

Report on the
operation of the Department of
Agricultural

A Madras Presidency
1903-04



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OPERATIONS OF THE DEPARTMENT OF
AGRICULTURE,

MADRAS PRESIDENCY.

FOR THE OFFICIAL YEAR

1903-1904.

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கொள்ளப்பட்ட
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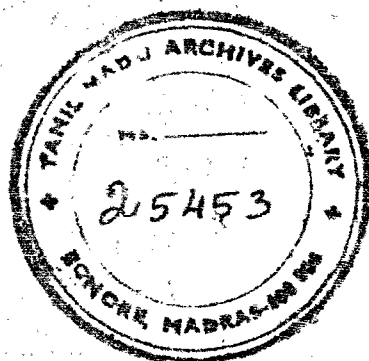
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REPORT

ON THE

OPERATIONS OF THE DEPARTMENT OF AGRICULTURE

FOR

1903-1904.

I.—PREFATORY.

The post of Director of Agriculture was held by the Hon'ble Mr. C. J. Weir, I.C.S., until the 21st October 1903, on which date the Hon'ble Mr. A. E. Castlestuart Stuart, I.C.S., took over charge. M.R.Ry. C. K. Subba Rau continued to be in charge of the office of the Deputy Director of Agriculture till the 22nd July 1903 during the absence of Mr. C. Benson on leave; and from that date till the end of the year Mr. Benson was on duty. The office of the Superintendent, Civil Veterinary Department, was held throughout the year by Major Gunn and that of the Government Botanist by Mr. Barber.

2. In June 1903 the Hon'ble Mr. C. J. Weir visited the Samalkota experimental station. In December following, the Hon'ble Mr. Castlestuart Stuart visited the Rev. Mr. Andrew's pumping irrigation station at Melrosapuram in company with the Inspector-General of Agriculture and the Director of Public Instruction. M.R.Ry. C. K. Subba Rau, while in charge of the office of the Deputy Director of Agriculture, paid the usual visits to the Bellary and Kollpatti farms and the Government fibre plantation at Bindapur, and toured in several districts in connection with the reclamation of alkaline soils, saltpetre experiments and the extraction of plantain fibre. Mr. Benson, besides inspecting the farms and plantation from time to time, toured in the Gôdâvari, Coimbatore, Madura and Tanjore districts in connection with the selection of sites for additional experimental farms and the reclamation of alkaline lands and for the purpose of conferring with the Tanjore Agricultural Association. He also accompanied the Inspector-General of Agriculture in his tour of agricultural enquiry through this Presidency. He attended, along with Mr. Barber, a conference of Agricultural officers from various parts of India held at Poona and other places in the Bombay 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 locusts which appeared in the Hospet taluk, Bellary district, and of moths which damaged castor oil plants (*Ricinus communis*) in a few villages of the Kudligi and Bellary taluks in the same district were forwarded to the Reporter on Economic Products or the Superintendent, Indian Museum; and it was ascertained that the locusts belonged to the species *Acridium Succinctum* Linn and the moths on the castor plants to the species of *Noctuid* *Ophiura Melicerte* and *Achaea Melicerte*.

5. *Imperial Institute.*—The Department continued to supply specimens of economic products to the Reporter on Economic Products. Specimens of 75 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*). Other articles forwarded to him were different kinds of chillies for transmission to one of his correspondents for experimental cultivation, and musli tubers for cultivation in the Royal Botanical Gardens at Sibpur for clearing up doubts as to the plants to which the roots were attributed.

6. A small quantity of the seed of cloves was forwarded through the Inspector-General of Agriculture to the Director of Land Records and Agriculture, Assam, for cultivation. At the instance of the Inspector-General, seeds of some typical indigenous varieties of cotton were forwarded to Hull, England, in order that their value might be tested for oil and oil-cake (both decorticated and undecorticated). Arrangements were also made for the supply, to the Inspector-General, of the seed, botanical specimens and some lint of the perennial tree cottons found in this Presidency and, to the Agricultural Chemist to the Government of India, of specimens of the various kinds of oil seeds grown largely in this Presidency, the latter officer being engaged in the investigation of the amount of oil contained in the several oil seeds. A Wardian case containing well-established plants of the varieties of lemon grass grown in Cochin and used in the preparation of lemon grass oil, was forwarded to the West Indies; but as it reached the destination in a bad condition, a fresh consignment has been made since the close of the year.

7. Reports continued to be received during the year from District officers and Conservators of Forests as to the methods of increasing fodder supplies and as to the natural vegetable foods gathered and used by poor people especially in years of scarcity or famine. The reports were forwarded to the Inspector-General and the very large number of specimens of famine foods which accompanied them were forwarded to the Reporter on Economic Products for analyses. Enquiries were also instituted at the instance of the Inspector-General, as to the extent to which margosa (nim) leaves and cake were used as manure in this Presidency and the use and economic value and the manner of extraction of the nim seed oil. The information furnished by District officers has been communicated to the Inspector-General since the close of the year, and experiments have been set on foot at the Samalkota farm to test the manurial value of the nim cake as compared with farm yard manure.

III.—SCIENTIFIC AND LOCAL ENQUIRY UNDER PROVINCIAL DIRECTION.

8. The two Agricultural Probationers, who were receiving practical training in the farms of the Bombay Presidency, returned and were appointed Agricultural Inspectors, and their places were filled by the appointment of new men. The remaining two probationers were sent to Bombay for similar training. The experimental farms at Bellary, Koilpatti and Samalkot continued to be worked during the year.

9. At both the Bellary and Koilpatti farms, the main problem to be solved was the extent to which deep tillage would operate as a remedy for the evil effects of drought. Subsidiary experiments were to be made in the comparative value of various kinds of fodder and various methods of collecting and utilising cattle manure, in seed selection, and in the use of new implements.

In the *Bellary* farm, it has been arranged that comparative experiments should be made on two fields laid out into 18 half-acre plots; but no real experimental work either in deep tillage or in manuring was commenced, as the natural fertility and condition of the several plots had not been fully ascertained. These plots were accordingly sown under the ordinary method of tillage with white sorghum, the main staple crop of the locality; the outturn ranged from 453 to 844 lb. per acre, indicating the inequality of the plots and the great dependence of the crops on the season, which was not favourable. The outturn on the entire area, 24.44 acres, including the two fields, sown with white sorghum was at the rate of 474 lb. of grain, 1,347 lb. of dry straw and 402 lb. of green fodder per acre. As ordinary incidents of farm management, the following crops were grown—Italian millet, on about 17 acres; bengal-gram

on 11.94 acres; tobacco of the Dindigul and Godavari varieties as well as several indigenous and Java varieties furnished by the Inspector-General; sweet potatoes and chillies. The outturn of the Dindigul and Godavari varieties of tobacco was not unsatisfactory, having amounted to 956 lb. of cured leaf per acre notwithstanding that the crop was much affected by mildew. The varieties furnished by the Inspector-General yielded a poor outturn. No attempt was made to test the economic value of different fodder crops or the various methods of growing them owing to insufficiency of live-stock. What fodder was grown during the year was intended merely for feeding the existing stock. Under *selection of seed*, the work done consisted in the cultivation of eighty varieties of sorghum, the seed of which was furnished by the Government Botanist, and of fifty more supplied by the Inspector-General of Agriculture; but the result was a general failure owing partly to drought in October 1903 and partly to excessive rain in November following; but a trifling amount of seed of some of the varieties has been secured. The Deputy Director of Agriculture has found that there is great risk of confusion in attempting to study too large a number of varieties of the same crop. Under *implements*, the Surat plough was tried and found to work better than the local pattern; and the chaff-cutter supplied by the Inspector-General of Agriculture has enabled the Agricultural Department to use up a larger proportion of the harder straws as fodder.

10. At the *Koilpatti* farm, which consists of a block of black cotton soil intended primarily for experiments and of a poor red soil block, which contains a few wells, farm buildings and residential quarters, no experiments in deep tillage or manuring were conducted during the year for the reasons stated under the Bellary farm. The block of black cotton soil having been much neglected for many years before its acquisition by Government, difficulty was experienced in eradicating the bariali grass from some portions of it. It is also subject to the drawback that the surface drainage of higher land to the west flows across a portion of it. Two fields consisting of 8 half-acre and 18 twenty-cent plots, which were prepared for the comparative experiments, were cultivated with cumbu—the staple of the locality—to test their natural fertility. Four of the half-acre plots, which were sown with the drill, yielded 339 lb. of grain and 660 lb. of straw per acre, while the remaining four plots, which were sown broadcast, yielded 391 lb. of grain and 794 lb. of straw per acre. The Deputy Director anticipated a larger outturn on the former set of plots, and attributes the result actually obtained to the want of skill on the part of the farm servants in the use of the drill. The total area sown with cumbu in the farm, including the two fields, was 10.5 acres, the outturn of which averaged 343 lb. of grain and 656 lb. of dry straw per acre. In the red soil block, which is extremely irregular in character, of poor soil and insufficiently supplied with irrigation from wells, a variety of crops were grown as incidents of ordinary cultivation, such as horse-gram, rainfed paddy, kudiraivali (a coarse kind of millet), ragi samai, tobacco, ground-nut, sweet potatoes, red gram, etc. The following features in the cultivation of this area deserve mention:—

Ragi planted on a plot of about one acre in September 1903 yielded 2,196 lb. of grain, while that planted on another plot of about two acres in October following yielded only 1,177 lb. of grain per acre, indicating the advantage of earlier planting. On the latter plot, one acre planted on the ridge-and-furrow system yielded a larger outturn (1,112 lb. per acre) than that sown alongside on the ordinary flat bed system (773 lb. an acre), showing that the former system is advantageous, besides being simpler to manage and better adapted for cheap inter-cultivation. Sample seeds of two varieties of paddy received from the Inspector-General were sown on quarter of an acre; one of them—*halki*—being fine and white, is considered worthy of a further trial, while the other—*banku*—attracted some notice around the farm on account of (1) its tillering character, which makes it possible to plant it thinly and save seed, and (2) its capability to mature rapidly, which is a recommendation for its growth in places where the rainfall is moderate. Tobacco planted on half an acre of poor land in December 1903 yielded 400 lb. of leaf cured on the local method, but an attempt is being made to improve on the local methods of curing. The varieties of sweet potatoes introduced from Poona appealed to local growers, eleven of whom have been supplied with vines for cultivation.

The fruit trees of the several kinds which were planted in 1902-1903 are promising. Following the practice of the locality, fodder sorghum was sown broadcast on about eight acres of the black soil and three acres of the red soil block with the object of cleaning the land. This, however, was only partially successful; and the yield was not satisfactory. The Deputy Director considers that the growth of sorghum for fodder is a very expensive method of producing it. It is, however, superior in quality to the straw of *cumbu*—the main cereal in the district—and its outturn is also larger; and the question of sowing it early so that it may ripen before *cumbu* and thus escape the attacks of what are apparently *aphids* is engaging attention. In regard to *new implements*, trials were made with small "improved ploughs" which were found economical to work on the red soil; the chaff-cutter was found serviceable as in the Bellary farm; and the drill and scuffler and bullock-hoes used in the Deccan districts were introduced and found useful in saving labour at certain times of the year. The Zamindar of Ettiyapuram was also helped in the use of the drill on his estate.

11. *Sugarcane*.—At the *Samalkot* farm, the area under sugarcane increased from five to eight acres during the year. The season was favourable and the crop did well, the seed cane having been raised from the canes grown in the farm and carefully selected. The canes were therefore much more healthy, though disease was still observable in several of the local varieties. The experimental plots were divided into three classes—

In the *varietal plots*, over twenty-two varieties of local and foreign canes, including eight acclimatized Mauritius canes from the Vizianagram plantation, were grown. In spite of the inequality of the plots the yield was good; and the red Mauritius was found to be the best variety both in regard to the weight of canes per acre and the yield of jaggery.

In the *manurial plots*, the experiments were confined to the comparative trial, for purposes of manure, of local products within the reach of the ryots. The manures tried were castor cake, bone-char, lime and compost made at the farm itself, and their order of importance as tested by the yield was as follows: bone and castor, castor, lime and castor, and compost.

On the *methods plots*, selected local varieties were planted in different ways or received different cultural treatment. In 1903-1904 the varieties tested were *bonta* and *yerra*. The latter variety succeeded admirably; but by its tall growth it completely overshadowed the smaller *bonta*, which was subject to an extraordinary invasion of jackals. Of the results of the experiments conducted at this excellent farm the following deserve notice:—

(i) The number of canes planted was reduced from 25,000—the "country method"—to 15,000 to the acre with satisfactory results. Planting in lines has been found to be preferable with reference to the ease of irrigation, detection of disease and jackals, hoeing and weeding, etc.

(ii) The making of separate holes for planting the cane has been replaced by the trenching system; but it has not yet been determined how deep the trenches should be. It is noteworthy that the sets planted in the deep trenches were almost entirely free from the attacks of the moth-borer, indicating that deep planting in some way discourages the insect.

(iii) The plants usually grown as green-dressing are leguminous and suffer from insect and other pests. The question of finding a suitable green-dressing is engaging attention.

(iv) The use of cane trash as a mulch in the first instance and its burial in the fields after the canals are reopened have several advantages; but as the trash and the crushed cane-residue are used as fuel in the manufacture of jaggery, the question of finding an equally light and highly inflammable substance which can be used in the place of the trash for boiling the syrup is under investigation.

(v) An improvement was introduced in the method of weeding and hoeing by using the *tolika* backwards, instead of forwards, and replacing it by a simpler instrument for breaking the crust formed by the baking sun after each of the first few irrigations. The result is that the ground is not trodden under foot as under the country system, and the whole field presents a singularly well-forked appearance. By the use of the rake, the cost of breaking the crust has also been reduced.

(vi) The question of reducing the expenses involved in the purchase of bamboo supports and in wrapping the canes to them by twisting the older leaves, while still half-green, has been engaging attention.

(vii) Experiments are in progress with the object of learning how long ratooning can be profitably carried on. A crop of *bonta* on a plot of ground, which was reaped as plant canes in 1902-1903 and allowed to grow again, was again reaped as "first ratoons" in 1903-1904 and yielded very well. It is being tried for the third year. It is necessary, however, that the crop should be free from disease, as it is "fatal to ratoon a crop that is diseased."

(viii) An attempt was made to improve the quality of jaggery from the refiner's point of view; but the results were not encouraging. The experiments will be continued.

The plantations made by ryots with the canes of the red Mauritius variety distributed to them in 1902-1903 were found to be healthy; and during the year under report a fresh supply of canes of this variety was made to various ryots belonging to seven taluks of the Godavari district and to a few applicants from Ganjam, Nellore, Chingleput, Pusa and Mysore.

12. *Cotton*.—Cotton being the main staple industrial crop in the Bellary and Tinnevely districts, its cultivation was undertaken in the Bellary and Koilpatti farms, with the object of improving indigenous varieties and selecting good seed. In the former, a quantity of ordinary seed purchased in the local bazaar was sown on about 6½ acres; but the plants were found to be of a most mixed description. The Government Botanist selected, from amongst the crop, 138 plants which he divided into twelve classes. One of these represented the ordinary *javari* cotton and another the *yerrapatti* type, and almost all the rest were found to be variations from one or other of these two types. A scheme of operations was laid down for the year, consisting in the collection of the ripe bolls from each bush separately, and in crossing between two bushes of each of the two main varieties. The seed cotton collected from uncrossed bushes of all the classes was sorted out with reference to colour and touch, and ginned. The lint obtained therefrom was examined by commercial firms dealing in cotton. Steps will be taken, with reference to the opinions furnished by them, to restrict cultivation in the current year to the best of those varieties. The seed of crossed plants has been carefully collected and will be separately sown in the ensuing season to see whether plants of greater vigour and productiveness spring up therefrom. The seed of certain exotic or extra-provincial varieties, which were grown at the farm in 1902-1903, was sown during the year; but the plants were of a mixed character and there were doubts as to their being true to type. It was therefore considered inadvisable to attempt cross-fertilization between these plants and those of the local varieties. The seed of a variety of cotton grown in Peru, which was supplied by a merchant from England, and further specimens of American cotton seeds received from the Inspector-General of Agriculture were sown partly on small plots protected by well irrigation and partly under ordinary field conditions. In the former case the yield was not good though a certain amount of seed was collected for further trial: the latter failed entirely. The lint of the Peru variety is said to be of good quality.

At the Koilpatti farm, cotton seed of 15 extra-provincial varieties raised in 1902-1903, of three varieties grown in Bellary and of the two sorts usually grown in Tinnevely (*Uppam* and *Karanganni*) were sown in rows two feet apart, instead of broadcast, in a field consisting of 29 ten-cent plots. The plants were, however, found to be too irregular and the varieties too uncertain to allow of any useful conclusions being drawn. It was accordingly decided merely to attempt to collect pure seed of some of the varieties, about which there was no room for reasonable doubt. Some crossing was also done at Koilpatti; but the benefit of the experiment was to some extent lost owing to the coverings on the crossed bolls having been blown away. Some seed from the crossed plants has, however, been obtained and arrangements will be made to sow it as soon as circumstances allow. The American cotton seeds furnished by the Inspector-General were sown on a poor sandy soil and yielded well.

13. *Ground-nuts*.—Ground-nut was planted, at the Koilpatti farm, on about half an acre, but did not germinate properly; and later on, the crop was attacked by a

fungoid disease, the effects of which could have been combated by ample watering; but this was not practicable owing to the limited supply of water available. The yield was only 375 lb. of nuts. The disease was found to prevail in various other parts of Southern India and a note giving a brief description of the general appearance of the disease was prepared by the Government Botanist, and arrangements were made for its publication in English and in Tamil in the District Gazettes of the chief ground-nut growing districts and for its distribution among leading ryots with instructions to keep a careful watch for evidence of the disease and give immediate intimation thereof to the Revenue Officers.

14. *Indigo plant*.—The small quantity of the seed of *Indigofera arrecta* obtained from Natal was sown in the Saidapet farm on 15 cents of land. The seed almost totally failed to germinate, and the twelve plants that at first appeared subsequently died. The sowing at the Trivandrum farm was, however, more successful and 350 plants grew up. A supply of seed will be obtained from Trivandrum and a fresh experiment made at the Saidapet farm. As stated in paragraph 14 of the previous report, specimens of all the varieties of the indigo plant grown in this Presidency were obtained and examined by the Government Botanist with the result that *Indigofera racemosa* has been discovered in the specimens received from Travancore. Of the fifteen other varieties received, only four, viz., *I. tinctoria*, *sumatrana*, *sufruticosa* and *articulata* are considered by Mr. Barber to be of economic importance; arrangements have accordingly been made for the comparative cultivation of these varieties and of *racemosa* and *arrecta*, under his direct supervision, on a piece of waste land attached to the Agri-Horticultural gardens, Madras.

15. *Aloe plantation*.—A small extent at Hindupur had been planted before the beginning of the year partly with *Agave sisalana* and partly with *Agave americana* and *vivipara*. The first two varieties have done fairly but not the last. The growth continues to be slow and proposals for the future management of the farm are awaited from the Deputy Director.

16. *Sunflower*.—At the instance of the Inspector-General of Prisons, samples of oil and fibre of "The Russian Giant Sunflower" grown in the Coimbatore Jail, experimentally for commercial purposes, were forwarded to the Reporter on Economic Products, who found that the oil was good, that its acid value was equal to 2.46 per cent. calculated as Oleic acid, and that it was higher than that of many sated oils. The use of the oil of this species of sunflower for culinary purposes having once been condemned, the Reporter on Economic Products suggested the cultivation of other kinds. The attention of the Agricultural Department having meanwhile been drawn to an article published in the "Madras Mail" regarding the utility of sunflower plants as a good preventive against the fevers prevalent in the marshy and malarial tracts of tropical countries, a small quantity of seed of the Giant Russian variety was obtained from the Coimbatore Jail and sown in the Koilpatti farm. It grew well and formed fine flower heads, but had scarcely any seeds owing probably to the absence of bees in the locality for fertilizing the flowers.

17. An Industrial and Arts Exhibition was held in December 1903 and January 1904 in Madras, to which a contribution of Rs. 10,000 was sanctioned by Government, on certain conditions.

18. *Saline soils*.—The experiments conducted by Mr. Keeling, Executive Engineer, Madras, in the reclamation of saline soils under the Periyar Project did not produce useful results owing partly to excessive rainfall and partly to the other engagements of that officer and his subsequent departure to England. The experiments will be continued on a smaller scale. In view of testing the utility of the native methods of reclaiming saline lands, regarding which information was collected by the Sub-Assistant Director, he was authorised to conduct experiments on the lands of two ryots in the Coimbatore district as well as in the Bellary and Koilpatti farms. Owing to want of co-operation on the part of the ryots, of whom one died with his servant of plague, and to lack of proper supervision, the results were practically nil. In the Bellary farm, a small plot of alkaline land was divided into three small terraced beds with surrounding bunds with the object of letting falling rain soak through and wash out the salts, among which common salt predominated, and was treated with gypsum, margosa cake and tanney refuse. The result was that the land, which had originally

been almost wholly bare, had a fair, and in some places a good, growth of herbage. At Koilpatti, gypsum was applied to two patches of red soil of alkaline nature, which show a considerable mechanical improvement.

19. *Saltpetre*.—To test the manurial value of saltpetre as a top-dressing especially for paddy, some experiments were conducted by four ryots of the Coimbatore district with the aid of the Agricultural Department as well as at the Koilpatti farm; but little useful information was obtained, as the experiments on the ryots' lands were not conducted under proper supervision. At Koilpatti, the saltpetre was applied in solution to the entire plot allotted for paddy cultivation owing to the land being of too uncertain character to allow of comparative experiments.

20. *Pumping experiments*.—At the instance of Mr. Chatterton, the Director of Public Instruction proposed the establishment of five or six agricultural schools at carefully selected spots; but, before approving the scheme, Government considered it desirable to have pumping experiments made similar to those conducted by the Revd. Mr. A. Andrew at Melrosapuram near Chingleput. Orders were issued for starting the experiments in five localities, of which one is to be on the banks of the Hagari in the Bellary district, where the information obtained would, it was thought, be useful in connection with the Tungabhadra Project. Proposals on this subject are under consideration. The four other stations selected for the purpose are Kadayampatti (Salem district) Manamadura (Madura district), Saidapet (Chingleput district) and Cuddalore. The Revd. Mr. Andrew's interesting report on the results of experiments conducted at Melrosapuram was received after the close of the year.

21. *Meteorology*.—As usual the rainfall registered at the rain-gauge stations was tabulated 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 435 (inclusive of 61 in the Native States) or two more than at the end of the previous year, and of these, 345 stations were inspected.

22. *Statistics*.—The following returns were published in connection with local enquiries under Provincial direction:—(1) Season reports in 3 sections (rainfall, cultivation and prices of food-grains and salt) monthly; (2) Crop forecast reports; and (3) Quarterly reports of cattle mortality.

23. *The Madras Agri-Horticultural Society*.—The income of the Society from various sources, including the Government grant of Rs. 4,000, amounted to Rs. 17,085. The usual flower-show was held on the 28th February 1904 in the nursery gardens and was on the whole a success, the annuals being exceptionally good.

IV.—BOTANY.

24. A detailed report on the work done by the Government Botanist is appended. The chief tour undertaken in connection with the *Botanical survey* of the Presidency was in the Anamalai forests. Mr. Barber collected 380 specimens, including 100 trees and 80 ferns and shrubs, the greater portion of which was named, and a valuable collection of the peppers of these and other forests was also made. A list of the trees with their vernacular names was furnished to the Forest Department, and a small named collection of 15 trees was placed in the Coimbatore museum as a nucleus of a forest herbarium. A commencement was also made in the study of the trees of the coffee zone of the Mysore forests and a set of about 200 trees was got together; but the work of naming these trees and the collections of grasses received from Forest officers is much in arrears, the existing staff being unable to cope with much systematic work. The collection of *fungi* commenced last year was discontinued for want of space, and the *entomological* work of the year was more or less preparatory. The collections of insect pests previously made were examined and got into good order, and the families of the insects were determined, this being the only work possible in the absence of proper reference collections. Some of the information obtained on fungus disease and insect pests was published in the bulletin on the diseases of sorghum in this Presidency.

In connection with *economic botany*, the Government Botanist inspected several important crops in the Coimbatore district, took careful notes of the conditions under which they were grown and of their pests, and made large collections for the economic

herbarium. He further investigated and reported on the diseases in pepper plantations and paid a visit to the pepper gardens in Malabar and the pepper plantation at Cadamaney on the Mysore ghâts. The former were suffering from a number of diseases chiefly of fungoid and nematode origin and in the latter too, though grown on different methods, diseases appeared to be as prevalent. Mr. Barber is of opinion that pepper well merits experimental cultivation, and action in this direction is under contemplation. His other contributions to economic botany have been noticed under Section III.

V.—VETERINARY.

25. The detailed report* on the operations of the Civil Veterinary Department is appended. The Veterinary College referred to in paragraph 22 of the report for 1902-1903 was opened under the designation of "The Madras Veterinary College" in October 1903, and the hospital belonging to the Society for the Prevention of Cruelty to Animals at Vepery has been attached thereto. The course of instruction extends over three years and the curriculum of studies is based on the syllabus settled at the Umballa Conference in 1900. The students received instruction free of charge, and ten of them held scholarships sanctioned by Government. The teaching staff consisted of the Assistant Principal and a lecturer, the Superintendent being *ex-officio* Principal. The twenty students admitted in October 1903 did well at the two examinations held by the Superintendent.

26. *Veterinary dispensaries.*—As stated in the report of the previous year, the establishment of Government Veterinary dispensaries continued in abeyance for want of qualified men. The Court of Wards opened a dispensary in July 1903 in Pithapuram, the head-quarters of an estate under its management. The number of patients treated during the year was 639, of which 581 were bovine. The dispensary opened at Trichinopoly by the District Board is reported to have been very popular, the number of cases treated during the year having aggregated 7,413, of which 4,863 were cattle patients. The hospital attached to the Madras Veterinary College is growing in popularity, and the cattle practice is improving since the Superintendent offered to treat cattle patients free of charge.

27. *Cattle disease.*—The steps taken during 1902-1903 to prevent cattle disease by inoculation were continued during the year. The number inoculated against anthrax was 6,281 in the Ganjam, Gôdâvari, Nellore, Chingleput, Tanjore, Tinnevely and Malabar districts and against rinderpest 2,805 in the two districts first mentioned. The Superintendent paid several visits to a few centres in these districts and found that the inoculated cattle were doing well. Preventive inoculation for cattle diseases is now well accepted by the ryots, and the only desideratum is a sufficient supply of serum and a staff of Veterinary Assistants.

28. *Pony-breeding operations.*—Of the 15 stallions at work, three were lent to private breeders in the Coimbatore, Salem and Gôdâvari districts, seven stood in Coimbatore, three in Salem and one in each of the Madura and Trichinopoly districts. The operations were conducted during the year on the new lines referred to in the previous report; and though it was at first apprehended that there would be a falling-off in the number of mares served, the results exceeded expectations, the total number of coverings having risen from 352 to 426 giving an average of 28 mares per stallion against 32 in the previous year. The decrease in the average is ascribed to one of the stallions having been under treatment till the end of September 1903 and to the four new stallions having commenced work only in May 1903. Of the 352 coverings in 1902-1903, the Superintendent has ascertained the results in 216 cases only. Sixty-seven cases were successful including 13 that aborted, and 149 cases were empty. The results are not traceable in 25 cases owing to the sale of the mares, and reports from Revenue officers are still due in the remaining 111 cases.

Seventy-four entire ponies in the Coimbatore district and 17 in the Salem district were castrated against 31 and 34 respectively in the previous year. There were no casualties among those castrated.

* The Madras forms J, K, and L are blank for the year under report; and the statement of expenditure incurred in the Madras Veterinary College from October 1903 to March 1904 which is printed at the end of the Superintendent's report has not been submitted in the Madras form O.

29. *Pony 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 fairs held in the Tinnevely district and in seven of these, Veterinary Assistants helped the local authorities in carrying out the provisions of the Act. In none of the fairs were any cases of contagious disease detected. A cattle show was held at Kasinkota in the Viragapatam district.

VI.—AGRICULTURAL EDUCATION.

30. The minors under the Court of Wards at Newington continued to receive instruction in Agriculture and Botany as stated in previous reports.

31. *Higher education.*—The College of Agriculture continued to work under the revised curriculum introduced on the recommendation of the Special Committee; but the number of students on its rolls fell from 50 to 46 owing to the discontinuance of the practice of admitting casual students for particular subjects. As Dr. Leather's services could not be spared from Dehra Dun and an Agricultural Chemist was not appointed for this Presidency, the special course of lectures in Agricultural Chemistry was delivered by the Principal of the College. Since the establishment of the Madras Veterinary College in October 1903, the lectures of the Superintendent, Civil Veterinary Department, who was otherwise fully engaged, ceased at the Agricultural College. Further, after the departure of Mr. Thorne, Vice-Principal, there was no practical European agriculturist who could teach agriculture. The Acting Vice-Principal and the Assistant in charge of the Veterinary Hospital to some extent supplied these shortcomings. The results of the final examinations were below the average owing probably to the quality of the candidates.

The Veterinary Hospital attached to the college continued to increase in popularity, the total number of cases treated having risen from 1152 to 1218.

The students of the College made two tours of agricultural enquiries, the first in September in the Chingleput district, which included a visit to the Revd. Mr. Andrew's farm at Melrosapuram, and the second in January in the Cuddapah and Kurnool districts. The Director inspected the College farm in December 1903 in company with Mr. Mollison, Dr. Bourne and Mr. Benson and the general impression conveyed was most unfavourable even after making every allowance for the severe damage caused by the heavy rains and floods of December 1903.

VII.—THE PUBLICATION OF AGRICULTURAL INFORMATION.

32. The note on simple machines for extracting plantain fibre, referred to in paragraph 30 of the previous report, has been translated into the vernaculars with suitable modifications and additions for the information of ryots, and instructions are being issued for the printing of a sufficient number of copies for circulation with the District Gazettes. The following bulletins were published by the Department during the year under report:—(1) No. 48.—Note on the experimental sugarcane station at Samalkot, Gôdâvari district; and (2) No. 49. Diseases of Andropogon Sorghum in the Madras Presidency.

33. Arrangements were made to translate bulletin No. 48 into Telugu and Tamil and publish it in diglott as a supplement to the District Gazettes for the benefit of ryots. An Assistant in the office of the Government Botanist also toured round the cane planting villages in the Gôdâvari district, and explained to the ryots the improved method of sugarcane cultivation followed in the Samalkot farm.

34. The Industrial Monograph on "Wood Carving" prescribed for 1901-1902 was issued during the year, and that on "Tanning and Working in Leather" due for 1902-1903 was submitted to Government after the close of the year. No industrial monograph is due from this Presidency for 1903-1904.

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

	Received.		Sent.
	Indian.	Foreign.	
	No.	No.	No.
Total publications	351	660	21

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 1903-1904.

2. There has been a very great increase in the number of subjects dealt with, especially in connection with Economic Botany, and it has been found impossible to refer to all individually in the space assigned for this report. The working room at our disposal has remained unchanged. This has proved so inadequate that active collecting has been largely in abeyance, and the time of the staff has been devoted to the attempt to keep the existing collections in a proper condition. In spite of all our efforts, a number of specimens have been destroyed by dust and damp, by rats and insects. The actual investigating work has been conducted under the greatest disadvantages as regards light and space, and many matters which would otherwise have occupied our attention have been perforce left over until a more suitable accommodation is provided.

3. The Government Botanist spent 230 days on tour and 136 at head office. The Anamalais, the Wynad, Malabar, the Mysore ghats, the Mysore sandalwood tract, Dhawar, the Bombay Agricultural farms, Coimbatore, Bellary and various parts of the Gôdâvari district have been visited for longer or shorter periods, and the Assistants have now commenced to take their part in this important work. They have been sent to Ootacamund, Bellary, the Gôdâvari district, North Arcot, South Arcot, Erode and Chingleput on independent missions.

4. Collections have been made of forest trees, grasses, peppers, indigos, and the most various economic plants, while a very large number of seeds have been sent to the Reporter on Economic Products to the Government of India. Collections of special groups have been sent to authorities at home for naming, an active correspondence has been kept up with those interested in agriculture in the Presidency and numerous reports have been prepared for the Director of Agriculture.

5. The following are among the more important pieces of work undertaken during the year:—

In connection with the systematic part of the survey, the Anamalai forests were visited by the Government Botanist and an Assistant from April 7th to May 25th. This was at the instigation of the Forest department who wished to know what the botanical names were of their forest trees. Three hundred and eighty numbers were collected consisting of 180 different plants. Of the 100 trees, 70 have been named and 30 are not at present determined. The 80 ferns and shrubs have mostly been named. A valuable collection of the peppers of these and other forests has been made, including dried and spirit specimens. A list of the trees with their vernacular names (about 200 of which have been collected from the Kadars) has been sent to the Conservator of Forests in the Southern Circle and a small named collection of 45 trees has been placed in the Coimbatore Museum as a nucleus of a forest herbarium.

This was the main systematic work of the year, but smaller collections were made at such places as the Government Botanist visited.

6. An Assistant was also sent to make a study of the trees of the coffee zone of the Mysore forests. His first tour, which was more or less preparatory, was in December. Most of the trees were found to be without flowers or fruits, but a set of about 200 were got together, of which 109 have now been named. This tour, which was made with the idea of ultimately helping the planters in their study of suitable shade trees and the causes of stump-rot in coffee, was undertaken with the assistance of Mr. Graham Anderson, C.I.E., to whom we are indebted for many facts concerning the vernacular names and uses of the different trees collected. The work is still being carried on as opportunity permits with the help of Mr. Anderson.

7. Collections have been received as usual from District Forest-officers, two lots of grasses (37 species) from North Salem, one lot of grasses (34 species, of which 19 are unfortunately indeterminate) from Nellore, and one small lot of 12 species from Oudupah. While welcoming these collections, we are considerably behindhand in naming them, as well as those sent in previous years. Four collections have been named during the year, but none of those referred to have been completed. Our present staff is unable to cope with much systematic work.

8. Many individual plants have been received for naming. A set of *Eucalyptus* specimens has been collected at our request by the Curator of the Ootacamund Gardens and forwarded to the Government Botanist at Sydney, as he is monographing the group.

9. Our collection of 76 sheets of yams has been sent to Dr. Prain at the Calcutta gardens, and he has very kindly named them for us. Our whole collection of ebones, with the Government Botanist's drawings, has also been sent to Dr. Prain, as he has made a special study of the group and these seem to be new species among those collected. A large number of sheets of indigos have also been sent to Dr. Prain who has named these difficult plants for us. A full set of our balsams, together with the paintings of Mr. Lawson's artist, has been sent to Sir Joseph Hooker who is now engaged in monographing the balsams of India. He has been pleased to speak well of their general get up, and it is perhaps admissible to quote his words of appreciation, as they will show more than anything else that this work of systematic botany, although taking a subordinate place at present, is not being neglected altogether.

"The collection is in splendid order, well collected, well mounted, and well arranged. It is by far the finest collection of Indian balsams that I have seen and will afford me great help in many ways." Our small collection, finally, of *Pandanus* has been sent to Professor U. Martelli, in Italy, who is monographing the genus.

It may be explained that this sending of sheets from our collection to various correspondents is not at all an unusual thing. Also, that before doing so the collections are worked out to the best of our ability in the office. By this method we obtain a number of valuable and authoritative namings which from our position we are quite unable to give, and, furthermore, the collections are greatly enriched by the annotations of monographers who are for the time being the greatest authorities on their respective orders.

10. The herbarium work has been conducted under the disadvantages already alluded to. About 2,000 sheets have been mounted for the systematic survey, 700 of which were from the Gôdâvari gorges and about 1,200 from the Anamalais. A large number (604 sheets) of plants have been prepared for transmission to Calcutta, but the congested state of our office has prevented them from being forwarded. In exchange, a considerable number of sheets (289) have been received from Dr. Prain for incorporation in our herbarium.

11. The collection of fungi, commenced last year at the instigation of Dr. Butler, has been discontinued for lack of space. All our sorghum smuts have, however, been sent to him for naming. Added to them was a large collection of grasses with smuts on them. These have a certain economic importance in that they affect the feeding value of pastures considerably.

Among the most interesting fungi sent to Dr. Butler was the red spot disease found so abundantly on sorghum leaves. This appeared at first sight to be identical with the red smut of sugarcane, *Colletotrichum falcatum*. But Dr. Butler has determined it to be the closely allied *Colletotrichum lincolni*. Various fungus diseases of sugarcane, prickly-pear, sorghum, etc., were also forwarded while many fungus diseases of sorghum, tenai,umbu, paddy and other crops were collected. A certain amount of this work was collated in the bulletin on the diseases of sorghum in the Madras Presidency. A considerable amount of time was spent over the fungus diseases of the pepper plantations and a report was written on the subject. Casuarina trees, dying in numbers on the east coast, were also examined, but, after long search in the specimens forwarded, no fungus hyphae were observed which appeared likely to cause the diseased condition of the trees. In the short tour to Yelwal with Dr. Butler some attention was paid to the spike disease in sandal which has much the character of a fungoid attack. Generally speaking, however, this part of our work, the study of cryptogamic botany, has been neglected. There is no one at present in the office who can be entrusted with the difficult microscopic examination needed, and the time of the Government Botanist has been taken up with other matters.

12. The study of fungi is closely connected with that of insect pests. The entomological work of the year has been of a desultory and more or less preparatory character. Owing to pressure in the office, the Sub-Assistant appointed for this work has been frequently employed in other ways. The previous collections have been gone over and got into good order. By the advice of Mr. Lefroy and in the absence of proper reference collections we have contented ourselves largely with determining the families of the insects collected. This method has been a useful education for the Sub-Assistant and has undoubtedly strengthened our hands in enabling us to deal more rapidly with such entomological work as is placed before us.

A couple of brightly coloured moths, which are accustomed to attack the sunn hemp fields in the Gôdâvari district disastrously, were worked out and, on reference to the Indian Museum, were named *Deilephila pulchella* and *Argina eribraria*. Some attention was devoted to the *Aleurodes* common in the diseased cane fields, but it was thought that this pest was secondary in its nature and only appeared on weakly plants. It has been used as an outward sign of the presence of red smut in the cane stem. The study of the Nilgiri white grub was continued, but comparatively few additions were made to our knowledge of this serious pest. The work on this subject will, it is hoped, be shortly presented for publication in the form of a bulletin. A ready method has been discovered of freeing individual gardens from these depredations. Many references of a minor character have been received and dealt with, but as a rule the details forwarded have been too meagre and the specimens immature. It is felt that the present arrangement of having one sub-assistant is hardly sufficient for dealing with this difficult subject. A certain amount of work on insect pests was included in the bulletin published on the Diseases of sorghum in the Madras Presidency, but the Government Botanist has not been able to devote such attention to the subject as it merits.

13. The subject in Economic Botany which has engaged the attention of the office most has been the management and study of the experiments on the Samalkota Sugarcane farm. Ten visits were paid to the farm by the Government Botanist during the year. The longest of these was for twelve days in June after the opening of the canals, but, during the months of February and March, the attention of the office as a whole was almost entirely devoted to sugarcane matters, including the reaping of the crop and the planting for the new season. A number of canes were distributed to the ryots for experimental cultivation. A careful study, with the co-operation of the Chemist of the Deccan Factory, was made as to the possible improvement of the local jaggery. The Samalkota canal was surveyed with the idea of finding a suitable place for a combined sugarcane and paddy station, but the result was not satisfactory. A number of canes were brought down to Madras and exhibited at the annual show of the Agri-Horticultural

Society. A visit was paid to the Vizianagram plantations of five years' acclimatised Mauritius canes, and a considerable number of plants were added to the Samalkota collection through the kindness of the Collector. In return for this generous treatment a scheme was prepared for the future sugarcane experiments at Vizianagram and the crop was taken off and the paggery prepared by the Agricultural Inspector attached to the Samalkota farm. A number of canes were received from the Inspector-General of Agriculture, representing the two best Bengal varieties, and local kinds were collected from South Arcot, Madras and North Arcot for detailed study at the farm. The collection of different varieties of cane under observation at Samalkot now numbers about thirty. A series of reports on the results obtained has been submitted to the Board so that further details are unnecessary here.

In connection with this subject it may be stated that the sugarcane cultivation was carefully studied in the Coimbatore district (where a serious attack of a scorch-like disease was noted), in North and South Arcot.

14. At the instance of the South Wynnad Planters' Association, the subject of pepper diseases was taken up with some amount of care. Since the diseases appeared to be chiefly of fungoid nature, it was not possible to do much, but a couple of reports were written and printed by the association. South India being the original home of the pepper of commerce, and the classification of these puzzling plants being, according to Sir Joseph Hooker, in a state of almost hopeless confusion, the wild peppers were investigated and a good collection was made for future study. A visit was paid to the pepper gardens in Malabar (May 26th—June 11th). These were found also to be suffering from a number of diseases chiefly of fungoid and nematode origin. On the whole it was considered that the pepper plantations of the Presidency were not in a healthy condition and well merited experimental cultivation. A visit was paid to the Cadamaney pepper plantations on the Mysore ghats, but, although the mode of growing the plants was in many respects diametrically opposed to that in Tellicherry and the Wynnad, the disease appeared to be as prevalent and evasive as ever. The plantations at Cadamaney are very largely natural, that is to say self-sown in the jungle. The constant presence of a definite fungus on the dying branches led to a series of inoculation experiments being commenced. But the results thus far seem to indicate that this fungus (*Nectria*?) is saprophytic and not the cause of the disease. The disease at Cadamaney was stated by the Kew authorities to be caused by a root fungus called *Rosellinia necatrix* Prill., and Del., but a careful search on the spot failed to reveal its presence. A projected visit to the Bombay ghats was frustrated by the lack of information placed at our disposal. From all accounts the pepper there seems to be in a more flourishing condition than elsewhere in India, and for this reason the plantations would be worth a visit later on.

15. The main agricultural tour set apart for the economic survey of the Presidency was in the Coimbatore district (July 9th—August 11th). The line chosen was Coimbatore, Udumalpet, Madaturkolam and Dharapuram. The crops inspected were cholam, cotton, tenai, ragi, combu, betel, pepper, cummin, coriander, fenugreek, sugarcane, gingelly, varagu, brinjals and several minor ones. Careful notes were taken on these crops and their pests, together with the water supply and mode of irrigation and the character of the soil and climate. Large collections were added to the economic herbarium and many specimens were placed in spirit for future investigation. The bazaar at Udumalpet was visited and numerous samples of different agricultural produce were taken.

16. During the month of September advantage was taken of a tour in South India by the Cryptogamic Botanist and Entomologist to the Government of India to discuss matters connected with future joint work. The first place visited was the Samalkota farm where the various experiments were explained and specimens of pests were collected. The Madras office was then carefully gone over and a number of specimens in our collections were noted and some of them named for us. The Entomologist kindly drafted a set of instructions for the guidance of the Entomological Sub-Assistant. The Mysore State was then visited. The planters took advantage of our presence to hold a general meeting at Saklaspur. The Cadamaney pepper plantations were then visited by me and I again joined Drs. Butler and Lehmann at Yelwal for the investigation of the spike disease in sandalwood. The study of this disease having been placed definitely in the hands of Dr. Butler by the Government of India, I assumed a merely helpful attitude. Incidentally I learnt during this visit that the same disease had appeared within a few miles of the sandal-bearing tract of Kollegal in the Madras Presidency. This I at once reported to the Board and subsequently learnt from the District Forest-officer of North Coimbatore that spike had made its appearance in Kollegal at some distance from the Mysore boundary. I have placed the authorities in communication with Dr. Butler who is conducting the investigation.

The futile attempt to reach the pepper plantations of the Bombay ghats belongs to the same tour and has already been referred to. I turned my attention to the crops in Dharwar and made collections and notes. The betel gardens of the little native state of Savanar were carefully gone over with Dr. Butler and a number of pests in this usually healthy crop were noted and collected.

17. In the earlier half of November I accompanied the Deputy Director on a tour of inspection through the Bombay farms. This was at the instance of the Inspector-General of Agriculture, who had assembled agricultural officials from various parts of India. As already reported in detail, we visited Poona, Bombay, Surat, Ahmedabad, Chharodi, Nadiad, noted

the experiments of Professor Gammie in cotton crossing, and observed the sugarcane, ground-nut, tobacco and sorghums plots. Some observations made during this tour were incorporated in a recent report to the Board.

18. The Bellary farm was visited twice during the year in company with the Deputy Director of Agriculture, in connection with a scheme I had drawn up for cotton crossing in the Madras Presidency. The plants were examined and numbered, herbarium specimens were collected, and the lint collected was sorted. A more detailed scheme for crossing was prepared for the plants growing at the Saklapet farm, but the weather proved most inauspicious and the floods of December nearly washed the whole place away. Separate reports have been prepared on these places, in connection with the improvement of Indian cottons.

19. These were the main agricultural tours conducted by the Government Botanist during the year. An assistant was deputed to Ootacamund to study the swarming of the cockchafers in April and May, and again in September to examine the results of sowing some of the chief forms in boxes with grass on them. He was however new to the work and little success attended his efforts. Reference has been made to the tour in the Mysore coffee zone by another Assistant to collect the shola trees. An Assistant was deputed to Bellary to collect heads of the different kinds of cholam growing at the Experimental Farm. An Assistant was deputed to South Arcot and at the same time another to North Arcot to study the sugarcane growth in these two districts, and by this means our knowledge has been largely increased in both these directions. An Assistant was sent with good results among the Godavari ryots to familiarise them with the methods of cultivation adopted in the Samalkot farm and to show them the kinds of cane we were distributing. Another Assistant was deputed to collect seed of Bourbon naturalised cotton in the Erode taluk for the Inspector-General of Agriculture. The Agricultural Inspector in charge of the Samalkot farm made several tours in the Godavari district and visited the Vizianagram plantation to make preparations for milling their canes for them there. Besides these tours among the assistants, one accompanied me on the Anaimalai tour, another went with me to Tellicherry, and a third accompanied me throughout the Coimbatore Economic tour.

This is the first year in which systematic touring has been done by Assistants, and the results have been eminently satisfactory in a general increase of their usefulness.

20. About 1,000 sheets of economic plants have been added to the herbarium. These are made up as follows:—257 sheets of cholams, 93 of combu, tenai, etc., 66 sheets of sorghum diseases, 292 sheets of cottons and over 200 of various others. Besides these a large number have been added to the spirit collections all of which are in a fit state to be examined under the microscope when a suitable opportunity occurs.

21. A number of seeds of different kinds of crops have passed through the office, during the year under review, to the Reporter on Economic Products to the Government of India. This work, which has largely occupied the clerical section, included 136 lots of paddy, 51 of cholam, 15 of chillies, 11 of ragi, 17 of combu and tenai, and others in smaller quantity, such as gingelly, cow-gram and varagu. A sample of each has been retained in the office, the economic collections being thereby considerably strengthened.

22. Twenty-three parcels of indigos were received from different parts of the Presidency. As recently reported, these include 17 kinds of wild and cultivated forms, and although therefore connected with the systematic survey, several species of high economic value have been recorded. Thus the wished-for *Indigofera longicaulis* has been rediscovered in Travancore—a plant which has the reputation, rightly or wrongly, of being the most valuable indigo-producing plant in the world, and now cultivated in Madagascar and Zanzibar. *Indigofera sumatrana* appears to be the main cultivated form in the Madras Presidency, but *I. tinctoria*, *I. Anil* and *I. articulata* have been met with wild in different parts, and it seems not improbable that they may be escapes from former cultivation. We have in this study been much indebted to Major Prain, without whose help the work could not have been done.

23. The artist has worked steadily throughout the year and has added a fine series of drawings and paintings to the herbarium. He was deputed for one month to study the methods of the artist working under Mr. Cameron at Bangalore, and his work has profited much thereby. We are indebted to Mr. Cameron for his kind personal superintendence in this matter. The artist's work consists of 30 paintings, chiefly of flowers and varieties of sugarcane, and 53 folio pages of drawings, the latter being reproductions of sketches on tour by the Government Botanist, and chiefly consisting of analyses of various forest trees.

24. The following publications have been issued during the year:—

(1) A Memorandum on the Pressing, Preservation and Despatch of specimens to the office of the Government Botanist.

(2) A Note on the Experimental Sugarcane Cultivation at Samalkota. This was issued as Bulletin No. 48 of Vol II of the Madras Department of Agriculture.

(3) The diseases of Andropogon Sorghum in the Madras Presidency, Bulletin No. 49, in the same series.

(4) Two reports on the Wynnad Pepper plantations have been printed and circulated by the South Wynnad Planters' Association.

(5) Notes on *Morus* have been prepared for various publications.—The Madras Presidency the South Arcot District, the Godavari District.

MADRAS,
25th May 1904.

(Signed) C. A. BARBER,
Govt. Botanist,

APPENDIX II.

Annual Report of the Superintendent, Civil Veterinary Department, Madras.

I have the honour to submit my report on the working of the Civil Veterinary Department during the year 1903-1904.

2. I was in charge of the department throughout the year. A greater portion of my attention was devoted to the organization of the Veterinary College. During the year I was in camp for 136 days and the remaining period was spent at head-quarters except five days in June when I was on casual leave. The period on tour was spent in visiting a few taluks of Gólavari and Ganjam districts and also Sattur taluk of the Tinnevely district where inoculation was carried out and in inspecting all the pony-breeding stations in the Coimbatore and Salem districts. I paid several visits to Madura district in connection with the pony-breeding operations and also in reference to the proposal of the District Board for opening a Veterinary dispensary. The Veterinary dispensaries in Pithapuram, Trichinopoly, and Saidapet were also frequently visited by me during the year. In the districts I visited, it has been my endeavour to find out what prospects existed for cattle-breeding and for Veterinary dispensaries at important centres. Occasion was also taken to inspect one of the cattle fairs in the Tinnevely district, and at the Board's request I went to Chattrapur to inspect an elephant of the Agency of the Ganjam district.

Appendix
Form A.

3. *Pony-breeding operations.*—At the commencement of the year there were 15 stallions at work, 9 in Coimbatore, 5 in Salem and 1 in Madura district. The number at stand during the preceding year was only 12. Three stallions were stationed with private breeders. Two of them retained possession of the Government stallions during the whole year, but one of them Mr. Morgan of the Carrada estate retained only for two months. During the latter part of the year a stallion was lent to the Raja of Tani but he does not seem to have properly utilised its services. There is a requisition from Mr. Arbuthnot, the District Board Engineer, Vizagapatnam, for the loan of a Government stallion and also from the zamindar of Ettiyapuram. I paid two visits to Salem and Coimbatore districts and visited all the pony-breeding centres. But stations such as Kangayam, Dindigul, Palayakottai and Pagalpatti were inspected more often. The total number of coverings effected by all the Government stallions during the year under report was 426 and exceeded that of the previous year by 74. This gives an average of 28 per stallion as against 32 during last year. The four new stallions commenced work only in May 1903, and stallion "Baby" which was under treatment at Madras commenced to work only in October 1903.

Appendix
Form C.

(i) *Coimbatore.*—Except stallions Abdullah, Nile, Ophir and Punch which were standing at their respective centres during the whole year, the other stallions in Coimbatore district had to be transferred from one centre to another in search of work. Stallion Selim was working at Erode until 10th September 1903, when he was transferred to Hosur in the Salem district and was replaced by stallion No. 23 Jumna from the latter station. "Parel" was working at Palladam in the Coimbatore district until 18th February 1904 when he was transferred to Tani station in the Gólavari district. "Hector" was working at Pallachi until 26th November 1903, when he was transferred to Gopichettipalayam. The total number of coverings in Coimbatore district alone was 271 for 10 stallions or an average of 27 per stallion. It seemed to me unnecessary to rest the stallions as in former years, as they are really underworked. The work turned out may be considered short owing to the fact, that they worked for 12 months instead of 10. But the new stallions commenced work only in May and some time was lost in transit as some of the stallions were constantly transferred from one centre to another. A stallion used to be stationed at Kollegal permanently, and it was a good centre for pony-breeding operations, but owing to the prevalence of plague he had to be withdrawn. The work in Palladam and in Dhárapuram taluks was not good. But Palladam is not a very good centre for pony-breeding operations and Dhárapuram is also the same owing to its nearness to Kangayam where three stallions are at work. Besides, Dhárapuram was declared an infected area during the latter part of the year. During the year the experiment was tried of making it purely optional for pony owners to bring in their mares to Government stallions and no peons were allowed to collect mares as in past years. It was anticipated that in consequence at first there would be a falling off in the number of mares served, but the opposite has resulted as the number of coverings has exceeded last year by 74.

(ii) *Salem.*—The total number of coverings in this district was 113 for 5 stallions or an average of 22.6 per stallion. The work was very poor. This is due to prevalence of plague in Hosur which is otherwise a very important centre for pony-breeding operations. Stallions

"Tigris" and "Carbon" remained permanently during the year under report at Hosur and Pagalpatti respectively. "Sunshine" remained for four months at Harur, five months at Dharmapuri and three months at Pennagaram. "Rahiman" was working between Pennagaram and Dharmapuri until 5th August 1903, when he was transferred to Trichinopoly. "Jumna" was transferred to Erode in place of "Selim" which arrived at Hosur on the 16th September 1903. It is interesting to note that mares were received at Hosur for service from Mysore Province, Rayachoti taluk of the Cuddapah district and Palmaner in North Arcot and locally from Salem, Uttankarai and Krishnagiri taluks.

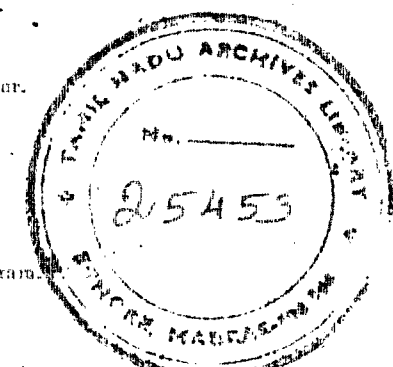
(iii) I consider that stallion "Rahiman" at Trichinopoly and "Samawy" in Madura district are doing good work. A stallion was sent for the first time to Trichinopoly but Madura is a centre where pony-breeding operations were in existence formerly. In Trichinopoly the work of the stallion is also supervised by the Veterinary Assistant in charge of the Veterinary Dispensary.

Bellary is still declared to be an infected area and therefore I have not made any arrangements to extend pony-breeding operations to this place, though it was believed that there is wide scope for the industry. It is hoped that something may be done at least during the ensuing year 1904-1905. I also visited Nilgiris and Kottagiri during the year. The former to interview Mr. A. Morgan on the prospects of pony-breeding and the latter to inspect the mule-breeding farm managed by Mr. Edmiston.

The subjoined statement will show where the Government stallions were located and the work done by each:—

Number.	Name of stallion.	Number of coverings.	Place where worked.
<i>Coimbatore district.</i>			
6	Abdullah	30	Kangayam.
11	Parel	19	Palladam, until 18th February 1904, transferred to Tani.
15	Selim	10	Erode, until 10th September 1903, afterwards transferred to Hosur.
17	Hector	33	Pallachi, until 26th November 1903, transferred afterwards to Gopichettipalayam.
19	Baby	33	Kangayam, arrived from Madras 27th September 1903, transferred afterwards to Aravakurichi.
19	Nile	13	Dhárapuram.
22	Ophir	32	Palayakottai.
23	Jumna	18	Erode, transferred from Hosur.
24	Ali	41	Kangayam, Aravakurichi and Katur.
25	Punch	30	Kangayam.
Total		271	
<i>Salem district.</i>			
13	Sunshine	30	Harur, Dharmapuri and Pennagaram.
20	Tigris	29	Hosur.
23	Jumna	12	Hosur, transferred to Erode.
25	Rahiman	14	Dharmapuri and Pennagaram (14).
15	Selim	8	Hosur.
7	Carbon	20	Pagalpatti (Salem district).
Total		113	
27	Samawy	24	Dindigul and Palni in the Madura district.
25	Rahiman	17	Trichinopoly.
11	Parel	1	Tani in the Gólavari district.
Grand Total		426	

4. *Results of coverings of the pony-breeding operations.*—During the previous year (1902-1903) 352 mares were covered. The results of coverings were ascertained in 241 cases only and in the remaining 111 cases the reports of the revenue officials are still due. Of the cases that were ascertained 149 were reported empty, 25 were sold and not traceable and the remaining 67 were successful coverings including 13 mares that had aborted. This would give a percentage of 27.3 of the successful coverings as against 23.8 of the previous year. There is no doubt that a large percentage of the coverings have proved successful; but it is very difficult to extract information from the ryots who misunderstand our enquiries. Revenue officials are now entrusted with the work of ascertaining these results and the Veterinary Assistant has been withdrawn for the more important work of cattle-disease. There is no opportunity for this department to verify these reports, at least in a few cases, and it is also not possible to make the villagers themselves report the results in each case.



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(ii) *Mule-breeding operations.*—The total number of coverings during the previous year was 113. The results were ascertained in only 50 cases. For the remaining the reports are still due. Of those cases that were ascertained, 35 coverings were successful and this includes 16 mares that aborted. Mule-breeding has now been discontinued.

The cost of the operations amounted to Rs. 4,718-0-2 including Rs. 87-8-7 incurred in connection with the mule-breeding.

Appendix
Form D.

5. *Castration.*—In Coimbatore district there were 2 salustries and 74 entires were castrated by them. The number of castrations during last year was 31 and the work of the year under report may therefore be taken as indicating some progress. In Salem district only one man was at work and he castrated only 17 entires. This is very poor work and there is no excuse why more entires were not castrated unless the prevalence of plague stood in the way of castration also. Hosūr is the only centre where more work can be done under castration, but this place has unfortunately been deserted in many places on account of plague. Senior Veterinary Assistants had also castrated a few cases on their tours and there were no casualties either in those cases attended by them or the salustries.

Appendix
Form E.

6. *Cattle disease.*—A statement showing the total loss of cattle in each district during the four previous years and the statement comparing the loss during the year with that of the four previous years are appended herewith.

Appendix
Forms F &
G.

The total loss during the year was 93,158, which is slightly over the figures of the two previous years, but it is very doubtful if any reliance can be placed on the accuracy of the report. In the years 1899-1900 and 1900-1901 the loss was 34,062 and 27,378 respectively under rinderpest and diarrhoea and dysentery put together, but in the year under report and the two preceding years the loss was about 18,000. This sudden decrease in the cattle deaths though satisfactory, cannot be regarded as representing the correct figures. From unspecified diseases alone 32,548 deaths were reported and it is possible that many of these deaths were due either to rinderpest or anthrax. There was an unusually large number of deaths from black-quarter and malignant sore throat and the death-rate is more than double the average of the four previous years. There is nothing special to note under epizootic apthia, except the large number of deaths among young calves in the Chingleput district. It may be observed that the average loss during the last five years from cattle diseases alone was 94,049.

Appendix
Form F.

From the statistics it may be readily seen that casualties among cattle are exceptionally heavy in the districts of Ganjām, Godāvāri, Kistna, Nellore, South Arcot, Tanjore and Chingleput. In Ganjām and Godāvāri it is especially severe. The total live-stock in Ganjām is about four lakhs and in Godāvāri about nine lakhs. In these two districts the death-rate is nearly 20,000 or a fifth of the total loss in the whole Presidency. I have had occasion to explain in my previous report that the nine lakhs of cattle do not really represent the number of cattle as large herds from surrounding districts are brought into Godāvāri for grazing, and this no doubt is answerable for the introduction of disease and the large losses entailed. One Senior Veterinary Assistant is in charge of these two districts, where employment could be found for not less than half a dozen. A considerable number of cattle were inoculated in these districts and it has been ascertained that the results were very satisfactory. I made several visits to a few centres in these districts and I found that the inoculated cattle were doing well and the ryots generally appreciate the treatment. Preventive inoculation for cattle diseases is well accepted in this Presidency and all that is now necessary is a sufficient supply of sera. It is essential that at least one or two Veterinary Assistants should be in charge of each of the abovenamed seven districts and much useful work would be done by starting a number of Veterinary dispensaries in different centres of these districts. The success that has attended the Veterinary hospitals at Trichinopoly and Pithapuram augurs well for the future of similar institutions. The work done in these two hospitals is explained elsewhere. The total loss from anthrax was 16,887. This disease was most virulent in Godāvāri, Nellore and Tanjore districts and nearly one-half of the total loss was contributed by these three districts. Veterinary Assistants were from time to time engaged in these districts, but the number of cattle inoculated by them for anthrax was small owing to the difficulty of procuring anthrax serum in sufficiently large quantities. Eventually I think it will be found to be more convenient to establish laboratories for manufacturing serum in the different provinces. Large doses of serum are required in order to treat cattle actually suffering from disease, and I venture to express the opinion that it may be found to be very difficult to procure the necessary sera if the manufacture is confined to one place alone for the requirements of the whole of India.

A good many sick cattle were treated with 50 and 60 C.C. of serum and the results were very satisfactory.

In addition to the loss from diseases there were 13,235 deaths from other causes. This includes 71 cases from criminal poisoning, but a great many of these cases were altered according to subsequent reports.

In dealing with cattle disease I would lay special stress on the necessity of preserving the cattle-sheds scrupulously clean.

Appendix
Form G.

7. *Cattle-breeding.*—In order to supplement my information in cattle-breeding, I visited during the year Ongole and Malabar districts. Ongole and its surrounding places form an important centre for cattle-breeding in the Nellore district. In Malabar there is not much to be noticed in the way of a special breed, but I think there is room for improvement. After ascertaining that the agricultural classes in the Madras Presidency were still in favour of cattle shows, I submitted a request to Government of India for an annual grant of Rs. 1,000 for prizes at the shows and have suggested to Government of Madras, the reasonableness of reviving cattle shows in the Nellore district and also of stimulating the efforts of the local people at Vizagapatam to inaugurate cattle shows in different places of the district similar to the one held at Kasimkota under the patronage of the zamindar of that place. A scale of awards and other particulars in connection with the holding of these shows were drawn up and submitted to Board—vide this office No. 310, dated 5th May 1904. The Collectors of the Vizagapatam and Nellore districts are in favour of these shows and in time to come these shows will indirectly help the efforts of this department in improving the local breeds. The Zamindar of Ettiapuram has realized the necessity for improving the breed of cattle and has requested this department to select for him a Nellore and a Amritmahal bull, and this matter is receiving the particular attention of this department. It is expected that several zamindars and the estates under Court of Wards will become similarly interested and consult this department in matters regarding the improvement of their cattle and sundry other things respecting them.

8. *Cattle fairs.*—The Madras Act II of 1866 was in force as usual at most of the cattle fairs held in Tinnevely district. A Veterinary Assistant was always deputed to attend these fairs wherever it was possible to spare one. Their experience of these cattle fairs and of the arrangements thereof should, I presume, be of valuable help to the taluk officials in putting things in order. In none of these fairs were any cases of contagious disease detected. The fair grounds were generally kept clean and Veterinary Assistants were required to pay particular attention to the sanitation. No cattle fairs either in Madras or Coimbatore districts were held during the year. In all, the Veterinary Assistants attended seven cattle fairs during the year, and the total number of cattle brought for sale was about 106,915 of which 58,500 were reported to have been sold for reasonable prices. Prices ruled high except at Kazhugumalai.

9. *Veterinary hospitals.*—I am glad to bring to notice that another Veterinary hospital was organised at Pithapuram, Godāvāri district, during the year. There are now on the whole four Veterinary Hospitals in the Madras Presidency including the one attached to the Madras Veterinary College, one at Saidapet and the fourth at Trichinopoly. I only receive the annual return from the Saidapet Veterinary hospital and I am at present unable to quote the number of cases treated at this place. The Veterinary hospital at Trichinopoly has been now in existence for over a year and from the returns that are received from the Veterinary Assistant through the President of the District Board, Trichinopoly, I gather that since April 1903 to March 1904, 7,413 cases were treated. Of these 682 were in-patients and 6,731 were out-patients. The details are as follows:—

								In-patient.	Out-patient.
Horse	...	...	...	...	...	...	...	180	1,550
Cattle	...	...	...	...	...	...	...	374	4,180
Dogs	...	...	...	...	...	...	...	123	692

It is very encouraging to find that within so short a time it should have gained such popularity, as is evinced by the fact that a large number of patients especially cattle were brought there for treatment. The Veterinary hospital at Pithapuram commenced its operations in the middle of July 1903. It is located in the place where the weekly cattle fair is held and this was selected with a view to afford it a greater publicity. A small room is erected as a pharmacy and a few sheds for patients admitted into the hospital. The hospital is provided with the necessary instruments and medicines. A graduate of the Lahore Veterinary College is in charge of this Hospital assisted by a compounder and a few servants. It is a great drawback that the Veterinary Assistant is not conversant with the local vernacular. This is one of the great objections to employing qualified men from the other parts of India. Moreover such men are not likely to gain the same amount of confidence as Madras men who are acquainted with local customs. At Pithapuram 639 patients were treated during the year and of these 581 or more than five-sixths were bovine patients. In Pithapuram the Veterinary Assistant was also employed in inoculating cattle within his jurisdiction. During the year I paid three visits to the Veterinary hospital at Trichinopoly and two to that at Pithapuram. The work at the Madras Veterinary College hospital has been reviewed separately.

(ii) Government has sanctioned the establishment of a Veterinary hospital at Madras. I visited the place in order to select a site for the necessary buildings and to suggest other particulars regarding its organization. It is hoped that very soon it may be brought into working order. A Veterinary Assistant from either the Bombay or the Bengal Veterinary Colleges will be put in charge of this hospital temporarily until such time as he can be replaced by a graduate of the Madras Veterinary College.

10. As in last year, the staff consisted of only three Senior Veterinary Assistants. These were utilised not only for the cattle-disease work, but also such other work as falls under the management of this department, such as cattle-breeding, cattle-fairs, etc. For purposes of detail I submit below the work done by each assistant.

(a) From April to the commencement of July 1903 V. P. Subramania Mudaliar was in charge of the pony-breeding operations inspecting the Government stallions and their work. As I found that it was desirable to utilise his services to the important work of treatment of cattle-disease, I withdrew him from the pony-breeding operations and delegated him as occasion required for inoculation work. His head-quarters was consequently changed from Erode to Madras. He tried inoculation in three districts—Tinnevely, Tanjore, and Nellore and inoculated in all 2,715 cattle for anthrax and more than one-half (1,509) cattle belong to Nellore. In the Nellore district it was reported by the local officers that ryots were not in favour of inoculation, but as I had not enough reliance on these reports, the veterinary assistant was sent to do what he can and it is satisfactory to notice that the ryots volunteered their cattle for inoculation as soon as they understood that the treatment is calculated to do more good than harm. Further cattle at the Koilpatti farm, as well as the home-farm cattle of the Sivagiri estate, under the Court of Wards, were protected against anthrax. In addition to this work he attended the marginally noted cattle fairs where Cattle Disease Act was enforced and worked in the Veterinary College hospital for nearly a month when one of the permanent incumbents proceeded on leave.

Kalugumalai. Muthulapuram.
Sivalaperi. Sankaranayinarkóyil.

(b) M. Hassan aly Sahib was also on cattle-disease work and inoculated 2,394 cattle against anthrax in the districts of Malabar, Tanjore, Nellore, Chingleput and Tinnevely. His work was chiefly in Tanjore and Tinnevely districts where alone he inoculated 1,801 cattle. This prophylactic treatment was also adopted during the year by the military authorities of the Poonamallee cantonment and the Zamindar of Seitur in Tinnevely district. He was deputed also in connection with the cattle fairs at Kalugumalai, Tiruchendur and Kanniseri, where the Act was in force.

(c) Veterinary Assistant H. C. Sampathu Aiyangar was transferred permanently to the Gódvári and the Ganjam districts for cattle-disease duty. In these two districts either rinderpest or anthrax is always to be found. He successfully treated both rinderpest and anthrax and it was reported that ryots voluntarily sought his assistance. In Gódvári district he inoculated 2,043 cattle for rinderpest and 1,068 for anthrax in the Ganjam district, 702 cattle for rinderpest and 104 for anthrax. He was sent to Pithápuram at the request of the Collector of Gódvári to train veterinary assistant attached to Pithápuram Veterinary Dispensary in inoculation. The latter is now able to carry out inoculation independently and the necessary serum is supplied from this office. At the request of the President of the Kasinkota cattle show the veterinary assistant was asked to visit the show and render them whatever assistance they required. A separate report was submitted to Board regarding the particulars of this show. On information that an annual horse fair was to be held at Kotipalli near Rajahmundry he was ordered there to ascertain the nature of the exhibits gathered for the fair and also to help a merchant who was a large dealer in horses in the selection of good horses. His services were not required by the merchant as the fair was unexpectedly poor and no suitable ponies had been collected.

11. Enquiries were made by me personally and by letter regarding the efficacy of inoculation on the sick cases and the reports from different quarters tend to establish the fact that the spread of the disease was arrested and the people generally were satisfied with the new treatment. Nine thousand and eighty-six cattle were inoculated during the year by the subordinates of this department and this may be considered to be very satisfactory considering the many difficulties the small staff of this department had to contend against.

12. *The Madras Veterinary College.*—The Madras Veterinary College was started in October 1903 in Vepery. Temporary premises have been rented but these only give the necessary accommodation for one class whereas in two years time there will be three classes at work simultaneously. A plot of land has been acquired, and when the buildings, the plans of which have already been submitted to Government for sanction are erected, the college should be the best equipped in India. The hospital formerly worked by the Madras Society for the Prevention of Cruelty to Animals, was very kindly handed over by them to Government and this formed the nucleus of the practice for instruction. There had been hundreds of applications from various parts for admission into the college. A very careful selection was made and according to the rules only 20 were selected for the first-year course. During the first three months in October, November and December

Brahmins 6. Christians 3.
Other Hindus 8. Mahomedans 3.

1903, the students were practically on probation and the term commenced from 1st January 1904. During the period two examinations were held by me—one at the end of December 1903 to determine the best students for Government scholarships and another before the vacation to test the progress made by them.

The statement of marks obtained by each student during each of the examinations is appended herewith:—

Names.	Examination held in		Remarks.
	December 1903, maximum 30.	March 1904, maximum 50.	
Abd-ul-Ghafur, M.	14	36	He left the college, as it came to my knowledge that he was a dismissed Government servant.
Brown, C.	28	34	
Doraisami Naidu, K.	18	27	
Devagi Rao	22	..	
Ghias-ud-din, B. M.	23	30	
Hayavadana Rao, C.	20	38	
Hosain Hazari, M.	26	25	
Kannaiya Nayudu, M. P.	26	45	
Krishnaswami Mudali, G.	29	46	
Kumaraswami Pillai, T. G.	28	35	
Narasimhaiah, V. G.	29	43	
Parthasarathy Mudali, A.	27	59	
Patankar, S. M.	30	46	
Rajappa, A.	25	32	
Rameshchandra Iyer, A.	19	33	
Ramalinga Mudali, A.	17	29	
Saltasaniam, A.	17	39	
Srinivas Iyengar, C. V.	..	26	
Wesley, J. M.	19	45	
Wilson, A. J.	27	45	
Veeraswamiiah	13	..	I removed him being unfit. He was taken in the place of Veerasamiiah, as being more suitable.
Ramalingam Nayudu	..	..	

13. The students have shown generally considerable diligence to their studies and were regular in attendance. It is hoped that at the end of three years, the full term of the course, most of them will be able to obtain their diplomas and qualify themselves for district posts.

14. A library and museum is attached to the college.

15. For the teaching work, two lecturers including the Assistant Principal have been appointed during the year and the sanctioned staff will be entertained later on, when the second and third year classes are opened.

16. The office work of the Veterinary College and the Hospital is thrown on the establishment of the Civil Veterinary Department, and I have submitted certain proposals for re-organization of the office establishment during the year.

17. The Government Veterinary Hospital attached to the college is increasing in popularity every day and the following schedule exhibits the patients treated in this institution:—

	In-patients.	Out-patients.
Horses	212	126
Cattle	72	5
Dogs	157	192
Poultry	1	2
Monkey	..	1
Cats	5	4
Deer	1	..
Total	448	330
Grand total	778	

As an inducement to cattle-owners, I have notified that cattle-patients will be medically treated free of cost. This seems to have the desired object and the cattle-owners bring their cattle now more freely than before.

The charges for treatment and feeding have been very moderate and only minimum charges have been claimed. The collections for both in and out-patients until the end of 31st March 1904 amounted to Rs. 2,238-4-6 or an average of nearly Rs. 500 per month.

When the hospital was worked by the Society for the Prevention of Cruelty to Animals practically only horses and dogs were admitted for treatment. I am glad to say that owners are now bringing their cattle voluntarily and I anticipate a large cattle practice. If the municipal contractors' cattle were placed under our medical supervision a very large cattle practice could be assured. The few cattle in the hospital were sent in by the Police and thereby caused the hospital to become unpopular with owners of cattle, and this no doubt will account for the small number of cattle patients. To persons who are not very well off, advice and medicine are given free or at a very low charge.

18. In the compound of the "Dobbin Hall" premises a temporary cattle shed to accommodate about 30 cattle was erected during the year with cocoanut leaves but this has, however, to be replaced by a more durable and safe one.

19. A small plot of ground is cultivated with guinea grass at present and arrangements are being made to cultivate lucerne and also to grow some useful medicinal plants for the instruction of the students.

20. A tennis ground, a plot for the cricket pitch, as well as a gymnasium has been laid out for the physical training of the students and attendance at least to one of these has been made compulsory.

21. In conclusion, I beg to tender my sincere thanks to Board and to Government for the very favourable reception that they have given to the various proposals made by me for the development of the college. I express a hope that the general tendency of the people to recognise the good done to them that is now noticed everywhere augurs well for the future of this department.

MADRAS,
5th July 1904.

(Signed) W. D. GUNN, Major,
Supt., Civil Veterinary Dept.

APPENDICES.

MADRAS FORM A.

RETURN of pony and donkey stallions for the official year 1903-1904.

		Pony stallion.	Donkey stallion.
Balance on 1st April 1903	...	15	...
Increase { Purchased	...	...	...
By transfer from	...	...	...
Total	...	15	...
Decrease { Died	...	...	...
Destroyed	...	...	...
Sold	...	...	...
Total	...	...	...
Balance on 31st March 1904	...	15	...

* Arab ponies.

MADRAS FORM B.

RETURN of pony and donkey stallions struck off the list during the official year 1903-1904.—Nil.

MADRAS FORM C.

RETURN of services and produce of pony and donkey stallions during the official year 1903-1904.

	Number at stud.		Number of mares covered.		Average of mares covered per stallion at stud.		Results of previous year's covering.			Average result of previous year's covering per stallion at stud.		
	Year under report.	Previous year.	Year under report.	Previous year.	Year under report.	Previous year.	Number produce.	Number held.	Number known.	Average produce.	Average of not held.	Average of not known.
1	2	3	4	5	6	7	8	9	10	11	12	13
Ponies	15	11	425	352	28	32	67	149	156	6.1	13.5	12.3
Donkeys	..	4	..	113	..	28	35	15	63	8.7	3.7	15.7

MADRAS FORM D.

RETURN of cost of feed, keep, attendants, etc., of pony and donkey stallions during 1903-1904.

District.	Number of stallions.		Total annual cost.		Average cost per stallion.		Remarks.
	Pony.	Donkey.	Pony.	Donkey.	Pony.	Donkey.	
Coinbatore	..	..	Rs. A. P.	Rs. A. P.	Rs. A. P.	..	The donkey stallions were disposed of during the year.
Salem	..	..	..	..	..	..	
Madurai	..	..	..	..	..	..	
Tinnevely	..	..	..	..	..	..	
Godavari	..	..	..	..	..	..	..

MADRAS FORM E.

RETURN of ponies castrated by Salmistries during the year 1903-1904.

District.	Number of ponies castrated.	Number of known deaths from effects of castration.	Remarks.
Coinbatore	74	..	..
Salem	17	..	..

MADRAS FORM F.

COMPARATIVE statement on cattle mortality for five years ending 1903-1904.

Cause of death.	1899-1900.	1900-1901.	1901-1902.	1902-1903.	1903-1904.
<i>Diseases.</i>					
Rinderpest	..	..	..	..	..
Anthrax	..	..	..	..	..
Kobdang sore-throat	..	..	..	..	..
Black quarter	..	..	..	..	..
Hydrophobic apoplexy	..	..	..	..	..
Varicella	..	..	..	..	..
Others	..	..	..	..	..
Total	1,61,529	97,541	88,997	88,576	93,158
<i>Other Causes.</i>					
Snake-bite	..	..	..	..	..
Wild animals	..	..	..	..	..
Criminal poisoning	..	..	..	..	..
Total	14,832	13,639	12,606	13,117	13,235
Grand total	1,15,162	111,180	101,603	102,303	106,393

MADRAS FORM H.

RETURN showing the Provincial cost of the Civil Veterinary department during the year 1903-1904.

[illegible]

SHOWING results of preventive inoculation during the year 1903-1904.

Province.	Against enterpest.					Against anthrax.				
	Number of outbreaks in which inoculation was undertaken.	Number of animals (if ascertainable) which died un inoculated in course of outbreak.	Method of inoculation followed.	Number of animals inoculated.	Number which died after inoculation.	Number of outbreaks in which inoculation was undertaken.	Number of animals (if ascertainable) which died un inoculated in course of outbreak.	Method of inoculation followed.	Number of animals inoculated.	Number which died after inoculation.
1	2	3	4	5	6	7	8	9	10	11
Madras	..	..	"Serum alone" method.	2805	12	..	..	"Serum alone" method	6329	33

Showing total strength of subordinate veterinary staff employed during the year 1903-1904.

Provinces.	Paid from Provincial or District funds.	Number of Veterinary Inspectors.	Number of Veterinary Assistants.			Total.
			Employed in Veterinary dispensaries.	Employed in work connected with horses and mule breeding.	Employed in work connected with cattle-breeding and cattle disease.	
1	2	3	4	5	6	7
Madras	Provincial .. District Board .. Court of .. Wards ..		.. 1 .. 1		3	3 1 .. 1

Heads.				Amount.				Heads.				Amount.			
				RS.	A.	P.						RS.	A.	P.	
Local allowance as Principal	..	..	..	500	0	0		Miscellaneous	..	..	..	2,370	13	3	
Lecturers	..	..	..	1,187	3	7		Scholarships	..	..	..	200	0	0	
Clerks and servants	..	..	..	316	8	0		Purchase of books	..	..	..	932	2	0	
Travelling allowance	..	..	..	333	8	4		Petty repairs to buildings	..	..	..	185	0	0	
Scientific instruments and apparatus	..	..	..	729	14	1		Rents, rates and taxes	..	..	..	462	14	5	
Drugs	..	..	..	142	11	6			..	..	Total	8,474	4	2	
Furniture	..	..	..	350	0	0									
Repairs to furniture	..	..	..	52	14	0									
Tour charges and office expenses	..	..	..	55	11	0									

				Number of Deaths among— <i>cont.</i>									
Districts.	Cattle— <i>cont.</i>			Horses and Ponies.									
	Total.	Grand Total.	Total stock by the local owners.	From diseases.				From snake-bite.	By wild animals.	From animal poisoning.	Total.	Grand Total.	
				Dysentery and diarrhoea.	Anthrax.	Others.	Total.						
													15
	12	13	14	15	16	17	18	19	20	21	22	23	
1. Ganjam	365	9,745	123,753	4	2	3	9	..	..	..	..	9	
2. Vizagapatam ..	115	3,275	128,721	..	4	1	5	..	..	..	..	5	
3. Godavari	351	13,782	..	8	29	62	99	8	..	..	12	111	
4. Kistna	331	11,251	1,764,151	1	2	26	29	..	10	..	10	39	
5. Kurunool	613	5,103	176,229	2	2	11	15	1	17	..	18	36	
6. Bellary	256	3,235	502,760	1	4	24	32	2	13	..	15	47	
7. Anantapur	306	3,922	1,157,178	1	..	12	13	..	8	..	8	21	
8. Cuddapah	111	5,134	512,078	..	..	3	3	..	2	..	2	5	
9. Nellore	273	6,581	264,955	..	..	11	12	..	1	..	1	13	
19. Chingleput	222	4,586	662,698	1	..	38	41	..	..	..	..	41	
11. South Arcot .. .	601	3,738	1,163,662	1	..	6	7	..	..	..	..	7	
12. North Arcot .. .	381	3,766	801,315	1	..	2	2	..	..	..	..	2	
13. Salem	401	2,016	912,587	3	..	5	8	..	..	..	..	15	
14. Coimbatore	824	3,441	1,151,637	1	1	7	9	2	19	1	22	31	
15. Trichinopoly .. .	90	2,244	699,159	..	..	3	3	..	..	..	..	3	
16. Tanjore	188	6,259	926,710	..	..	6	6	..	..	..	..	6	
17. Madras	276	2,895	653,098	1	5	29	35	1	11	..	12	47	
18. Tinnevely	132	1,612	482,925	..	..	4	5	1	..	..	1	6	
19. Nilgiris	419	592	64,856	..	1	1	2	..	3	..	3	11	
20. Malabar	2,325	4,668	968,938	1	..	3	4	1	3	..	4	8	
21. South Canara .. .	4,052	5,487	1,351,799	..	..	1	1	..	..	..	..	1	
Total	13,235	1,00,293	..	21	51	261	343	16	104	1	121	464	

GOVERNMENT OF MADRAS.
REVENUE DEPARTMENT.

Read—Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), Mis. No. 4136, dated 3rd August 1904.

The Hon'ble Mr. A. E. CASIBESTUART STUART, I.C.S.

ABSTRACT.—Submitting report on the operations of the Department of Agriculture for 1903-1904.

Order—No. 1049, Revenue, dated 20th September 1904.

Miscellaneous.

The report read above deals with the year's work of the Agricultural Department in all its branches, and His Excellency in Council is pleased to be able to congratulate the department as a whole on an interesting record of useful and increasing activity.

2. The report bears testimony to the variety of subjects that have engaged the attention of the department, but fewer experiments designed on a broader and clearer basis would doubtless give more satisfactory results. There is much truth in the Deputy Director's remark that there is great risk of confusion in attempting to study too large a number of varieties of the same crop. The development and organisation of the department have during the past year occupied the careful attention of Government, and they have now under their consideration various suggestions for its improvement made by Mr. Mollison in connection with his recent inspection of the Saidapet College. When effect has been given to the decisions arrived at, it is hoped that the efficiency of the department may be considerably increased.

3. In the matter of experimental agriculture, the most important departure in the year has been the establishment of the pumping stations alluded to in paragraph 20 of the report. The results already obtained by the Rev. Mr. Andrew's experiments at Melrosapuram (of which a full account has been published in his report printed in G.O., No. 819A, dated 5th August 1904), encourage Government to hope for a considerable development of the productive capacities of the poorer soils by improving the facilities for utilising sub-soil water. On the Government farms at Bellary and Koilpatti little of value has yet been achieved: and, while it is true that progress in experimental cultivation must necessarily be slow, the working of these farms can hardly be considered satisfactory. The Director's attention has already been drawn to the matter.

The sugarcane farm at Samalkot has been more successful, and Government are glad to observe that a beginning has already been made in the distribution of selected seed to the ryots of the neighbourhood.

4. In addition to his botanical survey the Government Botanist devoted much time to various enquiries in Economic Botany, the most important of which perhaps were in connection with the improvement of cotton, and his investigation of the pepper-vine disease in Malabar. The feasibility of starting an experimental pepper garden in Malabar is now under consideration. Recently proposals have been received for strengthening the Botanist's staff, and it is hoped that he will be able to devote more attention in future, as he desires, to the important study of insect pests.

5. The Madras Veterinary College was successfully inaugurated in October, but some time must elapse before it will be able to supply qualified veterinarians for want of whom the establishment of veterinary dispensaries has perforce been held in abeyance. It is very satisfactory to note that inoculation against cattle disease is growing in popularity, and Government trust that every effort will be made by the department to meet the demands of the ryots in this vitally important matter. To encourage the improvement of cattle-breeding, a sum of Rs. 1,000 has recently been allotted for the award of prizes at cattle shows, and the Board of Revenue has been asked to consider the best means of supplying breeders with selected bulls.

6. Mr. Mollison's report on his inspection of the Saidapet Agricultural College has recently been received, and the reorganisation of the College on a more efficient basis and the transfer of its control to the Agricultural Department is now under the consideration of Government.

7. Government are glad to observe that special efforts have been made to place the results of the researches of the department within easy reach of the ryot; but are of opinion that much more might be done in this direction. Elaborate bulletins are valuable as a means of recording the results of the department's work; but are mostly unintelligible to the rural community, whose interests will be better served by publications of a less ambitious character. Free use should be made of the village sheets of the District Gazettes to convey advice and information on all matters that are likely to be of interest to the ryots. But much the most satisfactory and immediately effective method is to send out qualified subordinates to explain and show the ryots the improved methods and their results when possible. In addition to the publications mentioned in the report, copies of M.R.Ry. Rajagopal Naidu's vernacular treatise on agriculture and of M.R.Ry. M. Venkanah's Telugu Manual of Agriculture have been distributed gratis and a vernacular translation has been ordered of the monograph on "Tanning".

(True Extract.)

(Signed) J. N. ATKINSON,
Ag. Secretary to Government

To the Board of Revenue (Revenue Settlement,
Land Records and Agriculture).

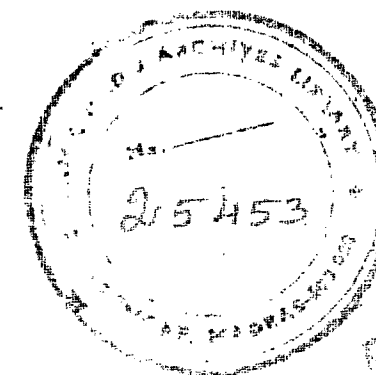
„ the Educational Department.
„ the Inspector-General of Agriculture.
„ the Minister of Agriculture, Argentine Republic.
„ the Entomologist to the Government of India.
„ Monsieur Chailley-Bert.

Editors' Table.

Endorsement No. 1049A.

Copy to the Government of India, Department of Revenue and Agriculture.

(Signed) F. B. EVANS,
Ag. Under Secretary to Government.



5.20.1904