotton. This will be reported upon to Government separately.

Paddy.—The Board is glad to note that there has been a striking inc-
 crease in the output of paddy at Palur and at Taliparamba owing to the seed hav-
 ing been selected from singly planted fields. At Samalkota also the singly pla-
 nted fields appear to have given the best yields. One of the chief advantages of this
 system is to consist in the rapid improvement which it effects in the qu-
 ality of the grain. It is satisfactory that both in Tanjore and Tinnevely the ryots
 are beginning to appreciate the advantages of single planting.

Sugarcane.—The new Mauritius canes introduced into the Gôda
 Arcot districts are rapidly ousting the inferior local canes hitherto
 grown. The area under Mauritius canes in the latter district increased from 60 a-
 cres in 1908 to 247 acres in 1908-1909, while there were only 130 acres under

some na.
 Tiruppur, Madura, Kizhore,
 more by the respective district Agriculturists.
 The local association. Similar shows held at
 Cochin Darbar and at Aret and Kollpatti under the
 and the Zamindar respectively are specially worthy of note.

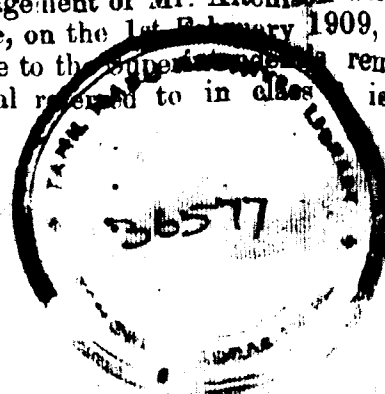
5. The Assistant in Mycology who had been working in
 eradication of palm disease in Gôdâvari was deputed to Pusa for
 Imperial Mycologist. The operations in Gôdâvari have proved q-
 it is satisfactory to learn that the disease has been extirpated com-
 taluks and partially from a third. Dr. Butler's report on the effect
 in circumscribing the area of the disease has been submitted to Govt. The
 Board endorses the Director's remark that credit is due to Mr. Green, the Deputy
 Collector in charge of the operations, for their remarkable success.

6. A third Assistant to the Government Botanist has been appointed for Ento-
 mological work and he has been deputed to Pusa for one year's training. The two
 other Entomological Assistants visited Pusa from 15th to 30th March 1909 and
 received a training in the rearing of the Eri-silk worm which promises to develop
 into a useful cottage industry.

7. *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 1908-1909 was 476, inclusive of 84 in the
 Native States, or six more than at the end of the previous year and of these, 391
 stations were inspected.

8. *Statistics.*—The following returns were published in connection with local
 affairs under provincial direction:—(1) monthly season reports in three sections,
 cultivation, and prices of food-grains and salt; (2) annual crop forecast
 in respect of cotton, paddy, ground-nut, indigo, sugarcane, castors and gingelly;
 quarterly reports of cattle mortality.

Veterinary Department.—The Madras Veterinary College.—The work of
 continued to be satisfactory and 24 students graduated in the year. In
 and B, however, the results in some of the subjects were poor. This was
 want of efficient teaching in certain subjects which the Board has taken
 and partly to the inferior quality of the students in those classes.
 trusts that, under the management of Mr. Aitchison who assumed charge,
 the Principal of the College, on the 1st February 1909, better results will
 be in future. With reference to the superintendent's remark in paragraph
 report that the poor material referred to in class is due to want of



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