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REPORT

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ON THE

OPERATIONS OF THE DEPARTMENT OF
AGRICULTURE,

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MADRAS PRESIDENCY.

FOR THE OFFICIAL YEAR

1904-1905.

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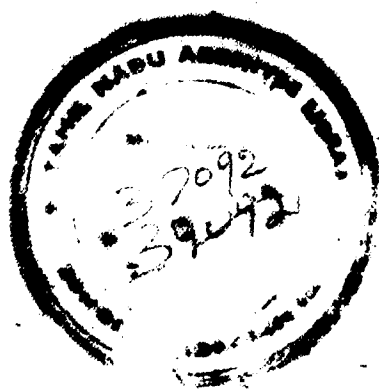
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REPORT

3

ON THE

OPERATIONS OF THE DEPARTMENT OF AGRICULTURE

FOR

1904-1905.

I.—PREFATORY.

post of Director of Agriculture was held throughout the year by the Hon'ble A. B. Castles Stuart, I.C.S. During the same period Mr. Benson, Major Gunn and Mr. Barber held the offices of Deputy Director, Superintendent of the Civil Veterinary Department and Government Botanist, respectively.

2. The Director spent 102 days on tour, visiting all the districts of the Presidency, except the Nilgiris, Madura, Ganjam, Kistna and South Canara, and, in addition to his other work as Settlement Commissioner and Director of Land Records, inspected the agricultural experimental stations at Samalkota, Bellary, Hindupur and Koilpatti as also the pumping station at Attur. He visited Nellore with a view to encourage the experiment of cultivation by ryots of irrigated dry crops on black-cotton soils under the Pennahal, and opened the Agricultural Exhibition held in May 1904 at Conjeevaram in the Chingleput district, the Agricultural and Cattle Show held in January 1905 at Vizianagram in the Visakhapatnam district and the Cattle Show held in February following at Ongole in the Guntur district. He also inspected in September 1904 the vineyards of the Penukonda Agricultural Society and in November 1904 presided at the annual convention of the Tanjore Agricultural and Industrial Institution. In all the districts visited, opportunity was taken to encourage the formation of local Agricultural Associations and of Co-operative Credit Societies; while the benefits to be derived from well-irrigation by means of oil-engines and pumps were impressed upon the numerous landholders with whom the Director came into touch. The Deputy Director of Agriculture supervised the work on the Bellary and Koilpatti farms as well as the Hindupur fibre plantation which are under his direct charge and, besides visiting the Samalkota farm, toured in several districts for the following purposes, among others: the collection of pure cotton-seed for sale to ryots, the conduct of experiments in curing tobacco, the reclamation of saline soils, and the inspection of farms established, or the sites of farms to be opened, by Agricultural Associations and other public bodies and by private gentlemen. He attended, along with Mr. Barber, the first meeting of the Board of Agriculture held in January 1905 at Pusa. On his way back from Pusa he visited the herbarium of the Reporter on Economic Products at Calcutta. In March 1905 he accompanied the Officiating Inspector-General of Agriculture in his tour of inspection through this Presidency.

II.—SCIENTIFIC AND NATIONAL ENQUIRY UNDER IMPERIAL DIRECTION.

3. *Geology*.—The annual report of the Director, Geological Survey, has not yet been received.

4. *Entomology*.—Specimens of the locusts which appeared in the Kudligi and Bellary taluqs, in the Tadipatri and Anantapur taluqs, and in the Kurnool district, were forwarded to the Imperial Entomologist who found that all the specimens from the Bellary district except one belonged to the species of *Aceridium succinatum* (Linn.)

or what is called the "Bombay locust", and the excepted one to the species of *Acridium aeruginosum* or the "Madras locust". The specimens from Anantapur could not be identified owing to the damaged condition in which they were received by the Entomologist, and no fresh specimens could be collected subsequently, while the species of locust that visited the Kurnool district was ascertained to be a male specimen of the "Bombay locust". Certain insects, resembling fire-flies, and locally known as such, appeared for the first time in several villages of the Ponnani and Ernad taluks, Malabar district, and caused damage to paddy seedlings both while in nurseries or seed-beds and also immediately after transplantation. Two sets of specimens of these insects were sent to the Imperial Entomologist for identification: one of these sets was found to be new to the collection in the Imperial Institute, and was believed to be new to India, and it was accordingly sent to Europe for identification. The other was identified as "Rice Hispa" (*Hispa senescens*), well known as a rice-pest in various parts of India.

5. *Imperial Institute.*—The Department continued to supply specimens of economic products to the Reporter on Economic Products. Specimens of about 50 products were forwarded to him during the year, as also the seed of different kinds of crops grown in this Presidency and additional specimens of yams (*Dioscoreas*) and sorghums. Amongst other articles forwarded to him were specimens of mats manufactured in the different districts of the Presidency together with the prepared material and dry botanical specimens of the plants used, specimens of flowers, leaves, fruits and seed of the Arnotto dye plant obtained from Mysore and some specimens of chilli plants obtained from Madura.

6. One hundred young cardamom plants from Kottalam and 2 lbs. of the best variety of potatoes grown in the Nilgiris were forwarded to the Director of Land Records and Agriculture, Assam, for experimental cultivation. Similarly, a small quantity of the seed of *Salicornia brachiata* was obtained from the Collector of Tanjor and supplied to the Director of Land Records and Agriculture, United Provinces (Agra and Oudh), while certain ginger seed bulbs from Travancore and seeds of two varieties of tobacco from Dindigul were forwarded to the Director of Land Records, Bengal. As stated in paragraph 6 of the report for 1903-1904, a second consignment to the West Indies of a Wardian case containing well-established plants of Cochin lemon grass was forwarded at the beginning of the year under report; but as that too was received in a damaged condition, steps are being taken to make another consignment when seeds will also be sent if possible. Specimens of vegetable food gathered and used by the poorer classes of people in times of scarcity or famine continued to be received during the year, and were duly forwarded to the Reporter on Economic Products.

III.—SCIENTIFIC AND LOCAL ENQUIRY UNDER PROVINCIAL DIRECTION.

7. The two agricultural probationers who had been receiving practical training at the farms of the Bombay Presidency returned during the year; and one probationer was entertained and sent to Bombay for similar training.

The permanent experimental farms at Bellary and Koilpatti and the temporary farm at Samalkota were at work during the year. On a consideration of the results attained on the last-mentioned farm during the probationary period covered by the three previous years, Government sanctioned the proposal to place it on a permanent footing. A new temporary farm was established at Palur in the Channarayana taluk, South Arcot district, with the object of studying the diseases and of promoting the improvement of the ground-nut, and steps were taken to open a permanent farm at Taliparamba in the Chirakkal taluk for making a thorough investigation of the pepper-vine diseases prevailing in the Malabar district.

8. At both the Bellary and Koilpatti farms, the experimental work consisted mainly in endeavours to determine the comparative value of the various methods of collecting and utilising cattle manure and the extent to which deep tillage would operate as a remedy for the evil effects of drought. Little information of a practical character was yielded by the manurial experiments at Bellary, owing mainly to the damage and loss of manure caused by the very heavy rainfall in September and October

1904 and to the fact that some of the manure applied to the manured plots was found to have been carried to the adjoining unmanured plots. The latter cause appears to have affected the outturn of an unmanured plot at Koilpatti also; but otherwise, the results obtained at the latter farm were, on the whole, in accord with what might have been expected. As regards deep tillage, the effect of it was greatly lessened at the Bellary farm by the exceptional rainfall in May and June 1904 and the results were contradictory to a considerable degree, whereas at Koilpatti the four plots experimented upon yielded a much larger outturn than all those tilled in the manner usual in the district except the single unmanured plot mentioned above.

9. At the Bellary farm, the following food crops, viz., sorghums of a number of varieties, local and foreign, cumbu, red gram and korra, were sown in addition to cotton either with a view to the selection of seed or in the ordinary course of farm management. Owing to the unfavourable character of the season, the korra practically failed and none of the varieties of sorghum except the late sorghum yielded a fair outturn, but the pulse crops did fairly well. The seeds of the several sorts of the local early sorghum and of the fodder sorghums and other foreign sorts obtained from Bombay have, however, been collected with a view to their being further tested. In the case of ragi, an attempt was made to contrast the comparative value of the ridge-and-furrow and flat-bed systems of planting, but the experiment was mostly frustrated by the excessive rain of October 1904.

10. At the Koilpatti farm also the season was unfavourable: the deficiency in rainfall in the early part of the year retarded farm work until the beginning of October 1904, and the subsequent general failure of rain and consequent scanty supply of water in the farm wells rendered it difficult to bring to maturity some of the crops grown on the plots devoted to the experiments mentioned in paragraph 8 *supra* and also affected almost all the other crops, unirrigated as well as irrigated. The more important crops, other than cotton, that were grown in the farm, were Irungu sorghum, chola-nattu and cumbu. Irungu sorghums were partially saved with the aid of well water and classified into 17 sorts, and enough seed has been collected for further trial. Chola-nattu was sown on 13 acres but yielded a very poor outturn. In order to determine the best time for cutting the crop from a fodder point of view, small plots of this area were cut at different stages, and the samples of the fodder were analysed by the Agricultural Chemist to the Government of India: the results of the analyses and the figures of outturn indicate, in the Deputy Director's opinion, that the quantity and character of the fodder are at their best when the grain is in the "milky" but the test will have to be repeated several times before the investigation can be pronounced to be complete. Three Bombay varieties of cumbu as well as the local variety were sown on four acres but the yields were poor: one of the former (namely the Awned variety) yielded the largest outturn, viz., 266 lbs. of grain and 526 lbs. of straw per acre and suffered comparatively little from the depredations of birds. Other crops were also grown as incidents of ordinary cultivation, such as ragi, paddy, chillies and onions, sweet potato, brinjals, tobacco and Berseem or Egyptian clover. The following points about these crops deserve special mention:—

Owing to scarcity of water the attempt made to test the relative merits of the ridge-and-furrow and flat-bed systems of planting ragi failed just as the similar experiments at Bellary failed from excess of rainfall. It may, however, be said generally that less water was used, and the yield per acre was greater, under the former system than under the latter. Onions planted on a 15 cent plot yielded at the rate of 6,400 lbs. per acre but the outturn of those raised from seed—a method not usually adopted by ryots—on a small portion of the area was 10,100 lbs. per acre. Owing, however, to the smallness of the area experimented on and the unfavourable character of the past season, the experiments require to be repeated on a larger scale. As the tobacco crop did not flourish under hand-watering, a new method was adopted, viz., of hoeing the land as often as possible during the growth of the crop and allowing water only into every second furrow as required: as a result, the crop grew well and required less water. An attempt was also made to improve on the local practice of curing the crop, but the results are not yet known.

11. *Sugarcane.*—At the Samalkota farm, the area under sugarcane was increased from 8 to 13 acres. A cyclonic storm which occurred in October 1904 caused damage to the extent of Rs. 400; the growth of the canes was otherwise not affected,

as the water-supply in the canals was adequate throughout the year. The experimental plots were, as usual, divided into three classes, viz., the varietals, the manurials and the methods plots.

The *varietals* were sub-divided into classes A and B; class A included cane suitable for detailed study and extended cultivation as well as for eventual distribution to ryots. Class B consisted of canes of little primary importance. The varieties falling under class A were studied at their various stages of growth, and the juices of the promising kinds were carefully analysed with the result that the "white Mauritius" and the "striped Mauritius" have been selected for distribution among ryots during 1905-1906. In the case of the sorts falling under class B, notes were taken regarding their germination and growth: two of these, viz., the "Ashy Mauritius" and the "Red sports," appear to be even better than the "striped Mauritius."

In the *manurial plots*, the effects of various manures were tested. As the result of past experience at the farm, the experiments were confined mainly to testing the local oil-cakes. The manures applied were castor-cakes in small and large quantities of 10 and 30 bags, respectively, per acre, pungam and margosa cake combined, cattle manure and a general manure containing artificial fertilisers. The results tend to show that, in the particular plots experimented on, chemical manures and the local cattle manure were ineffective and that about 15 bags of castor-cake per acre or about 20 bags of mixed pungam and margosa cake which would be considerably cheaper, are calculated to produce the best results.

On the *methods plots*, a single variety, *yerra cheruku*, was planted in different ways or received different methods of cultural treatment. The following results of these experiments deserve mention:—

(i) The relative advantages of planting the cane by its upper and lower ends were tested on equal plots; though the germination was better and the number of shoots produced was greater with the upper halves, the weight of the canes and the amount of jaggery produced was greater from the lower ends.

(ii) With a view to determine the number of sets per acre that could be planted with advantage, two ten-cent plots were planted with 20,000 and 30,000 sets per acre, respectively; the latter produced better results in all respects, but the experiment is inconclusive and further trials have to be made.

(iii) Certain plots were devoted to testing the effect of green dressing and weeding, but though, owing to a mistake in the conduct of the experiments, very few sets appeared, they showed a great tillering power, and the canes were also thicker and contained excellent juice.

(iv) Two plots were laid out for the purpose of determining whether canes could be grown either without being wrapped to or supported by bamboos at all or by allowing them to merely lean against the sides or railings of square compartments made of bamboos. Though the plots were blown down by the hurricane in October 1904, the plants were allowed to grow with the result that the few canes harvested proved to be of excellent size and quality: and in fact one "bamboo railing" which had not been much damaged yielded the highest weight of canes and the largest quantity of jaggery, i.e., at the rate of 13,520 lbs. of jaggery per acre.

Besides the above-mentioned special experiments, certain others of a general character were made, the more important of which are mentioned below:—

(i) With a view to gradually evolve disease-resisting varieties of good quality, a "disease plot" was started during the year under report, in which canes of various kinds which showed signs of disease were grown in rows and healthy canes found in diseased areas were planted between the diseased rows. Though the selection was fair, almost the whole of the plants died, and there was difficulty in obtaining sufficient sets for experiments in 1905-1906.

(ii) The question of producing a cane in delta land which will ripen in nine months engaged attention, as this is a matter of considerable importance in cases where, as in tracts like the Kistna delta, irrigation is available for only nine months in the year.

(iii) The observation of "sports in canes" being one of the ways where new varieties may be obtained, experiments were made in this direction during the year with the result that the striped Mauritius has been found to sport into red and wh

canes. Both these sports were analysed; and it was found that, while the white sports appear to be similar to the striped Mauritius, the red sports excelled all the other canes of the farm in richness of juice.

Red Mauritius canes were widely distributed throughout the Gódvári district, the demand for them on the part of the ryots being extraordinarily great. The results of the cultivation of this variety by the ryots were highly satisfactory and the cane was unanimously pronounced to be vastly superior in all respects to the local canes. The Red Mauritius variety having been fairly launched into the delta taluks, two new varieties, viz., the striped Mauritius and white Mauritius, were towards the close of the year under report distributed for trial to a single ryot in each taluk, who was specially selected for the care with which he had previously grown the Red Mauritius.

12. *Groundnut*.—The importance of the groundnut in the South Arcot district and the prevalence of the disease mentioned in paragraph 13 of the previous report induced the Government Botanist to make a careful study of this crop. A temporary farm was started in the district to arrest the deterioration of the industry and to introduce disease-resisting and improved varieties of groundnut; it was also thought desirable to make use of this farm as a nursery for the distribution of the Sanaikota sugarcane over the southern districts of the Presidency and to introduce improved varieties of cane into the South Arcot district. A farm consisting of 9 acres of dry land and 5 acres of wet land was accordingly opened in the village of Palur, Cuddalore taluk, towards the close of the year. The lands were enclosed and planted up with several varieties of groundnut and sugarcane and with a number of varieties of indigo as a rotation crop: an office and a cattle shed were also erected before the close of the year.

13. *Pepper*.—As stated in paragraph 24 of the previous report, the diseases in pepper plantations in Malabar were investigated and reported upon by Mr. Barber; and enough information was collected to suggest the lines on which the diseases should be studied and remedies sought. The Wynaad Planters' Association, at whose instance the original investigation was made, requested that he might again be deputed to the Wynaad, but the request could not be complied with. Enquiries were at the same time made as to whether, having regard to the magnitude of the interests involved and the affected area of the pepper gardens in the plains where the disease was reported to be no less virulent than in the Wynaad, it would not be advisable to establish a pepper farm in the former tracts for the conduct of an organised series of experiments into the nature of the pests and the requirements of pepper cultivation; and as the result of such enquiries, Government decided to open a special pepper farm. A suitable site was selected at Taliparamba in the Chirakkal taluk, and much preliminary work was done before the close of the year though the land was not formally acquired till sometime later.

14. *Cotton*.—At Bellary, as proposed in paragraph 12 of the previous report, those varieties of cotton which local experts had declared the most valuable continued to be grown, but the season was unfavourable to the cotton crop generally and it was not possible to obtain any quantitative results. The produce collected under the system of selection has been submitted for expert opinion. The seed obtained from the flowers crossed in 1903-1904 was all carefully sown in separate plots but the result was not encouraging. This portion of the crop showed no increase in vigour and was further very irregular, and the lint produced was generally of inferior quality. The irregular growth is to be attributed to the fact that the crossing in 1904 was carried out before it had been discovered that many variations existed amongst what were apparently plants of the same sort. Further selection from the most promising of these crossed plants has been made for sowing again in 1905-1906. Besides this, a large number of flowers on specially selected cotton plants of several of the sorts commonly found locally, were crossed during 1904-1905, and the seed obtained has been set aside for future sowing.

The American varieties alluded to in the report for 1903-1904, as well as the Peruvian cotton therein mentioned, were again sown, as also the seed of what turned out to be an American variety which was obtained from the Hadagalli taluk of Bellary, where it is sown as "Bombay cotton" and was stated by the Collector to be a relic of the efforts, made some 40 years ago, to introduce Hinginghat and other

fine sorts into the district. None of these crops flourished and it is not proposed to proceed further with them, but the Peruvian cotton is still standing and will not be removed until after the results of the 1905-1906 harvest are known.

At the Koilpatti farm, attention was almost entirely confined to the two local varieties (Uppam and Karanganni), and probably enough pure lint of each has been obtained to allow of a definite determination being made of their relative merits. The season was not, however, favourable to a determination of their relative producing capacities, and the harvest has not been completed. One noticeable feature may, however, be mentioned, viz., that the advantage of sowing cotton in drills or lines instead of broadcast came out very strongly in an unfavourable season like the past one, and the farm crop, which was almost entirely sown in lines, grew much better than those on neighbouring land, a result which is explained by the far better tillage which this method of sowing permits of. As at Bellary, the seed obtained from crossings made in 1903-1904 was all very carefully sown and with very similar results; that is, that the plants produced showed no increase but rather a decrease in vigour; much of the seed was infertile; but as yet no opinion can be offered as to the lint produced. During the year under report, selection and crossing of the two local sorts was continued and the seed thus obtained will be reserved for sowing in 1905-1906.

At this farm a variety of cotton (Cambodia cotton) introduced by the Chamber of Agriculture, Pondicherry, into the Trichinopoly district was sown for experiment, and it promises to prove useful on black soil. Besides this, the American cottons alluded to in the previous report were all again sown on the red soil block, but owing to the deficiency of water in the wells they did not flourish, and it is not possible to say from the experience of 1904-1905 whether or not there is an opening for such cottons on this class of land in Tinnevely.

With a view to improve the quality and outturn of the cotton grown in this Presidency generally by distributing to ryots the best seeds available, an effort was made, at the instance of the Government of India, to collect good seed of the best local sorts in several localities, viz., Bellary, Nandyal and Tinnevely, directly by departmental arrangement and partly with the aid of Messrs. Harvey Brothers at the last-mentioned station, and in smaller quantities at Tadpatri, Kurnool, Jammalamadugu and Nandigama, through the agency of the Revenue department. Except in Tinnevely, it has been found impossible to collect really pure seed and the crops of the ryots were found to be in a state of hopeless mixture. Although mixing is fairly widespread in Tinnevely, yet it is not universal and in parts of the district the two sorts are to be found grown practically pure. Arrangements are now being made for the distribution of this seed to the ryots at a reasonable price.

15. *Tobacco*.—The Government Botanist having in his report on the inspection of the Bombay Agricultural farms in 1903-1904 suggested that there was a most interesting and extensive field for enquiry and experiment in the matter of tobacco cultivation in this Presidency, Government ordered enquiries to be made of the leading tobacco manufacturers as to the directions in which the varieties already grown were capable of improvement. These enquiries showed that there were defects in the methods followed in this Presidency, both as regards cultivation, including harvesting, and as regards the curing of tobacco, and that the chief desideratum of manufacturers was the production of a "wrapper" leaf of good colour and requisite "burning qualities". No great advance could be made in the rectification of these defects pending the appointment of an Agricultural Chemist; but the practice of the growers of tobacco in and around Dindigul—the chief centre of tobacco cultivation—was observed in all its details during the year, and the improvements suggested by such observation have been embodied in a revised bulletin No. 4 published since the close of the year. In regard to harvesting and curing, arrangements were made with the co-operation of Messrs. Spencer & Co.'s agent at Dindigul to secure 15 pothies of good tobacco (valued at Rs. 1,000) notwithstanding the unfavourable character of the season, but the result of the curing operations is not yet known.

The Inspector-General of Agriculture has, since the commencement of the above-mentioned observations and experiments, expressed the opinion that the extraordinary variation in the produce of gardens in the same locality and apparently similar in all

respects can only be attributed to differences either in soil or in the water of the wells used for irrigation, and that this is a problem that can be approached only with the aid of an Agricultural Chemist; the question of growing tobacco departmentally has therefore been deferred pending the appointment of such an officer.

In 1903, seeds of five varieties of tobacco received from the Inspector-General of Agriculture were sown by selected ryots in the Madura, Coimbatore and Gódvári districts, by Messrs. Spencer & Co.'s agent at Dindigul and by Mr. Barry at Cocanada. In Madura none of the varieties except one did well; and even the leaves of the excepted variety were not as large as those of the indigenous species. In the Coimbatore district the seedlings of three varieties perished, while the growth of the others was stunted and the yield was practically nil. In the Gódvári district, the ryots who tried the seeds stated that the produce was less valuable and less useful than the country tobacco; and Mr. Barry who sowed them on lanka lands could not obtain a proper outturn as the season was too wet, and the tobacco was also of bad quality and small size. On the other hand, the experiments conducted by Messrs. Spencer & Co. were more successful and their method of cultivation especially in regard to the topping of the plants resulted in the production of a fairly good leaf.

16. *Aloe plantation*.—Of the three varieties of hemp referred to in paragraph 15 of the previous report, *agave sisalana* showed an extraordinary variation in growth, while *agave cantula* made little or no growth. To try the effect of cultivation on the growth of the plants, the sisal plants were hoed round during the year; the plots were further cleared of grass and weeds to prevent accidents by fire. Doubts having been felt during the year as to the relative values of certain methods of cultivating agave, such as clearing and leaving the land to nature, draining and not draining it, growing the plants under shade and exposing them to the sun, steps have been taken to test these methods and their results as far as possible on separate plots. Further, it being desirable to obtain some data as to the output by dealing with the leaf already available in the farm for cutting, arrangements have, since the close of the year, been made for the training of an agricultural probationer by the Secretaries to the Indian Fibre Company in the best method of extracting the fibre by hand.

17. *Foreign varieties of paddy*.—Seeds of 22 good varieties of paddy grown in Bombay, Central Provinces and Bengal were received from the Inspector-General of Agriculture in 1903 and tried in 1903-1904 and 1904-1905, at the farm attached to the Agricultural College, at the Koilpatti farm, and on the estate of a landholder in the Shiyali taluk of the Tanjore district. The crops on the College farm in 1903-1904 having been seriously damaged by heavy rain and wind, and to a small extent by insect-pests also, a further trial was made under well irrigation in 1904-1905; but the experiments were on the whole inconclusive owing to their having been made on very small plots and a further trial will be made in 1905-1906 on a larger scale with a smaller number of sorts. The results achieved at the Koilpatti farm in 1903-1904 were referred to in paragraph 10 of the previous year's report; in the year under report three varieties were planted at the farm, viz., Banko, Halki and Ambemohur. The last-mentioned variety did not flourish but the Banko and Halki yielded fairly at the rate of 2,062 lbs. and 1,662 lbs. respectively per acre. The experiments made in the Tanjore district in 1903-1904 yielded no results of value. The Banko, Halki and Chinnore varieties were tried again in 1904-1905; the yield per acre in the case of the first-mentioned variety was 1,044 measures on land of more than average fertility and 777 measures on land of less than average fertility, while Chinnore and Halki yielded at the rates of 686 and 360 measures respectively per acre. The landholder is of opinion that Banko will be a valuable substitute for the locally-grown Kadappu and Vadansamba varieties, being superior to them both in point of yield and quality, and that owing to its capacity to withstand scarcity of water it is also suitable for cultivation on high level lands.

18. *Indigo*.—At the Agri-Horticultural Gardens, Madras, the experimental cultivation of the several varieties of indigo mentioned in paragraph 14 of the previous report had to be abandoned owing to the poor character of the soil. They were accordingly planted in the farm attached to the Agricultural College at Saidapet, but, owing to the unfavourable character of the season, the experiment was not successful. Seeds of *Indigofera longeracemosa*, *Indigofera arrecta* and Delhi indigo and several other varieties obtained from various parts of this Presidency were sown

towards the close of the year as a rotation crop on the groundnut farm referred to in paragraph 12 above: the germination in all these cases except *Indigofera arrecta* was good.

19. *Sunflower*.—As stated in paragraph 16 of the previous report, the Reporter on Economic Products suggested the cultivation of other kinds of sunflower than the Russian giant variety. The ordinary garden variety was accordingly cultivated at the Coimbatore Jail, and the oils yielded by both that and the Russian giant varieties were sent to that officer who states that there is scarcely any difference in the properties of the two oils.

20. *Saline soils*.—The experiments conducted during the year under report in the reclamation of saline soils under the Periyar Project did not produce useful results owing mainly to the unfavourable character of the season and the consequent deficiency of water-supply. The plots, however, presented a more promising appearance at the close of the year than they had done before, presumably on account of the application of gypsum and leaf manure, and the experiments will therefore be continued during the current year. The soil of the alkaline plots in the Bellary farm experimented upon in 1903-1904 was reported by the Agricultural Chemist to "drain very badly." As, in the case of such soils, reclamation by the growth of herbage would take much time besides being uncertain in result, a new method of treatment was decided on, viz., to bring the whole area to a uniform and reasonable slope and then apply bone manure with a view to open out the soil and induce better drainage.

21. *Paspalum dilatatum*.—About 60 lbs. of the seed of this valuable fodder grass were received from the Conservator of Forests, Central Circle, and distributed to the leading ryots and Agricultural Associations in this Presidency for experimental cultivation. The seed was also sown at the Samalkota, Bellary and Koilpatti farms; some plants were with difficulty raised at the first-mentioned two farms. At Koilpatti, the seed was sown in a nursery in September 1904 and the seedlings were transplanted on 12 cents in November; and, under careful treatment, the first cutting in April 1905 yielded 1,229 lbs. of green fodder.

22. *Nitrogen-fixing bacteria*.—A small quantity of nitrogen-fixing bacteria was obtained from America; but, as it was found unsuited for application to leguminous crops grown on the plains, it was forwarded to the Curator, Government Botanic Gardens and Parks, Ootacamund, for trial.

23. *Agricultural Exhibitions and Associations*.—An Agricultural Exhibition was held in May 1904 at Conjeevaram in the Chingleput district, to which a contribution of Rs. 500 was sanctioned by Government on certain conditions. Agricultural Exhibitions and cattle-shows were held by the Tanjore Agricultural and Industrial Institution in connection with its annual convention at Tanjore in November 1904 and by the Vizagapatam District Agricultural Association, at Vizianagram, in January 1905; another Agricultural show was held in March 1905 at Pedakallapalli in the Kistna district. During the year under report proposals for the formation of a Central Agricultural Committee—which has since been established—in connection with the Victoria Technical Institute were under consideration, and District Agricultural Associations were formed at several of the centres visited by the Director of Agriculture.

24. *Pumping experiments*.—During the year under report, pumping experiments with oil engines were carried on at Kadiampatti, Saidapet, Cuddalore, Manamadurai, Melrosapuram, Coimbatore, Attur and Villupuram, the experiments conducted at the four last-named places having been transferred in July 1904 from the Public Works Department to the control of the Board of Revenue. Proposals for the opening of a pumping irrigation farm on the banks of the Hagari in the Bellary district for the conduct of experiments with the irrigated cultivation of black-cotton soils and the determination of the duty of water were under consideration; and towards the close of the year, Government called for detailed proposals which have since been submitted. Pumping experiments were also carried on by private enterprise at Kattalai and Trichinopoly with the assistance and advice of the Supervisor in charge of pumping experiments. The report on the results of the experiments at Melrosapuram, submitted by the Rev. Mr. Andrew was translated into the chief vernaculars of the Presidency and

ordered to be published in the village sheet of the District Gazette, and Mr. Chatterton has been requested to collect the results of the experiments and place before the public reliable statistics as to the quantity of water obtainable by means of oil engines and the extent of dry land which they can be expected to irrigate.

M.R. Ry. S. Rajagopalasawmy Madaliar, Supervisor, was in charge of the pumping experiments almost throughout the year during the absence of Mr. Chatterton on furlough.

25. *First Meeting of the Board of Agriculture at Pusa*.—With reference to the proceedings of the first meeting of the Board of Agriculture referred to in the concluding portion of paragraph 2 above, steps are being taken in the direction, among others, of starting additional farms for the study and improvement of cotton and for cultivating jute departmentally with a view to see whether it can successfully be grown in the Godavari and Kistna delta.

26. *Experiments in the irrigation of dry crops on black-cotton soils*.—Experiments in the irrigation of black-cotton soils to a limited extent were conducted through the agency of ryots holding lands under a tank newly constructed at Ponnalur in the Nellore district. About 740 acres of dry crops were lightly watered, and the irrigation was found to have done no harm to the black-cotton soil lands.

27. *Meteorology*.—The rainfall registered at the rain gauge stations was tabulated as usual and the results published by the Meteorological Reporter to the Government of Madras. The total number of stations in the Presidency at the end of the year was 454 (inclusive of 76 in the Native States) or nineteen more than at the end of the previous year; and of these, 362 stations were inspected.

28. *Statistics*.—The following returns were published in connection with local enquiries under Provincial direction:—(1) Monthly season reports in three sections (rainfall, cultivation and prices of food-grains and salt); (2) annual crop forecast reports; and (3) quarterly reports of cattle mortality.

29. *The Madras Agri-Horticultural Society*.—The income of the society from various sources including the Government grant of Rs. 4,000 amounted to Rs. 18,462. The usual flower-show was held on the 27th February 1905 at the nursery gardens of the society and was, on the whole, up to the average of the previous years notwithstanding the adverse character of the season.

IV.—BOTANY.

30. A detailed report on the work done by the Government Botanist is appended. Much attention could not be paid to the systematic botanical survey of the Presidency during the year, owing to the fact that the time of the Government Botanist and his staff was occupied mainly with economic and general agricultural work. An attempt was made to form an authoritative "Sandal flora" of the chief sandal-bearing tracts of Mysore, but though this work was rendered difficult owing to the prevalent drought, the opportunity was taken to make a collection of the haustoria of the sandalwood attached to different plants for comparative study. A close study of the sandal haustoria was undertaken, and the results of the investigation were published in the *Indian Forester*. Considerable collections of the various Loranthaceae (parasites), which ravage the forests of this Presidency, were made in all stages of their development. Attention was paid to the herbarium: about 2,000 sheets were mounted during the year, and these were made up of 1,000 from the Godavari gorges, 700 from the Wynad and 300 from the Kistna uplands, but, owing to want of time, a large portion of the specimens mounted in this and previous years could not be written upon. The study of plant diseases generally received a check owing to the absence of skilled assistants and the necessity of employing the whole staff on general agricultural matters. No large additions could therefore be made to the previous collections of fungi and insect pests.

In connection with economic botany, the Government Botanist made a thorough study of the ground-nut, sugarcane and indigo crops in the South Arcot district and the pepper plantations in Malabar with the result, already stated, that a temporary ground-nut farm and sugarcane nursery was opened at Palur in the former district and the necessary steps were taken to establish a permanent pepper garden at

Taliparamba in the latter district. A thorough study was made of the agaves of this Presidency and the uses to which they are put in the different districts, and the results were intimated to the Superintendent of the Calcutta Botanical Gardens for publication in the form of a bulletin. For various reasons, no great progress was made in the collection of economic plants, but the development of this branch of the herbarium work received marked attention. The fungus disease affecting *palmyra* trees in portions of the Gódvári district was studied during the year, and as the result thereof, the Inspector-General of Agriculture was requested to depute the Imperial Cryptogamic Botanist for making a thorough investigation of the disease. The other contributions of the Government Botanist to economic botany have been noticed under section III.

V.—VETERINARY.

31. The detailed report on the operations of the Civil Veterinary Department is appended. The Madras Veterinary College worked well during the year. The teaching staff of the College was strengthened by the appointment, in January 1905, of a second lecturer. The students whose term commenced in January 1904 did well both in practical and theoretical work at the annual examination held in December 1904 by the Superintendent, Civil Veterinary Department, and *ex-officio* Principal, and all of them obtained promotion to the higher class. A fresh batch of 20 students commenced their term in January 1905. The students received instruction free of charge, and 20 of them (10 in each of the two classes) held scholarships sanctioned by Government.

32. *Veterinary dispensaries.*—As in previous years, the establishment of Government Veterinary dispensaries at mufassal stations generally remained in abeyance for want of local men qualified to take charge of them; the opening of a dispensary at Rajahmundry, where one was urgently wanted, was, however, sanctioned by Government, and though a Veterinary graduate was sent for from Bombay, it was not started during the year pending the selection of a suitable site. There were in all five dispensaries at work in the Presidency, of which two were attached to the Veterinary College at Madras and to the Agricultural College at Saidapet respectively and maintained by Government, two more were kept up by the District Boards of Trichinopoly and Madurai, and the fifth by the Pithápuram estate under the management of the Court of Wards. The dispensaries were all of them popular, and the cattle practice grew apace. At the dispensary attached to the Veterinary College, horses and dogs formed the bulk of the patients.

33. *Cattle disease.*—Preventive inoculation against cattle disease was continued during the year. The work was carried on in the districts of Ganjam, Vizagapatam, Gódvári, Guntur, Nellore, Chingleput, South Arcot, Tanjore and Tinnevely, and the total number inoculated against anthrax and rinderpest rose from 6,329 and 2,805 in 1903-1904 to 12,437 and 8,251, respectively, in the year under report. With increased facilities for the supply of serum and with the strengthening of the staff of Veterinary Assistants, when graduates of the Local Veterinary College become available, a considerable development of this branch of work may be looked for.

34. *Pony-breeding operations.*—One of the stallions lent to private breeders in the previous year having died, the number at work was only 14. Of these, eight stood in the Coimbatore district, four in Salem, one in Madurai and another in Trichinopoly and, latterly, at Ootacamund. The total number of mares covered was 356 against 426 in the previous year, giving an average of 25 mares per stallion against 28 in the previous year. The decrease in the average is attributable mainly to one of the stallions having been under treatment in Madras for some time and to his having covered only four mares during the year. Of the 426 coverings in 1903-1904, the Superintendent has ascertained the results in 293 cases only; 110 cases were successful though six of these aborted, and in 183 cases the results were *nil*. The results are not traceable in 66 cases owing to the sale of the mares, and reports from Revenue officers are due in the remaining 67 cases.

Sixty-three entire ponies in the Coimbatore district and sixteen in the Salem district were castrated against 74 and 17 respectively, in the previous year. There were two deaths among castrated subjects, and compensation was paid to the owners.

35. *Pony and cattle shows and cattle fairs.*—No pony shows were held during the year. The Madras Cattle Disease Act (II of 1866) was put in force at most of the cattle fairs held in the Tinnevely district; and in nine of these, Veterinary Assistants helped the local authorities in carrying out the provisions of the Act. Cattle shows were held at Vizianagram in the Vizagapatam district, at Ongole in the Guntur district and at Conjeeveram in the Chingleput district. Government contributed Rs. 500, from Imperial Funds, towards the prizes awarded at the Vizianagram Show and a similar sum towards the Ongole Show, besides granting medals for the best cow and the best bull and certificates to all prize-winners. At the Ongole Show, cattle to the value of Rs. 10,000 were sold—an illustration of the commercial value of such Shows, apart from their educative effect.

36. *Cattle-breeding.*—With a view to promote a general improvement of stock or at least to prevent the deterioration thereof, Government considered it desirable to provide selected persons with breeding bulls, and directed that enquiry and inspection should be made in the neighbourhood of the breeding districts in order to select the most congenial localities and the most suitable persons for the conduct of the experiments. Proposals on this subject were under consideration during the year.

VI.—AGRICULTURAL EDUCATION.

37. The arrangements in vogue in previous years for imparting instruction in agriculture to the minors under the Court of Wards at Newington continued to be in force during the year. Mr. Benson, the Deputy Director of Agriculture, examined the minors once in September 1904 and again in the early part of April 1905 and made certain suggestions with a view to improve the method of instruction; these suggestions are now under the Court's consideration.

38. *Higher education.*—The College of Agriculture continued to work under the revised curriculum introduced in the year 1902-1903. The number of students on the rolls showed an increase from 46 to 58—the direct result of the greater interest that has recently been aroused in agriculture in the Presidency. The Sub-Assistant Director of Agriculture, who was Acting as Vice-Principal, was retransferred to the Agricultural Department in July 1904. The College had thereafter to work for almost the whole of the year without a Professor of Agriculture: further, there was a change in the other lecturers owing to the illness and subsequent death of the First Assistant. The results of the final examinations, nevertheless, showed an improvement as compared with those of 1903-1904.

The Veterinary Hospital attached to the College continued to be popular and the total number of cases treated showed a slight increase.

An improvement was introduced into the College farm in the shape of an oil-engine and pump for raising water from the Adyar, and this was of special value as the rainfall during the year under report was very deficient.

The students of the College made two tours of agricultural study—the first in October 1904 in the South Arcot, Tanjore, Madurai and Tinnevely districts and the second in January 1905 in the Cuddapah district.

VII.—THE PUBLICATION OF AGRICULTURAL INFORMATION.

39. A bulletin (No. 50), on sugarcane cultivation in the Deccan districts of the Madras Presidency, was issued during the year under report. The note on the sugarcane cultivation at the Samalkot experimental station which was published in *diglotti*, as stated in paragraph 33 of the previous report, was revised with reference to the results attained in 1903-1904, and the revised note was published in the District Gazettes for the benefit of ryots and was also distributed to leading agriculturists. Similarly, a note in English and Tamil on the successful cultivation of the variety of paddy called Banko at the Koilpatti farm and the special merits of its cultivation was printed as a leaflet and distributed among ryots in the Tinnevely district. Two more leaflets on "Alkali Land and its Reclamation" and "The Bamboo Seed Drill" were translated into Tamil, Telugu and Canarese and copies thereof were

circulated with District Gazettes and distributed among ryots throughout the Presidency exclusive of the West Coast districts. A note on the cultivation of Sisal hemp in Yucatan was printed and copies were supplied to Collectors of selected districts for circulation among those interested in the aloe fibre industry. As directed in paragraph 7 of the Government Order reviewing the report for 1903-1904, a new method of bringing the results attained at the Samalkot farm to the notice of the ryots of the cane-planting villages in the Gódvári district was adopted during the year under report. An agent was furnished with copies of a printed pamphlet as well as with a cartful of samples of the sugarcane grown successfully at the farm; with this twofold equipment he called at the various villages, held public meetings of the ryots, explained to them the contents of the pamphlet, and exhibited his specimens. Another plan was also tried at the farm, viz., to train on the farm, for a few weeks or a month, selected ryots belonging to the several zamindaris and to send them back duly impressed with the general aspect of the different varieties grown on the farm and charged with information as to the improved methods of work there adopted. In Tanjore an Agricultural Inspector was occasionally deputed to help the Tanjore Agricultural and Industrial Institution in the introduction of new crops and of improved methods of agriculture and improved implements and similar assistance was rendered to the Penukonda Agricultural Society in the cultivation of their vineyards.

40. An Industrial Monograph on "Tanning and Working in Leather," the subject prescribed by Government for 1902-1903, was issued during the year. Under the orders of Government, steps were taken to ascertain the number of copies required for free distribution to the various District Agricultural, Planters' and Trades' Associations and to Editors of newspapers and reviews with a view to the monograph being brought to the notice of leather merchants and traders generally throughout the Presidency: arrangements were also made to abridge the monograph for translation into the several vernaculars and publication for the benefit of villagers, tanners and leather workers. The subject chosen for the industrial monograph for the year under report is "Stone-carving and Inlaying," and Mr. A. Rea, Superintendent of Archaeological Survey, has undertaken its preparation. It is not, however, due until September 1905.

41. The number of papers received from and communicated to other Provincial departments was as follows:—

	Received.		Sent.
	Indian.	Foreign.	
	No.	No.	No.
Total publications	246	835	18

APPENDIX I.

ANNUAL REPORT OF THE GOVERNMENT BOTANIST, MADRAS.

I have the honour to present the following report of work done in my office during the year 1904-1905.

2. Owing to various causes this work suffered considerable derangement—

(1) The office was transferred during the year to the Drill Hall of the Madras Volunteer Guards. The collections were rearranged and spread out, the new premises were furnished, a laboratory was constructed and the library brought into order.

(2) There was a great extension in the work of the Samalkota sugarcane farm. Land was acquired for a permanent farm and building operations commenced. Two new farms were opened—one at Palur in South Arcot for the study of ground-nut, sugarcane and indigo, and one at Taliparamba in Malabar for the study of pepper.

(3) The ordinary work of the office was further disturbed by the deputation of the Government Botanist to the Pusa Conference and the ensuing heavy work in connection with the development of the Agricultural Department in Madras.

3. An important addition was made to the staff in the shape of fieldmen. This experiment promises to be of the greatest assistance in various directions. There has, however, been considerable difficulty in obtaining suitable candidates, because of the absence of an assurance of future prospects. Only two of the three posts have been filled.

4. The Government Botanist spent 200 days on tour during the year. The tours projected and sanctioned by Government were (1) an economic tour in the Ceded Districts and (2) a systematic survey tour in the Travancore forests. The former was given up in favour of a thorough study of the South Arcot district in connection with the Palur farm and the latter was postponed in favour of a similar study of Malabar pepper plantations in preparation for the Taliparamba farm. Seven visits were made to Samalkota during the year. A visit was paid to Koilpatti to observe the cotton crossing experiments, to Burliyar and Kallar plantations of the Nilgiris and to the Melrosapuram farm. Frequent visits were paid to the Saidapet farm to observe the experiments in ground-nut, indigo, sugarcane and cotton. A short tour was made to Alamuru in the Gódvári district to study the palmyra disease and the deputation to Pusa was made use of for special studies at the Royal Botanic gardens, Calcutta, and the office of the Reporter on Economic Products to the Government of India.

The various Assistants spent about 360 days on tour including visits to Travancore, Mysore, Gódvári, South Arcot, Koilpatti, Ootacamund, Erode, Guntur, Malabar, Udumalpet, Saidapet, Coimbatore, Tanjore and Salem.

5. The systematic botanical survey of the Presidency has had comparatively little attention paid to it during the year. One Sub-Assistant is set apart for the work of keeping the collections of the Madras flora in order. He has also to make occasional collecting tours. But this officer has during the year been frequently employed on economic work.

A tour was made by him along the Travancore backwaters, partly for the purpose of preparing the way for the Government Botanist, but more especially for making a collection of the indigenous indigos and collecting seeds of *Indigofera longicaecum* recently rediscovered in that part of South India. Another tour was made along the chief sandal-bearing tracts of Mysore for the formation of an authoritative "Sandal flora". This work was unfortunately rendered difficult by the prevailing drought, few flowers or even leaves being found on the majority of plants. Advantage was taken of this tour to make a collection of the haustoria of the sandalwood attached to different plants for a comparative study on which the Government Botanist is engaged.

Collections of minor importance were made at various places wherever the Government Botanist was on tour.

6. The herbarium received a considerable amount of attention. The whole of the cases were rearranged and the sheets examined and cleaned upon transference to more commodious quarters, and the regular monthly inspection was rigidly adhered to. About 2,000 sheets were mounted, this number being made up of 1,000 from the Gódvári gorges, 700 from the Wynad and 300 from the Kistna uplands. Three hundred sheets were mounted for the Calcutta herbarium and about the same number was despatched. In exchange for these, 291 sheets were received from Calcutta.

Only 500 sheets were written on and incorporated in the finished collections, and this fact is worthy of attention. There is a very large collection of mounted specimens in the herbarium not yet written upon. Many of these are already worked out, but there has not been time for the Sub-Assistant or the Government Botanist to put the finishing touch and add them to the collection. During the year 2,000 sheets have been mounted and only 500 have been written upon, the mass of sheets unduly increased by 1,500, and this in a year when active collection was in abeyance. The Botanical Survey of the Presidency takes up a very small portion of the time of the staff at present. But, considering the value of the collection and the advisability of keeping pace with Bengal, Bombay and the United Provinces in all of which floras have now been prepared, it should be placed upon a more satisfactory basis.

7. During the intervals of economic work, the Government Botanist devoted some of his time to a biological study of the parasitic phanerogams of the Presidency. These have considerable economic importance. The various species of *Loranthus* severely injure many of the forest trees and a careful study of their mode of life has been instituted. Considerable collections have been made of all stages of their development from the seed to the mature plant. Observations are much needed by Forest officers as to the special birds which distribute the seeds of the different varieties.

A close study has been undertaken of the sandal haustoria. It is felt that a biological study of this curious parasitic tree is needed in order to prepare the way for successful plantations. Some of the results of this investigation have been published in a couple of papers in the "Indian Forester".

8. Although no great strides have been made in the collection of economic plants during the year for the reasons stated in paragraph 2), the tendency towards the development of this branch of herbarium work at the expense of the systematic survey has been very marked. The study of plant diseases generally has received a check because of the absence of competent assistants and the necessity of employing the whole staff on general agricultural matters. Practically the whole strength of the office has been thrown into the foundation of the three farms mentioned below.

9. The work of the sugarcane farm at Samalkota has been carried on with energy. Great attention has been paid to the collection and study of the different varieties of canes, 30 or 40 of which have now been got together. Large numbers of the Red Mauritius canes were distributed to the ryots at the commencement of the year and the plots on which these were planted were inspected twice during their growth by the Agricultural Inspector. The success of this variety as compared with the local kinds was so marked that the demands for seed were far in excess of the capacity of the farm. The experiments with methods of planting, the application of different kinds of manures, the formation of a weed compost, the raising of seedling canes and the collection of sports have been continued.

Under instructions from the Director of Agriculture, a block of 36 acres has been selected for the formation of a permanent sugarcane farm, the land during the past 3 years having been rented each season, a jaggery shed and store-house has been erected and plans have been prepared for the laying out of the farm, the erection of quarters for the Inspector in charge and an inspection bungalow for European officers.

The farm has received many visitors including the Director of Agriculture, the Deputy Director of Agriculture, the Collector of the district, Dr. Lehmann, the Hon'ble Mr. Yorke, the Rajah of Venkatagiri, three Zamindars of Peddapur, the Manager of Pithapuram Estate, the Coconada Chamber of Commerce, the District Association and hundreds of ryots, many of whom have travelled great distances. Selected cultivators deputed by various land-owners have been received upon the farm and instructed in the methods of cane cultivation adopted. During the year a set of Barbados seedlings have been successfully introduced and are being grown under observation at the Saidapet farm and the Agri-Horticultural Society's gardens in Madras.

10. Consequent upon the study of the conditions of the pepper plantations commenced last year, it was decided by Government that a special farm should be devoted to the subject. After a considerable amount of touring, it was considered advisable that this farm should be placed in Malabar, the home of the pepper plant, and not in the Wynad, although a subsidiary farm might be formed there later. A site has been accordingly selected at Taliparamba in the Chirakkal taluk. Although most of the preliminary work has been accomplished, the land had not been acquired at the close of the official year.

11. The importance of the groundnut in South Arcot and the occurrence of a serious disease in this staple in the Poona farm led to a careful study of this crop. Three tours were made by the Government Botanist and several by his Assistants in the South Arcot district and, finally, a site for the farm was selected near Palur in the Cuddalore taluk. Arrangements were made by the inclusion of 5 acres of wet land for the formation of a sugarcane nursery in the south of the Presidency, and a truck-load of the best Samalkota varieties were sent down and planted. A number of indigo varieties had been collected in the Government Botanist's office, as detailed elsewhere in this report, and these have been planted as a rotation crop on the dry land not required for groundnut. The land for this farm has been rented for two years. It has been enclosed and planted up and an office and cattle-shed have been erected.

12. The following subjects of economic interest have received special attention during the year:

Grasses.—Seven hundred and eighty-five sheets were mounted during the year, comprising collections from Tinnevely, the Nilgiris, Madras and the Wynad. Seventy-one of these sheets refer to diseases. A set of grass-smuts, sent for determination in November 1903, were worked out by Dr. Butler, and, out of the fifteen kinds sent, six were found to be new species, while the others have not been finally named.

Lemon-grass.—Two lots of lemon-grass have been received for the herbarium, one from Mr. Jowitt of Ceylon, who is specially studying the group, and one from Mr. Barton Wright of the Nilgiris. These have been determined as regards the species, but the naming of the variety has not been possible in the absence of authentic herbarium specimens.

A Wardian case of Cochin lemon-grass was carefully packed and forwarded to Kew for the Imperial Commissioner of Agriculture in the West Indies. The result was a failure, the plants being dead on their arrival in England. A third lot has been obtained from Cochin for another attempt. Seed will also be collected for transmission.

14. **Agaves.**—At the instance of the Superintendent of the Calcutta Botanical Gardens, and of Mr. J. R. Drummond, I.C.S., a thorough survey has been made of the agaves of the Presidency. These plants, although widely scattered, are not natives of India, having been introduced at various periods. One hundred and nine lots were received and forwarded to Calcutta. The sending of such large specimens involved a considerable amount of labour and the collection of their vernacular names and uses entailed an active correspondence throughout the year. The results, however, have justified the trouble, for it has been found that the names locally applied were pretty generally incorrect. The economic importance of this cannot be overestimated. Various attempts have been made in South India to start fibre plantations, and, for this, the true determination of the species is of prime importance. For instance, the plant usually called *Agave americana* proves to be *Agave vera-cruz* and the fibre value of these plants is probably very different. A bulletin on the subject is about to be published by the Calcutta authorities and full details will be found in it regarding the Madras varieties.

15. **Sorghums** (*cholum*, *jonna*).—Seventy-one numbers of sorghums were forwarded to the Reporter on Economic Products in continuation of last year's collections. Specimens of all these have been retained in the local office herbarium. A study was made of the Irungu cholums in the Koilpatti farm and these were divided into fifteen varieties, which, it was recommended, should be kept apart. An attempt was made to classify all the sorghums thus far collected and an Assistant went over all the sheets with the Deputy Director of Agriculture. The collection of sorghums in the office is now large and fairly representative. It includes 680 sheets of sorghum heads and 70 sheets of diseased specimens, filling six large herbarium cases.

16. **Yams, etc.**—The survey of the wild yams of the Presidency has been continued and 51 sets of leaves and tubers have been forwarded to the Reporter on Economic Products for further growth and determination. Besides these, various packages of paddy, kudiraivali (*Pennisetum polystachyon*, *Roeb.*), varagu, cumba, tenai, pepper, chillies and so forth were also forwarded for experimental growth at Sibpur, duplicates being retained in the office collection.

17. **Indigo.**—Indigo seed has been collected from various sources for growth on the Palur farm. An Assistant was sent to Travancore to obtain seed of *Indigofera longiracemosa*. He succeeded in finding a number of plants, the seed of which was selected and has been planted at Palur, Saidapet, Pusa, Calcutta and Java. Seed of *Indigofera anil*, discovered only in the Satyamanglam taluk of the Coimbatore district, has also been sown, but *Indigofera articulata*, found in the Palnad taluk of the Kistna district, was not obtainable because of the failure of the north-east monsoon. *Delonix* was obtained from Colonel Prain. *Indigofera arrecta* was received from Mr. Coventry at Pusa, while the *Gossypia*, *Faboideae* and *Namul* varieties have been obtained from various parts and have been planted in the series.

18. **Cotton.**—The investigation of cotton problems has been relegated to the office of the Deputy Director of Agriculture. A certain amount of attention was, however, devoted to the subject. A large collection of the tree-cottons from all parts of the Presidency was grown on the Saidapet farm for the Inspector-General of Agriculture, and herbarium specimens of these were collected during the year. Similarly, eighteen varieties of *American cottons*, considered suitable for cultivation on light soil with irrigation, were obtained from the Koilpatti farm and grown at Saidapet. Herbarium specimens have been taken of these. A couple of plots of light-soil cotton, the *Terrapatty* of Kurnool and the *Bourbon* of Erode were also grown at Saidapet under the Government Botanist's directions. Three minor experiments in cotton-growing were tried in the Salem, Tanjore and Coimbatore Jails, an attempt being made to determine the nature of the plants grown from bazaar seed in each case. Owing to unfavourable nature of the weather, all of these plots which were inspected several times during the year, have failed.

19. **Caster.**—At the instance of the Ceylon Agricultural Department, a small collection of the different varieties of *castor* was made and the following were transmitted:—*Peddā* and *Chilla amudam* from Berwada, *Periya* and *Chilla amudam* from Coimbatore, *Payra amudam* from Guntur, *Tota amudam* from Hindupur and *Manikottai* from Erode. The results of sowing these different varieties in the Ceylon agricultural farm will be followed with interest and should be of use to Madras.

20. A great amount of miscellaneous work has been accomplished by the office during the year and the correspondence has been large. Attention has already been drawn to the absence of the skilled assistants in the investigation of plant diseases. Considerable numbers of specimens have, however, been obtained during the year and have received as careful attention as was possible under the circumstances. No large additions have been made to the collection of Madras plant-pests. The Cryptogamic Botanist to the Government of India, besides naming our grass-smuts, has forwarded a useful herbarium set of sugarcane diseases in North India and has helped us in various other ways. Both he and the Inspector-General of Agriculture have visited Madras during the year to the great benefit of the Department. Upon removal of the office to more commodious quarters, the collection of photographic negatives has been got into order and now numbers between 300 and 400. Work in this direction has, however, been hampered by an injury in the Government Botanist's fingers and the absence of any one else in the office capable of doing the work. A photographic subordinate is badly needed. The office has sustained a severe loss in the death of the artist Govindarajulu who showed great talent and whose place it will be difficult to fill.

MADRAS,
12th June 1905.

(Signed) G. A. RAMESH,
Government Botanist, Madras.

APPENDIX II.

ANNUAL REPORT OF THE SUPERINTENDENT, CIVIL VETERINARY
DEPARTMENT, MADRAS.

I have the honour to report as follows on the work done during the official year 1904-1905.

2. I was in charge of both the Civil Veterinary Department and the Madras Veterinary College during the year. The staff of the College consisted of an Assistant Principal, Mr. D'Silva, and Senior lecturer Mr. Mascarenhas, whose services were lent to the Conservator of Forests, Southern Circle, for one year from the 4th March 1905. In his place, Mr. Valladares was appointed. In January 1905 another lecturer was added to this staff.

3. I was on tour for 86 days during the year and travelled 8,929 miles by rail and 437 miles by road. My presence at head-quarters, for a longer period, was necessary in connection with the supervision of the College work. When everything is in working order and the full complement number of assistants, i.e., four, are entertained, I may be able to spare more of my time to inspection duty. The principal portion of my tour was in the pony-breeding districts and in the districts where inoculation was in progress. In connection with the inoculation, I had been to Tanjore, Berhampur, Vizagapatam, Pithapuram, Bapatla and Ongole taluks. The progress of inoculation work and its usefulness are referred to in subsequent paragraphs. The hospitals at Trichinopoly, Madura—where one has been started during the latter part of October 1904—and Pithapuram were visited by me frequently. Cuddalore, Berhampur, Coonoor and Rajahmundry were also inspected by me to ascertain the importance of these centres for starting similar institutions. It is anticipated that in Rajahmundry, Coonoor and Berhampur hospitals will soon be started, and I am of opinion that they will be very popular. Cuddalore is a suitable centre, but the opening of a hospital should be deferred until the scheme about Veterinary hospitals has been decided, and more Veterinary graduates are available. Several other places which are supposed to be important centres of cattle breeding or at least susceptible of improvement in this direction were visited, and a report on the furtherance of a scheme for the improvement of the cattle of this Presidency was submitted by me during the year. On information that glanders was suspected among the horses at Coonoor, I proceeded to the spot and inspected some of the hawk lines and satisfied myself that the disease was the less dangerous one of strangles. In addition to the above, the Government elephants at Pollachi were inspected under direction of the Board of Revenue. I was also directed to inspect the different taluks of the Nellore district, in connection with certain forest restrictions which were said to interfere with the good grazing of the cattle of Nellore, and at the same time discouraged the ryot from interesting himself in cattle breeding which is a speciality in most of the places of Nellore district.

4. *Madras Veterinary College.*—(i) The new buildings have been completed and the classes will be held there from the next term commencing from 1st July 1905. During the year, Dobbin Hall was acquired by Government, and this has been proposed to be altered into a hostel for students. Four kitchen houses have also been provided. The Society for the Prevention of Cruelty to Animals has erected a new Dog's home by the side of their main buildings, and has allotted a ward for dogs, also a spacious hall for conducting operations. This will afford the students considerable experience in canine practice.

(ii) The year commenced with 20 students in class A and all of them secured promotion to class B. The examination in all branches was conducted by me personally. The students have done well both in practical and theoretical work, and 11 of them secured more than 80 per cent. of full marks and the last student 75 per cent. Again a fresh batch of 20 students was admitted in October 1904, and their term commenced from 1st January 1905. These students were examined at the end of December for the distribution of the stipends and at the end of March again. I have adopted the plan of having a preliminary course for students on first entering the College. It can then be seen whether the young men show aptitude for the work. If they work satisfactorily they are allowed to continue their course.

(iii) The working hours are at present between 7 and 10 in the mornings and 2 and 4 in the afternoon. These hours are convenient inasmuch as they suit the public who call at the hospital, only during the morning hours, and it is during these hours that most of the practical work is done. The hospital is open for urgent cases at all hours, and the Assistant Principal, who resides in the premises, attends to these. All the Assistants are in attendance at the hospital during the morning hours, each in charge of a ward.

(iv) The attendance of students of both the classes has been very regular and they have all worked diligently. During the year one student, Krishna Kamalathara Rao, was, as a special case, exempted by Government from the operation of the rule that only passed candidates are to be admitted for the course.

(v) The Museum and the Library were further equipped during the year. Valuable models of a horse, cow and other portions of anatomy were obtained from the Secretary of State for instruction of students.

(vi) Lucerne was cultivated in the compound of the College and it grew well. This was supplied to sick cases in the hospital every day and as a diet it was of great medicinal value. Guinea grass was continued to be grown and this was likewise supplied to sick cases. It is proposed to apportion a plot for the cultivation of Harialli grass and it is expected that it will do well and thus be a saving in the feeding.

(vii) Evening exercises for students were made compulsory and the attendance was regular. They played a few cricket matches with the other Colleges and in most of them they came out successful. This year, a foot ball team, and a badminton club will be added, as the number of students, when the other class is formed, is bound to increase. The students celebrated the College day in the month of October, and the proceedings thereof were conducted with great enthusiasm. Such gatherings tend to promote *esprit de corps* among students and I therefore trust it will become an annual institution. Mr. D'Silva has performed his duties to my satisfaction and I beg to record herein my appreciation of his valuable services. The work of the Veterinary hospital, attached to the College, is referred to separately.

5. *Cattle diseases.*—(i) Appendices F and G are appended to the report and numbered XV and XVI respectively as ordered by the Board of Revenue.

(ii) The total deaths among cattle during the official year in the Madras Presidency was 89,871 from diseases and 14,370 from other causes, thus making up a total of 104,241 which is less than 1 per cent. of the total stock. The total loss during the year is very much the same as in the previous year, the difference being very slight. More than a third of the loss is attributed to unspecified diseases. The figures against rinderpest show an increase, and that against epizootic aptha a decline. Almost all the districts, especially Gódvári and Kistna, suffered an increased mortality from rinderpest. The loss from anthrax was very much less during the year in the districts of Gódvári, Nellore, Chingleput and Tanjore. In all these districts preventive inoculation against anthrax was in progress. When compared to the figures of the past year the mortality was reduced by nearly 50 per cent. in the Nellore district. This would go towards proving the beneficial results of inoculation against anthrax. In Ganjám, however, the figures show an increase in the mortality from this cause. Very careful antiseptic precautions were used in the administration of the sera, consequently no untoward results were reported.

Further, the sera have to be preserved at a somewhat low temperature, which causes anxiety during the hot weather; therefore I have devised a plan whereby the serum bottles are preserved in ice boxes and despatched only in small quantities to the Veterinary Assistants whenever they apply for the serum. As the period of immunity lasts probably for six months, inoculation has to be repeated in cases of continued outbreaks.

(iii) During the past three years preventive inoculation has become very popular, and this department is frequently being requested to inoculate herds of cattle. The following figures will very clearly show the degree of popularity which preventive inoculation has attained, and which is to my mind entirely satisfactory. The satisfactory result is due to the tact of the Veterinary Assistants employed on this work and also to the beneficial results which have accrued:—

	Anthrax.	Rinderpest.	Total.
1902-1903	377	..	377
1903-1904	8,320	2,805	9,124
1904-1905	12,437	8,251	20,688

In many cases where an animal actually had the disease—rinderpest—a dose of 50 c.c. proved effective and saved the animal. Malignant sore-throat was somewhat noticeable in the Ganjám, Kistna, Nellore and South Arcot districts, and black quarter in Cuddapah and Kurnool. Under epizootic aptha there had been nothing noticeable. I am not inclined to believe that 2,787 deaths can be caused by this disease. Epizootic aptha seldom ends in death. The average loss from the diseases malignant sore-throat, black quarter and epizootic aptha does not show any appreciable decrease over that of the previous year.

(iv) Cattle mortality was most severe in the Ganjám and the Gódvári districts, and the Ceded districts come next. These two portions of the Presidency, the Circars and the Ceded districts, afford a vast field for the operations of this department.

(v) It must however be remembered that during certain portions of the year large herds of cattle are brought from the surrounding and indeed distant districts for grazing, so that disease is constantly being imported into the district, and which it is almost impossible to prevent. The only measure then to be adopted is to have a larger staff in these districts, and reports of cattle disease to be sent direct to the Veterinary Assistants. These officials would at once proceed to the locality and inoculate all the animals comprising the herd. In this way the spread of the disease might be stopped.

(vi) According to the figures, the loss from other causes has been increasing, especially under "wild animals".

(vii) Under equines there had been 209 deaths from disease and 87 from accidents. Bellary district reported the largest number of deaths (40). During the year there were no contagious diseases, such as glanders and farcy among horses, reported.

6. *Veterinary Hospitals.*—(i) There are now five hospitals in this Presidency. One is attached to the Veterinary College, Vepery, one to the Agricultural College, Saidapet. Two are under the District Boards of Trichinopoly and Madura. One is in Pithapuram under the Court of Wards. The one in Madura was opened only in October 1904 and for some time afterwards, it was without a Veterinary Assistant, as the one appointed, Mr. Shah, left his duties abruptly.

(ii) The subjoined statement should speak for the progress attained by each of these hospitals:—

Serial number.	Name of the hospital.	In-patients.				Total number of in-patients.	Out patients.				Total number of out-patients.	Total number of in and out patients.	Total number of in and out patients during last year.
		Horses.	Cattle.	Dogs.	Others.		Horses.	Cattle.	Dogs.	Others.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Veterinary College Hospital	484	131	351	13	929	265	62	768	27	1,052	1,981	778
2	Saidapet Veterinary Hospital	386	489	..	357	..	..	..	..	..	..	1,322	1,218
3	Trichinopoly Veterinary Hospital	235	344	121	..	700	..	..	..	..	..	700	..
4	Madura Veterinary Hospital	146	229	30	..	405	..	..	..	..	..	405	..
5	Pithápuram Veterinary Hospital	9	6	3	..	18	35	317	90	13	455	473	439

* Refers to both in and out-patients.

(iii) In Trichinopoly and Madura it is the custom that fresh numbers are given to cases as they are daily admitted. The average number of cases treated every day amounted to 33 in Trichinopoly and 15 in Madura. From the figures, it is evident that Trichinopoly hospital has been growing in popularity and the hospital in Madura shows signs of becoming as useful as the one in the Trichinopoly district. The locality of the Madura dispensary, however, leaves much to be desired as it is a long way from the city. I hope shortly to have it removed to a more central place where it should become very popular.

(iv) Pithápuram is more a place for cattle and the number of bovine patients treated is 823 as against 581 for nine months during the previous year. The figures show a satisfactory increase. The Veterinary Assistant is a Punjabi and a graduate of that College, but he has very many difficulties to contend with. My experience still leads me out in the opinion that in order to get successful work done, only co-religionists with a good knowledge of the local vernacular may be employed, and who can hope to obtain the confidence of cattle owners who are extremely conservative. This difficulty will be met when the graduates of the Madras Veterinary College are forthcoming. Though the number of bovine cases treated at this hospital showed a small number of in-patients, it should in no way be considered that the hospital has gone down in popularity. The number of out-patients has increased. The fact is that the people cannot spare the time and trouble to look after their own animals while in hospital. If the animals were tended and fed at the dispensary, no doubt the animals would be allowed to remain. Except in serious illness, however, it seems desirable that the patients should be taken home where they receive every care from the owner's family. The Veterinary Assistant was, in addition to his hospital duties, employed on inoculation work outside Pithápuram on two different occasions, and this might have affected, to some degree, the hospital practice.

In Saidapet the number of patients treated has steadily increased year after year, from about 200 cases in 1888-89 to 1,232 during the year under report. I understand from a report received from Mr. Kees that certain proposals have been submitted to improve the cattle practice. I believe it is contemplated to supply feed for the cases while at the hospital, without trouble to owners who in most cases do not happen to live near to look after the cases themselves.

(v) Then coming to the hospital in Madras, it may be seen that the total number of patients was 1,981 during the year as against 778 for the six months in 1903-1904. The number of cattle patients was 183 against 77 during the previous year. The cattle practice has been increasing daily and to-day there are 36 patients under treatment in the hospital. Equine and canine practice form a large portion of the practice here, and the number of patients under these heads has increased from 687 during the latter half of the previous year to 1,758 during the current year. The nature of the cases treated at the hospital falls under different headings and affords ample opportunities for the instruction of students. On the whole, during the year, there had been only five cases among horses and two in dogs that were returned as incurable. There were 114 deaths among the patients treated during the year—and they are made up of horses 10, cattle 82, and others 2; and 24 cases were destroyed at the request of owners which should not have been included under the total number of cases treated. The destruction of animals has been undertaken by the hospital, as the bodies afford material for instruction to students in dissection and post-mortem examinations. In the hospital 329 major and 124 minor operations were conducted during the year. The number of police cases treated at the hospital are comparatively few and the main practice is among private cases. I consider that the menial establishment of the hospital is very much undermanned and propositions for a further increase will be submitted. The total receipts in the Veterinary hospital during the year amounted to Rs. 6,364-12-1.

7. *Pony-breeding operations.*—(i) During the year the number of stallions at work was only fourteen, as the one lent to the Raja of Tanj died from colic. There were eight in Coimbatore,

four in Salem, one in Madura and one in Trichinopoly, but latterly at Ootacamund in charge of a private gentleman, Mr. Morey. Mr. Morey has lately died, and the stallion has been removed to Kangayam until such time as a Veterinary dispensary has been established in Ootacamund when the stallion would be located there—a most convenient place for his work. The other stallions were under departmental supervision. The Pattaigar of Pallaikotta and the Mittadar of Pagalpatti both returned the stallions in their charge. From the latter I was obliged to withdraw it, as he did not maintain one of the conditions of the agreement that the stalls should be of the design approved by the Superintendent of the Civil Veterinary Department. The former was withdrawn on account of the prevalence of strangles among the Pattaigar's horses. I did not try during the year under report to influence any of the private owners to take charge of the stallions. I consider that it is not desirable to station stallions in places which are far away from Veterinary aid and where constant supervision by Veterinary Assistants cannot be arranged without some sacrifice to their other duties. There are, of course, a few other centres in this Presidency where pony breeding might do some good, and in such places the stallions should be stationed in the compound of the Veterinary Hospitals (when these are started) so that proper supervision might always be exercised. I had been round Coimbatore, Salem and Madura districts and visited almost all the places where stallions had been located. In these districts, the stallions are looked after by the District officers who have evinced much interest in them. The total number of coverings was 356 for 14 stallions or more accurately 13 stallions, as Stallion Rahiman covered only four mares during the year and for the most part of the year was at Madras under treatment, as he was falling off in condition. The average number of coverings would therefore be, eliminating Rahiman, 27 per stallion as against 28 during last year.

(ii) *Coimbatore.*—Eight stallions were at work in this district. Stallions Abdulla, Hector, Baby and Punah continued to work at their respective centres throughout the year. Stallion "Nile" was working at Dhárápúram till 10th June 1904 when he was transferred to Bhavani where he worked till about the middle of October and he was afterwards transferred to Kangayam where he has been working ever since. "Ophir" was in charge of Pattaigar of Pallaikotta until the end of June when he was transferred to Kangayam. "Jumna" worked at Erode till the middle of September when he was transferred to Perundurai on account of plague at the former station. "Ali" worked at Karúr for six months and afterwards at Udumalpet. Thus at the end of the year out of eight stallions four were stationed at Kangayam, Dhárápúram taluk. This is the chief breeding centre in the district. In the Coimbatore district the total number of mares served was 219 for 8 stallions against 271 for 9 stallions in the previous year. Thus the average per stallion was 27 during the year, which is very nearly the same as that of the previous year. Only one stallion, "Baby", covered 40 mares, two others, Punah and Ophir, 32 and 31, respectively, and the others below 30. The work of "Nile" was poor and this is owing to prevalence of plague at Dhárápúram and paucity of mares at Bhavani where he was afterwards transferred. At Kangayam, however, he was not much in favour with the ryots as there were three other stallions at stud, at that place, which were more appreciated as good stock-getters, especially "Abdulla." During this year also, Kollegal, one of the important centres for breeding, was without a stallion, as it was considered premature to renew operations at this place.

(iii) *Salem.*—There were four stallions in this district, three in the Hosúr sub-division and one in Salem for about 14 days, and afterwards at Hosúr. In the Hosúr sub-division "Sunshine" and "Tigris" were at Dharmapuri for seven months and one month respectively and afterwards they were transferred to Pennagaram and Krishnagiri where they continued to work until the end of the year. "Selim" stood at Hosúr during the whole year. The Sub-Collector, Salem, reports that at Krishnagiri the services of "Tigris" were much in demand. He is a fine specimen of an high caste Arab and he covered the largest number of mares, viz., 46. The total number of coverings in the Salem district was 114 which exceeded that of the previous year by one. The average per stallion during the year was 28.5 against 22.6 which was the average for the previous year.

(iv) *Madura.*—"Samawy" was stationed in Madura district, nine months in Dindigul and three months in Palni. He covered 19 mares in all or 5 less than in the previous year. He has been now transferred to a new centre in the Madura district.

(v) *Trichinopoly and Ootacamund.*—"Rahiman" was withdrawn from Trichinopoly as he required some rest and after keeping him in Madras for three months I sent him to Ootacamund to Mr. Morey where he covered four mares. It is believed that the pony covered several others, but which have not been reported.

(vi) *Pony-breeding operations,* as far as can be judged by the results and the prices demanded for the stock of Government stallions, do not call for adverse criticism. The Sub-Collector of Hosúr remarks as follows: "I am of opinion that the success of pony-breeding operations depends in some measure on the interest taken by the Divisional Officer. Government stallions have become such an institution in Hosúr that I trust they will not be abolished without good reason. Many mares come for service with their foals and the progeny of their sires, especially of "Tigris", are of good quality. Some mittadars have produced some very fair ponies in this way." Though the number of coverings on the whole show a decrease over the figures of the previous year, it cannot be doubted that pony-breeding, as an industry, might well be preserved in this Presidency. It would not require any great effort just now, until the results, at the end of the stipulated period—vide G.O., No. 421, Revenue, dated 24th April 1903—show satisfactory progress and justify further stimulus. No compulsion had been used and no influence was brought to bear on the ryots requiring them to avail of the services of these stallions but, as in previous year, the system that the ryots should voluntarily take their mares to these stallions was followed.

(vii) The subjoined table shows the work done by each stallion for the last three years:—

Number of stallion.	Name of the stallion.	1902-1903.	1903-1904.	1904-1905.
6	Abdulla	31	30	24
7	Carbon	32	20	14
11	Facel	28	20	..
13	Sunshine	29	30	25
15	Selim	30	18	29
17	Hector	40	33	25
18	Baby	19	33	40
19	Nile	28	16	14
20	Tigris	40	29	46
22	Ophir	48	32	31
23	Junna	27	30	24
24	Ali	..	41	29
25	Rehman	..	31	1
26	Punch	..	39	32
27	Sunaway	..	21	12

8. *Results of the coverings of the official year 1903-1904.*—There had been 426 coverings; of these in 259 cases enquiries were made and in the remaining 67 cases the reports are still due. Of the ascertained cases 110 were successful cases including 6 that had aborted. One hundred and eighty-three cases proved empty and the remaining 66 cases were not traceable, for they were sold subsequently and removed to other parts of the Presidency. This gives a percentage of 37.5 successful coverings, omitting out of account cases that were not reported and not traceable. This must be considered as an extremely favourable result when compared to the percentage 27.8 during 1902-1903. The results of these operations, for the most part, depend upon the time of service and the care bestowed on the animals after the service, setting aside other peculiarities of minor importance. As the results of the coverings improve, more mares of a better quality will be brought to the sires and on these grounds, I would advise Government to continue the pony-breeding operations. The non-compulsory system, that is, the system whereby owners of mares may voluntarily bring their animals to be covered without being worried by Chuprasis and Inspectors has, I maintain, proved satisfactory and may be adhered to. An award of Rs. 25 was given to a mare foal in December 1904 on the recommendation of the Collector.

9. *Castration.*—As in previous year, two salustries were at work in the Coimbatore district and 63 pony entires were castrated as against 74 in 1903-1904. Of the number castrated, two ponies died a few days after castration from tetanus and a compensation of Rs. 45 was sanctioned by the Board to the owners of the ponies (Rs. 25 in one case and Rs. 20 in the other). In the Salora district only one salstry was employed and he castrated 15 entires, one less than in the previous year. Each of them was on privilege leave for some time. It has been found somewhat difficult to obtain work for these men in the centres where they were previously employed and consequently they had been now and again transferred from one centre to another in search of work. Although these salustries do not belong to the permanent establishment, their services should be continued until the subordinate staff of the Civil Veterinary Department has been entertained, and duties such as castration can be taken up by them. The salustries also look after the Government stallions.

Table XIV.

10. *Cattle fairs and shows.*—I had notice of cattle fairs held in Tinnevely district only. Veterinary Assistants were deputed only to a few of the important fairs where the Act was enforced, as they had the more important duty of inoculation to perform. Besides these cattle fairs, cattle shows were held in the Vizianagram and Ongole taluks, both of which I attended, and the reports thereof were submitted to the Board in due course. The other show was in connection with the annual Chingleput Conference at Conjeevaram and Senior Veterinary Assistant M.R.Ry. V. P. Subrahmania Mudaliar attended this show. It is needless to dilate upon the usefulness of these shows, as full reports have already been submitted by me; but I trust that many more will be held in conjunction with the several important Agricultural Associations which have been recently organised.

Regarding cattle breeding nothing has been done during the year, as the proposals, to purchase bulls for distribution among herds, have not received the sanction of Government yet.

Table VII.

11. *Veterinary Assistants.*—(i) During the year the staff consisted of six Veterinary Assistants, three of whom were entertained very late in the year to cope with the demands for inoculation of cattle. One of the Senior Veterinary Assistants, H. C. Sampathu Iyengar, was appointed lecturer in the Veterinary College in January 1905, and in his place, one of the Bombay graduates was entertained temporarily for 2½ years.

(ii) Senior Veterinary Assistant V. P. Subrahmania Mudaliar did duty in seven districts and his work for the most part was inoculation. He has been able to inoculate 11,057 cattle on the whole for rinderpest and anthrax. He investigated an outbreak of charbon symptomatic in Anantapur district. In Sattur taluk of the Tinnevely district there was a highly fatal outbreak of rinderpest among sheep and goats in the month of February 1905 and prompt measures were taken to check its spread and about 209 animals were inoculated. In Trichendur, of the

tinnevelly district, his services were requested for the cattle fair duty and his services were also lent to the Chingleput district show held at Conjeeveram. He has been on privilege leave for 2½ months. His work has been entirely satisfactory.

(iii) M. Hassen Aly Sahib was on cattle fair duty in the Tinnevelly district and attended the marginally-noted cattle fairs where the Act was enforced. There was nothing very important about these fairs and they are usually organised for sale of cattle. The reports go to show that these

Kalucanadai.
Sivalaperi.
Kannicherry.

Alwartimnagari.
Muthulapuram.

fairs have been generally successful as markets for the sale of cattle and very good prices have been realised. The Veterinary Assistants are deputed to these fairs to segregate sick cattle, if any, among those that are brought to these fairs and to otherwise deal with them as required under the Act. Many sick cattle were segregated and treated. The arrangements in the cattle fair grounds were defective in some respects, and it is now under proposal to select suitable sites and to draw a model plan that might be adopted at all the fairs. Large sums are collected at these fairs from cattle owners for cattle and for carts that are admitted into the enclosures; and when the necessary improvements are made for the convenience of these cattle dealers, it is possible to realise a much larger income. At the invitation of the Secretary to the Zamindar of Ettiyapuram, he was deputed to advise the estate regarding the improvement of breeding operations, and two bulls of the Amrut Mahal and the Nellore types were selected and forwarded to the zamindar. He travelled through nine districts during the year, and besides inoculating 2,799 cattle for rinderpest and anthrax, investigated outbreaks of black quarter and malignant sore-throat in the districts of Madura, Coimbatore, Salem and Cuddur. In Coimbatore strangles prevailed among horses, principally of those of the Pattaigar of Pallakottai, and necessary advice was given to treat the cases. He performed his services to my satisfaction.

(iv) Sampathu Iyengar was in charge of the Ganjam and the Godavari districts. He was occasionally deputed to Vizagapatam. He was principally concerned with inoculation of cattle. Two thousand six hundred and sixty-eight cattle were inoculated by him on the whole, and from January 1905, he has been transferred to the College work. While the elephants of the Agency of Parlakimedi and Chatrapur were ill, professional aid was applied for and he was at once directed to attend to those cases.

(v) Three additional Assistants were employed, two of whom joined in the beginning of January 1905 and one in December 1904. They were trained under one or other of the Senior Veterinary Assistants in practical inoculation work before they were independently placed to perform the work of inoculation. After they were trained it was possible to depute two Assistants in independent charge of Ganjam and Godavari districts, one for each district. The third man was intended for charge of the proposed Veterinary Hospital at Rajahmundry. The opening of the hospital has been delayed for want of a suitable site. He has been posted to the Trichinopoly hospital while the permanent incumbent was on privilege leave, at the request of the President, District Board, Trichinopoly. The Veterinary Assistant who has been temporarily in place of the permanent incumbent was employed engaged on inoculation work in the districts. These Veterinary Assistants were principally engaged on inoculation work. They inoculated 3,605 cattle in all, besides 350 sheep in the Tinnevelly district for rinderpest. All our Assistants are graduates of the Bombay Veterinary College and they have to acquire a further knowledge of the places and the people in order to be more useful as inoculators.

12. *Preventive inoculation.*—Table III which is appended to this report gives details of the inoculation work carried on during the year. On the whole 20,688 animals were inoculated, 8,251 for rinderpest, 12,437 for anthrax, as against 9,134 cattle during the previous year. The noticeable feature in this branch of the work of this department is the steady increase in the number of cattle that were inoculated and the fact that people seem to appreciate the value of this treatment gradually. The reports from Godavari point out that the ryots have voluntarily submitted the cattle for inoculation. In the previous year it was not without much entreaty and advice that they could be persuaded. In the Ganjam district 45 villages forwarded the outbreak returns regularly. During the year most of the districts applied for the services of Veterinary Assistants but owing to the inefficiency of the staff it was not possible to render help in all cases. Only important outbreaks of diseases were taken notice of. Many of the places, where cattle have been inoculated, were visited again by the Veterinary Assistants with an interval of five months and it was found out that the inoculated cattle, with a very few exceptions, had survived the disease and were more healthy than before. The reports from the taluks where inoculation was in progress tend to show that the mortality among the inoculated cattle was practically nil. The cattle that were actually suffering from disease received a larger dose of the serum and nearly 80 per cent. of these recovered. The results of the inoculation of the past two years have placed the new treatment beyond its experimental stage, and we may now confidently hope to minimise cattle mortality to a considerable extent when the subordinate staff has been properly equipped. Specimens of blood of cases of malignant sore throat, were forwarded to the Imperial Bacteriologist in one or two instances for the preparation of separate serum for this disease, and also to the King's Institute for the preparation of slides for microscopical instruction to students.

Table III.

From the Imperial Bacteriologist 13,370 and 13,060 doses of anthrax and rinderpest respectively were received during the year.

13. *Expenditure of the Department.*—The total expenditure during the year under report Rs. 55,237-14-11—Imperial Rs. 17,775, Provincial Rs. 37,462-14-11. The latter

includes the charges of the Civil Veterinary Department Rs. 11,529-14-11, pony Rs. 4,722-3-9 and Veterinary College and Hospital, Rs. 21,214-12-3. The expense Veterinary College and Hospital include the pay of the staff, the stipends for students, an cost of establishment which alone amount to Rs. 7,900-4-4, and College contingent Rs. 14,124-7-11. Out of the College contingencies Rs. 6,943-5-19 were spent on furniture, instruments, veterinary models, and some other items which do not come under recurring expenditure. Thus the actual expenditure for medicines and upkeep of the hospital and sports, clubs, etc., amounted to Rs. 7,181-2-1. The total receipts during the year was Rs. 6,361-12-1 and Rs. 769-2-9 was outstanding at the end of 31st March 1905. From this it may be seen that the receipts in the hospital for treatment and feeding have exceeded the outlay. The rates prescribed for the treatment and feeding of the cases are very moderate and the public are generally satisfied with the charges made in the hospital.

14. The Board's Proceedings, communicating that the revised statements should be substituted for those that were hitherto submitted with the annual report, was received on the 22nd March 1905 in this office. There was not, therefore, sufficient time to collect and arrange the information under the headings prescribed in some of the revised statements. The statements contain the information that was available at the time of the preparation of the report.

MADRAS,
29th June 1905.

(Signed) W. D. GUNN,
Superintendent, Civil Veterinary Department

APPENDICES.

TABLE I.—Showing the main results of the Veterinary College during 1901-1905.

Veterinary Colleges and Schools.	Name of course of instruction and name of the course followed.	Number of students.					Students admitted during the year, classed by educational qualifications.			
		Admitted during the year.	Passed at examination during the year.	Failed at examination.	Remaining under instruction at end of year.	Students admitted during the year, classed by educational qualifications.	Matriculated with higher qualifications.	Known as English but not matriculated.	Known as English.	Known as English.
		Scholarship-holders.	Pay to bursars.	Passed at examination during the year.	Failed at examination.	In ordinary course.	Instructed by private tuition to pass.	Matriculated with higher qualifications.	Known as English but not matriculated.	Known as English.
1	2	3	4	5	6	7	8	9	10	11
Madras	Veterinary Graduate course.	25	..	..	..	..	..	2 F.A.s and 35 Matriculates.	..	..

Receipts.			Expenditure.			Employment of students who pay out during the three years preceding.			
From fees.	From other sources.	Total.	Salaries of instructing staff.	Other expenses.	Total.	Total number passed.	In service of Government or Local Bodies.	In service of other bodies or institutions.	In private practice.
12	13	14	15	16	17	18	19	20	21
Rs.	A. P.		Rs.	A. P.					
..	..	4,636 1 11	..	4,636 1 11	..	..	..	..	..

REMARKS.—The College was organised only in January 1904.

TABLE II.—Showing number of deaths from contagious diseases amongst animals during the year 1904-1905.

Provinces.	Equines.						Bovines.						
	Glanders.	Anthrax.	Surra.	Dourine.	Other diseases.	Total.	Rinderpest.	Feet and mouth disease.	Haemorrhagic septi-cemia.	Black quarter.	Anthrax.	Other contagious diseases.	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14 +
Madras	..	..	..	..	263	259	19,772	2,757	..	7,683	14,996	41,533	89,871

* There are no means of verifying this.

† Columns 15 to 20 of the form prescribed by the Government of India have been omitted as the entry therein is Nil.

TABLE III.—Showing results of preventive inoculation during the year 1904-1905.

Provinces.	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 uninoculated in course of outbreak.			Number of animals inoculated.			Number of animals which died after inoculation.		
				Equines.	Bovines.	Others.	Equines.	Bovines.	Others.	Equines.	Bovines.	Others.
1	2	3	4	5	6	7	8	9	10	11	12	13
Madras	Rinderpest and Anthrax.	Serum with lime methine	..	259	89,871	..	..	20,688	..	..	118	..

TABLE IV.—Showing the number of animals treated and castrated by Veterinary Assistants on tour during 1904-1905—Nil.*

* The chief work of Veterinary Assistants was inoculation.

TABLE V.—Showing number of animals treated at Veterinary hospitals and dispensaries during the year 1904–1905.

Province.	Number of Veterinary dispensaries.	Number of Veterinary Assistants employed at dispensaries.	In-patients.											
			Remaining on 1st April.			Admitted during the year.			Total.			Discharged during the year.		
			Equines.	Bovines.	Other animals.	Equines.	Bovines.	Other animals.	Equines.	Bovines.	Other animals.	Equines.	Bovines.	Other animals.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Madras.														
Veterinary College hospital.	1	3	..	..	..	431	131	364	..	..	..	..	..	..
Saidapet hospital	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Trichinopoly hospital ..	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Madura hospital	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Pithapuram hospital ..	1	1	..	..	..	9	6	3	..	..	..	..	..	..
Total ..	5	7	..	..	..	443	137	367	..	..	..	..	..	..

Province.	In-patients—cont.			Out-patients.			Total number of in and out-patients treated during the year.			Receipts.	Expenditure.				
	Balance on 31st March.	Number treated during the year.			Average daily attendance.										
		Equines.	Bovines.	Other animals.	Equines.	Bovines.	Other animals.	Equines.	Bovines.			Other animals.			
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Madras.															
Veterinary College hospital.	..	..	..	265	52	736	..	..	..	699	183	1,099	1,981	..	Separate registers not maintained. Average number of daily patients treated in Coimbatore, a month average daily cases 13.
Saidapet hospital	..	..	..	..	..	..	..	..	..	366	430	367	1,232	..	
Trichinopoly hospital ..	..	..	..	..	..	..	..	..	..	238	344	121	703	..	
Madura hospital	..	..	..	..	..	..	..	..	..	146	220	30	406	..	
Pithapuram hospital ..	..	..	..	36	817	103	..	..	..	44	823	106	973	..	
Total ..	..	..	..	300	889	838	..	..	..	1,513	2,068	1,713	4,294	..	

Note.—Information on other headings is not available.

TABLE VI.—Abstract showing receipts and expenditure of Veterinary dispensaries during 1904–1905.

Province.	Receipts.						
	Last year's balance.	By Local Fund grants.	By Government grants.	By Municipal contribution.	By fees.	By other sources.	Total.
	2	3	4	5	6	7	8
<i>Madras.</i>							
Saidapet hospital	..	..	..	..	RS. A. P. 982 3 3	RS. A. P. 142 11 6	RS. A. P. 1,124 14 9
Madura hospital	..	..	..	..	..	..	506 0 0
Trichinopoly hospital ..	..	..	..	..	6,364 12 1	..	6,364 12 1
Veterinary College hospital ..	..	..	..	..	769 2 9	..	..
Total ..	..	..	..	..	8,116 2 1	142 11 6	7,994 10 10
Province.	Expenditure.						
	Pay.	Travelling allowance.	Medicines, instruments, etc.	Furniture, etc.	Contingencies.	Total.	Balance.
	9	10	11	12	13	14	15
<i>Madras.</i>							
Saidapet hospital	RS. A. P. 855 0 0	..	RS. A. P. 499 0 0	..	RS. A. P. 685 0 0	RS. A. P. 2,089 0 0	..
Madura hospital	376 11 1	108 6 0	233 7 0	..	20 6 0	737 14 1	..
Trichinopoly hospital ..	..	..	..	..	..	2,018 0 0	..
Veterinary College hospital ..	817 0 0	..	2,595 13 9	853 10 0	6,098 4 3	10,364 12 0	..
Pithapuram hospital ..	..	..	..	..	..	1,411 12 4	..
Total ..	2,048 11 1	108 6 0	3,318 4 9	853 10 0	6,812 10 3	16,571 6 5	..

* Outstanding amount up to 31st March 1905.

TABLE VII.—Showing total strength of subordinate Veterinary staff employed during the year 1904–1905.

Province.	How occupied.	Whether paid from Provincial or Local Funds.	Veterinary Inspectors.	Veterinary Assistants.	Remarks.
1	2	3	4	5	6
Madras	In Colleges ..	Provincial ..	..	no. 1	* One to be eventually employed in charge of the Veterinary dispensary proposed to be opened in Rajahmundry.
	In Dispensaries ..	Provincial ..	..	3	
	On other work ..	District Board (2) ..	..	..	
		Court of Wards (1) ..	..	..	
		Provincial ..	..	* 5	
Total ..			..	9	

TABLE VIII.—Return of Stud Bulls for the year 1904–1905—Nil.

TABLE IX.—Showing main results of the working of Provincial cattle farms during the year 1904-1905—*Nil*.TABLE X.—Return of horse, pony and donkey stallions under Local Bodies for the year 1904-1905—*Nil*.

TABLE XI.—Services and produce of each class of horse, pony and donkey stallions during 1904-1905.

Horse, pony or donkey.	Province.	Stallions on register on 31st March.	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	..	The stallions at stud are under the Provincial Department of Government.							* Inclusive of stallion Bahiman which was without work for a greater portion of the year.
		15	*14	15	366	426	25	28	

TABLE XII.—Showing average cost of feed, keep, attendance, etc., of horse, pony and donkey stallions during the year 1904-1905.

Province.	Horse.		Pony.		Donkey.		Remarks.
	Year under report.	Previous year.	Year under report.	Previous year.	Year under report.	Previous year.	
1	2	3	4	5	6	7	8
Madras	..	..	RS. A. 23 5 per month.	RS. A. 20 8 per month.	..	..	Increase is due to the fact that the cost of grain was dear during the year under report.

TABLE XIII.—Abstract of particulars regarding horse fairs and shows held in non-selected districts during the year 1904-1905—*Nil*.*

* On account of plague the pony shows usually held in the Districts of Coimbatore and Salem, were abandoned during the year.

TABLE XIV.—Abstract of particulars regarding cattle fairs and shows held during the year 1904-1905.

Province.	Number of Cattle Fairs and Shows held.	Total number of stock present.							Average price of animal sold.					
		Bulls.	Bullocks.	Cows.	Young stock.	Buffaloes.	Camels.	Others.	Bulls.	Bullocks.	Cows.	Buffaloes.	Camels.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Madras	11	100,908 cattle.							*	..	The prices were moderate in some places and high in some others.			

Province.	Amount realized in fees.	Total number of animals that competed for prizes.	Prizes awarded.						Number of medals awarded.
			From Imperial funds.	From Provincial funds.	From Local funds.	From other sources.	Total.	Amount actually awarded.	
15	16	17	18	19	20	21	22	23	
Madras	Information not available.	RS. 1,231	RS. 1,000	..	..	RS. 2,200	RS. 3,200	RS. * 2,155	3

* Rs. 50 were awarded at the Conjeevaram show.

TABLE XIV-A.—Statement showing cost of the Civil Veterinary Department during the official year 1904-1905 in the Province of Madras.

Major heads.	Amount.			
	Imperial.	Provincial.	Local.	Total.
1	2	3	4	5
1. Salaries of officers	RS. 17,775	RS. A. P.		RS. A. P.
2. Do. of subordinates	..	12,706 10 5	..	17,775 0 0
3. Travelling allowance of officers	..	1,668 8 0	..	12,706 10 5
4. Do. of subordinates	..	* 2,858 5 10	..	1,668 8 0
5. Other allowances—House-rent, Superintendent, Civil Veterinary department	..	600 0 0	..	2,858 5 10
6. Supplies and services—Pony-breeding	..	4,722 3 9	..	600 0 0
7. Contingencies	..	784 11 0	..	4,722 3 9
8. Prevention of disease (included against (2)).	..	..	..	784 11 0
9. College contingencies	..	14,124 7 11	..	..
10. Prizes at fairs and shows	1,000	..	..	14,124 7 11
Total	18,775	37,462 14 11	..	1,000 0 0

* Includes allowance of College staff.

TABLE XV.—Comparative statement of cattle mortality for five years ending 1904-1905.

Causes of death.	Number of deaths among				
	Cattle for the official year.				
	1900-1901.	1901-1902.	1902-1903.	1903-1904.	1904-1905.
<i>Diseases.</i>					
Rinderpest	27,378	18,644	18,555	17,655	19,772
Anthrax	16,106	18,215	13,498	16,887	14,996
Malignant sore throat	7,341	7,662	9,063	13,769	11,317
Black quarter	2,482	2,421	2,989	7,616	7,688
Epirootic apth.	5,283	4,722	11,486	4,683	2,767
Others	38,951	37,333	35,417	32,548	33,336
Total	87,541	68,997	88,976	93,158	89,871
<i>Other causes.</i>					
Snake bite	2,028	1,761	2,109	2,278	2,957
Wild animals	11,564	10,811	10,937	10,886	19,061
Criminal poisoning	47	34	71	71	62
Total	13,639	12,606	13,117	13,335	14,870
Grand Total	111,180	101,603	102,093	106,393	104,741

TABLE XVI.—Statistics of mortality among cattle, horses and ponies in the several districts of the Madras Presidency during the official year 1904-1905.

Districts.	Number of deaths among									
	Cattle.									
	From diseases.							From snake-bite.	By wild animals.	From criminal poisoning.
	Rinderpest.	Anthrax.	Malignant throat.	Black quarter or quarter ill or evil.	Epirootic apth.	Other.	Total.			
1	2	3	4	5	6	7	8	9	10	11
1. Ganjam	4,608	1,015	1,075	850	433	3,197	10,673	51	190	..
2. Vizagapatam	748	423	487	120	179	303	2,256	85	71	..
3. Godavari	4,082	2,253	661	178	359	3,892	11,431	164	268	3
4. Kistna	2,322	1,278	1,275	287	199	2,964	8,315	221	59	7
5. Karnool	502	809	405	1,120	89	3,924	6,846	118	436	1
6. Bellary	404	894	369	428	60	2,400	4,049	66	227	4
7. Anantapur	325	545	182	679	112	2,297	4,041	31	209	2
8. Cuddapah	577	597	393	1,822	109	1,415	4,913	68	463	1
9. Nellore	476	1,327	1,000	493	262	3,242	7,300	254	161	..
10. Chingleput	329	608	364	74	35	881	1,789	152	8	..
11. South Arcot	608	1,906	1,059	185	79	1,977	5,664	176	337	3
12. North Arcot	600	876	740	621	37	800	3,574	185	553	3
13. Salem	860	748	374	359	114	792	2,258	41	346	2
14. Coimbatore	387	243	171	347	201	1,308	2,602	90	671	1
15. Trichinopoly	379	316	191	29	36	1,705	2,666	63	18	5
16. Tanjore	697	729	742	16	25	357	2,666	134	193	1
17. Madura	690	543	350	397	32	979	3,191	118	40	2
18. Tinnevely	337	301	42	18	12	398	1,115	1	362	..
19. The Nilgiris	3	..	57	4	3	14	81	1	259	3
20. Malabar	885	254	435	25	117	142	1,858	15	4,897	1
21. South Canara	102	9	77	62	222	214	686	71	31	8
22. Guntur	490	327	368	224	45	640	2,118	..	..	..
Total	19,772	14,596	11,317	7,633	2,767	33,336	89,871	2,267	12,061	52

Districts.	Number of deaths among—cont.											
	Cattle—cont.			Horses and Ponies.								
	Total.	Grand Total.	Total stock by the latest census.	From diseases.				From snake-bite.	By wild animals.	From criminal poisoning.	Total.	Grand Total.
	12	13	14	Diarrhoea and dysentery.	Anthrax.	Others.	Total.	19	20	21	22	23
1. Ganjam	231	10,907	319,832	..	..	1	1	..	..	..	..	1
2. Vizagapatam	105	2,361	128,721	..	..	..	..	..	..	..	..	..
3. Godavari	375	11,806	..	5	10	13	28	8	9	..	17	45
4. Kistna	287	8,602	786,471	2	4	22	28	4	2	..	6	34
5. Karnool	555	7,396	218,725	6	2	23	31	..	11	..	11	42
6. Bellary	296	4,345	502,360	7	1	32	40	1	3	..	4	44
7. Anantapur	242	4,283	1,167,178	3	1	30	34	..	15	..	15	49
8. Cuddapah	520	5,483	942,078	7	1	9	17	1	3	..	4	21
9. Nellore	405	7,706	119,178	..	..	19	19	..	2	..	2	21
10. Chingleput	165	1,954	662,693	2	3	2	7	..	..	..	..	7
11. South Arcot	533	6,197	1,158,336	..	..	6	6	..	2	..	2	8
12. North Arcot	741	4,815	896,082	..	5	3	8	..	..	..	..	8
13. Salem	390	2,646	1,019,552	2	1	10	13	1	3	..	4	17
14. Coimbatore	763	3,365	1,151,637	3	2	13	18	..	11	..	11	29
15. Trichinopoly	80	2,636	699,139	..	..	10	10	..	..	..	..	10
16. Tanjore	144	2,710	936,740	1	1	4	6	..	..	..	..	6
17. Madura	311	3,502	1,143,644	5	5	14	24	2	3	..	5	29
18. Tinnevely	128	1,243	482,925	..	..	..	..	..	..	..	..	..
19. The Nilgiris	363	444	64,850	..	..	3	3	..	1	..	1	41
20. Malabar	2,712	4,570	908,983	..	..	..	..	..	3	..	3	3
21. South Canara	4,913	5,599	616,237	..	..	1	1	..	..	..	..	1
22. Guntur	110	2,223	..	..	..	5	5	..	2	..	2	7
Total	14,370	104,241	13,817,364	43	36	220	299	17	70	..	87	386

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following paper :—

**Proceedings of the Board of Revenue (Rev. Sett., L. Rds. and Agri.),
Mis. No. 4289, dated 28th July 1905.**

ABSTRACT.—Submitting to Government a report on the operations of the Department of Agriculture for the official year 1904-1905.

Order—No. 816, Revenue, dated 4th September 1905.

Miscellaneous.

The Government have read with interest the report of the Agricultural Department which is on the whole

satisfactory, though the work of the department is still much impeded by the absence of an adequate staff both of expert officers and of trained subordinates. The subject of the further development of the department is now engaging the attention of the Government, and as the Government of India have, since the close of the period under review, made a special allotment for the purpose, more rapid progress may now be looked for.

2. Owing to the unfavourable character of the season during the greater part of the agricultural year, the practical results achieved in the Government farms at Bellary and Koilpatti were generally inconclusive. In the Samalkota sugarcane farm, however, some useful and important results were obtained.

3. Detailed proposals for the establishment of a pumping irrigation farm on the banks of the Hagari in the Bellary district for the conduct of experiments in irrigated cultivation and for the determination of the duty of water are under consideration. The Board will be requested to submit a full report regarding the progress and results of the experiments made at Ponnalur in the irrigation of dry crops on black cotton soil.

4. The measures adopted for the selection and distribution of cotton seed which are referred to in paragraph 14 of the report, should be reported in greater detail. How much seed has been collected and distributed, how many officers were employed on the work, and how their services were utilized, whether the assistance of private agency or of village officers was obtained, and other information bearing on the subject should be stated for the information of Government.

5. The Government Botanist and his staff were mainly engaged with economic and general agricultural work. Much attention was not therefore paid to the systematic botanical survey of the Presidency during the year.

6. To facilitate a close study of the diseases affecting ground-nut and to promote the improvement of that industrial crop, a temporary farm has been established in the South Arcot district. The opening of a farm in the Malabar district has been sanctioned to enable a thorough investigation to be made of the pepper-vine diseases prevailing in the district.

The Government are glad to note that the Madras Veterinary College worked on during the year and that preventive inoculation against cattle disease was carried on with success. The subject of cattle-breeding is very briefly dealt with, and some statement as to what was done during the year should have been given. The Board will be requested to report specially and more fully on the point. The revised proposals called for by the Board of Revenue from the Superintendent, Civil Veterinary Department, in its Proceedings, Mis. No. 3480, dated 23rd June 1905, for providing cattle-breeders with selected breeding bulls should be expedited.

8. The closing of the Agricultural College at Saidapet and the institution in its stead of a central technical School of Agriculture at a fresh and more promising site are under contemplation. The carrying out of this scheme is the necessary preliminary to any great advance in the operations of the Agricultural Department in this Presidency, as the want of a supply of trained practical agriculturists impedes all expansion at present.

9. The Government view with satisfaction the several steps taken for the dissemination of information regarding the results of the researches of the department. The plan adopted at Samalkota of training a few selected ryots on the farm for a month or so at a time should be extended.

10. The Government consider that more information may usefully be given in the report regarding the nature and value of the work done by Agricultural Societies so far as it comes under the notice of the Director and his subordinates.

(True Extract.)

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

To the Board of Revenue (Revenue Settlement, Land Records and Agriculture).
" the Public Department (for Presidency Administration Report).
" the Educational Department.
" the Inspector-General of Agriculture.
" the Inspector-General, Civil Veterinary Department.
" the Minister of Agriculture, Argentine Republic.
" the Entomologist to the Government of India.
" Monsieur Chailley-Bert.
Editors' Table.

Copy to the Government of India (with C.L.N.)

