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Educational (1905) Department.

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[Despatch Abstract.]

College of Agriculture

Reading the report ~~of the D. P. I.~~, on the working of the ~~College~~ during 1904-1905.

BACK PAPERS.

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Government of Madras.

EDUCATIONAL DEPARTMENT.

2

Read. } 1905. *Enclosures*

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ORIGINAL

G.O., No. 648, 29th September 1905.

N. P.

College of Agriculture.

Recording the report on the working of the — during 1904–1905.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

Read—the following paper :—

Letter—from the Hon'ble Mr. A. G. Bourne, D.Sc., F.R.S., Director of Public Instruction, Madras.
To—the Secretary to Government, Educational Department.
Dated—20th September 1905.
No.—Cur. 8060.

I have the honour to submit herewith a copy of my Proceedings, Dis. No. 5866, dated 7th September 1905, reviewing the report on the working of the College of Agriculture during 1904–1905.

Enclosure.

Proceedings of the Director of Public Instruction, Dis. No. 5866, dated 7th September 1905.

Letter—from W. Keess, Esq., M.A., M.R.A.C., Principal, Madras College of Agriculture.
To—the Director of Public Instruction.
Dated—Saidapet, 1st May 1905.
No.—384.

I have the honour to submit the report on the College of Agriculture for the year 1904–1905.

2. *Staff.*—On 18th July 1904, M.R.Ry. C. K. Subba Rao, Acting Vice-Principal, reverted to his permanent post in the Agricultural Department. The Vice-Principalship remained vacant for the remainder of the official year. On 23rd August M.R.Ry. G. Krishna Prabhu reported sick. On 17th September he died of gastritis. Mr. D'Silva, second assistant, was promoted to be acting first assistant. It was not till 12th November that the other four assistants went up a step, thus allowing M.R.Ry. T. Srinivasa Rao, bailiff, to be added to the staff as acting sixth assistant. The acting promotions were made with retrospective effect from the 17th September, so that the promoted officers drew their increased salaries from that date. It will be noticed that from 23rd August to 12th November, a period of more than two-and-a half months during which the college was at full work, there were only six lecturers instead of the sanctioned number of eight. It was fortunate that at this critical time the staff contained officers who were able to carry on the duties of M.R.Rys. C. K. Subba Rao and G. Krishna Prabhu in addition to their own. I consider, however, that the work of two of the assistants during the two-and-a half months mentioned was excessive and it is highly creditable to them that they did it so well.

The death of M.R.Ry. G. Krishna Prabhu referred to above entailed the loss to the institution of the officer who had served it longest. The deceased belonged to the first batch of students who entered the college. He passed out in 1879 second in order of merit. In 1883 he was appointed first assistant and therefore at the time of his death had filled that post for 22 years. During this period he proved himself an efficient teacher and won the respect of his colleagues and students.

3. The number of students on 31st March rose from 46 to 58, the increase being due to the large number of men who joined the college in January. In fact for the first time during the nineteen years I have been connected with the college, class I attained its maximum strength and applicants had to be refused admission. As in the previous year, I declined to admit casual students for "Surveying and Levelling" and "Agricultural Engineering" only.

—	Class I.		Class II.		Class III.		Casuals.		Total.	
	31st March 1904.	31st March 1905.	31st March 1904.	31st March 1905.	31st March 1904.	31st March 1905.	31st March 1904.	31st March 1905.	31st March 1904.	31st March 1905.
1. Europeans and Eurasians.	..	..	..	..	..	..	1	.	1	..
2. Native Christians ..	..	..	2	1	1	1	..	..	3	2
3. Muhammadans ..	2	2	2	1	..	2	1	3	5	8
4. Brahmans	11	12	11	8	3	7	1	1	26	28
5. Non-Brahman Caste Hindus ..	8	16	1	4	2	..	..	..	11	20
6. Panchamas and kindred classes.	..	..	..	..	..	..	..	..	..	..
Total ..	21	30	16	14	6	10	3	4	* 46	58

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

N.B.—The above table does not include the minors under the Court of Wards resident at Newington who attended field classes.

Classification according to general educational qualifications—

B.A.'s. †	2
F.A.'s.	8
Matriculates	26
Non-Matriculates	22
Total ...	58

† One of these is a B.A. of the Calcutta University.

4. *Instruction.*—This was carried out in accordance with the orders embodied in G.O., No. 429, Educational, dated 24th July 1902.

April to December.

Class III.—The unfavourable season tended to restrict the amount of practical work in agriculture done by students, but the class being a small one each student was given, I think, a sufficient amount. The students took turns at farm-supervision and dairy-work and most of them did well, especially one, whose excellent supervision has been noted in the college books. The class undertook a tour of enquiry in the southern districts from 1st to 19th October—*vide* Board's Proceedings (Revenue Settlement, Land Records and Agriculture), Mis. No. 177, dated 12th January 1905. The men spent one day a week in the Chemical Laboratory at quantitative analysis and the results of the examination in Agricultural Chemistry Advanced show that in spite of the breakdown in the water-supply to the laboratory and of the use of spirit for heating instead of gas they reached the high standard demanded by the examiner. For instruction in veterinary the class attended the hospital twice a week.

Class II.—The men of this class had their first year's course extended by six months and completed "field cultivation" during their first year, but to find employment for them, I set aside an acre on the farm to be cultivated by them without any assistance. Owing, however, to the unfavourable season very little could be done on the land. They, however, took part at times in the general work of the farm. For instruction in quantitative analysis and agricultural engineering the class was divided into two batches, which devoted one day every alternate week to each of the subjects. Qualitative analysis was done whenever time could be spared for it. The class went into camp at Pallávaram from 13th to 29th April for the purpose of preparing the prescribed engineering plans and estimates. I visited the camp on three occasions. The practical instruction in veterinary consisted of dissections.

Class I.—The students were given as much work as possible on the farm. In botany they had field and microscope classes, and in general chemistry a small amount of qualitative analysis. The class went into camp at Pallávaram with class II from 13th to 29th April for the purpose of preparing the prescribed survey plans.

As before mentioned, I paid the camp three visits.

January to March.

Class III.—The remarks made concerning the class III of April to December apply to this class except that the tour of enquiry was undertaken in the Cuddapah district from 7th January to 1st February—*vide* my letter No. 348, dated 20th April 1905.

Class II.—This class has of course not yet commenced field cultivation. I pressed on the work in agricultural engineering so as to allow of the men having time during the next monsoons for "field cultivation". The students devoted one day a week to quantitative analysis, and, they went on with qualitative analysis whenever they could spare time. The practical work in veterinary consisted of dissections.

Class I.—The students of this class seem to be very keen on farm work. The oil engine enabled the men to do a fair amount of it. I pressed on the work in "Surveying and Levelling" so as to enable the students to work long hours on the farm during the next cultivation season. In general chemistry the class had qualitative analysis for two hours a week. For instruction in botany the class was divided into two batches, each batch having a field class once a week.

5. *Veterinary Hospital.*—Mr. S. L. D'Silva was in charge during the whole year with M.R.Ry. S. P. Swaminathan as hospital-keeper. The number of cases treated showed a small increase, the maximum under the present conditions having, I think, been reached. I have, however, submitted proposals to you which, if adopted, will, I hope, increase the number of bovine patients—*vide* your Proceedings, Ref. on C. No. 3590/4, dated 14th June 1904, and Dis. No. 6268, dated 11th October 1904.

The following are the figures usually given in the annual report:—

	1903–1904.	1904–1905.
Number of cases treated—		
Horses	435	386
Cattle	471	489
Other animals	312	357
Total ...	1,218	1,232

	Rs.	A.	P.	Rs.	A.	P.
Expenditure including establishment ...	2,249	9	0	1,984	9	8
Income	1,122	6	5	1,124	14	9

A report by Mr. D'Silva is submitted.

6. It is gratifying to note that a demand has arisen both in and out of Government service for passed students and that the supply is not equal to the demand. A list of students is maintained in my office and not a single man, who is worth employing, is unemployed.

7. All three classes underwent gymnastic instruction.

The "Recreation club" is in a satisfactory condition. The cricket pitch was relaid early in the year, but want of rain prevented its being brought into playing condition. Cricket was consequently handicapped during the year, but a few matches were played. Tennis and badminton were regularly played.

The Students' Association held fourteen meetings at which papers were read. In connection with the association, the celebration of the "College day" was held as a private function on 22nd October, and included a tennis tournament, athletic sports and a musical entertainment.

8. *Examinations.*—Five students of class III, the remnant of a class of nine men recruited in July 1901 by Mr. Thorne, appeared for the diploma in December and two passed. Taking individual subjects, the results in the two advanced ones were, I consider, very good, while those in the six intermediate ones, for which candidates appeared for the first time, were, I think, satisfactory, the percentages of passes in four of them being over 58. No candidate appeared for the first time in "Meteorology and Geology" as the students of the class II of 1904 appeared in it in April and December 1903.

Subject.	Candidates who appeared for first time.			Candidates who appeared after having previously failed.		
	Number.	Passed.	Percentage.	Number.	Passed.	Percentage.
1. Botany, Intermediate (Special) ..	12	7	58·3	2	1	50·0
2. Meteorology and Geology, Intermediate (Special).	..	..	..	3	1	33·3
3. General Chemistry, Intermediate (Special).	13	5	38·5	2	1	50·0
4. Anatomy and Physiology, Intermediate (Special).	15	12	80·0	..	..	..
5. Veterinary Science and Hygiene, Intermediate (Special).	5	4	80·0	..	..	..
6. Surveying and Levelling, Intermediate (Special).	12	7	58·3	7	3	42·9
7. Agricultural Engineering, Intermediate (Special).	16	6	37·5	2	..	·0
8. Agriculture, Advanced	5	3	60·0	..	..	..
9. Agricultural Chemistry, Advanced.	5	4	80·0	1	..	·0

9. The guaranteed appointment of Rs. 40, the Robertson prize of the value of Rs. 87–4–6 and the Clogstoun prize of the value of Rs. 45–6–2 were all won by K. Narayana Aiyangar, Matriculate, stipendiary student from the Tinnevelly district.

10. *Museum.*—Owing to the numerical weakness of the staff the museum naturally suffered. M.R.Ry. Y. Srinivasa Rao, however, after his appointment as acting sixth assistant, did some useful work in renewing specimens and adding to their number.

11. In conclusion, I desire to acknowledge the services of the staff and officers of the college. In several ways the year which has just closed was a very trying one and it speaks well for the assistant lecturers and other officers that my report contains no unfavourable feature.

APPENDIX I.

Statement giving particulars called for in Proceedings No. 10543 of 1898 (the occupation of parents added as in previous years).

Class.	Distribution of scholars according to wealth.			Occupation of parents.				
	Richer class.	Middle class.	Poorer class.	Officials.	Petty officials.	Traders.	Land-holders.	Others.
Class I	6	23	..	..	..	1	18	10
,, II	..	12	2	6	..	1	7	..
,, III	3	7	1	6	..	..	5	..
Casuals	4	..	..	1	..	..	2	1
Total ..	13	42	3	13	..	2	32	11

Average number on the rolls = 42 (41·6) Average daily attendance = 38 (38·2).

APPENDIX II.

Statement showing the distribution of students according to districts.

Districts or Provinces.	Class I.	Class II.	Class III.	Casuals.
1. Gódávari	3	1	..	..
2. Kistna	4	1	2	..
3. Guntúr	1	..	..	..
4. Bellary	1	..	..	..
5. Kurnool	..	..	..	..
6. Cuddapah	2	..	..	1
7. Nellore	..	1	..	..
8. Madras	..	1	..	..
9. Chingleput	..	..	..	1
10. North Arcot	..	1	..	..
11. South Arcot	2	..	..	..
12. Tanjore	..	1	..	..
13. Trichinopoly	3	..	2	..
14. Tinnevelly	..	1	..	..
15. Coimbatore	2	1	1	..
16. Salem	1	..	..	..
17. Nilgiris	1	1	1	..
18. Malabar	..	1	..	..
19. South Canara	2	..	..	..
20. Bombay Presidency	..	..	..	1
21. Mysore	1	..	..	..
22. Travancore	..	1	..	..
23. Hyderabad	3	..	..	..
24. Indore State	..	..	2	1
25. Gwalior State	1	1	2	..
26. Barwani State	..	1	..	..
27. Kathiawar	..	1	..	..
28. Punjab	2	..	..	..
	1	..	..	..
Total ..	30	14	10	4

APPENDIX III.

Statement showing expenditure and income at Veterinary Hospital.

	1903–1904.	1904–1905.
Expenditure—	Rs. A. P.	Rs. A. P.
Establishment	1,066 12 0	858 0 0
Hospital charges	728 8 8	435 0 10
	* 185 13 8	* 503 13 10
Repairs to Veterinary hospital buildings ...	268 6 8	187 11 0
Total ...	2,249 9 0	1,984 9 8
Income—		
Subscriptions	24 0 0	24 0 0
Payment on account of stabling	259 12 5	298 13 3
Payment on account of advice and medicine.	598 4 0	659 6 0
Payment on account of sundry matters ...	240 6 0	142 11 6
Total ...	1,122 6 5	1,124 14 9

Note.—The figures marked with * are Accountant-General's adjustments.

APPENDIX IV.

Number of books in stock on 1st April 1904	2,309	(4 lost)
Number added during 1904–1905	41	
Total ...	2,350	
Books taken by staff	317	
Books taken by students	541	
Total ...	858	

APPENDIX V.

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

No.	Items.	Budget estimate, 1904–1905.	Expenditure. 1903–1904.	Expenditure. 1904–1905.
		Rs.	Rs. A. P.	Rs. A. P.
1	Principal and Vice-Principal	20,400	19,001 10 3	15,345 0 0
2	Masters and teachers	12,570	11,293 5 9	10,586 8 8
3	Establishment	2,508	2,393 4 8	2,412 9 8
4	Travelling allowances	350	329 10 9	271 12 9
5	Veterinary hospital establishment	858	1,066 12 0	858 0 0
6	Supplies and services—			
	Library allowance	150	210 7 0	53 2 0
	Prize allowance			50 0 0
	Scholarships	..	..	.. †
	Petty works of construction	50	1,484 13 5	14 13 6
	Laboratory charges	450	462 11 6	459 13 5
	Hospital charges	1,184	728 8 8	435 0 10
	Repairs to Veterinary hospital buildings		326 12 2‡	503 13 10‡
	Furniture and appliances including Europe stores and purchase of live-stock	2,900	268 6 8	187 11 0
			1,040 15 0	274 5 0
			1,346 12 10‡	74 4 2‡
	Batta and carriage to agricultural students	450	372 2 5	499 5 11
	Farm sunexe	8,500	7,151 13 8	8,500 0 5
	Botanical garden	1,000	848 2 4	999 15 7
7	Contingencies—			
	Petty repairs to buildings	1,200	1,515 2 7	1,206 14 7
	Cleaning charges	43	40 0 9	40 7 0
	Rents, rates and taxes	216¾	171 8 0	216 12 0
	Repairs to furniture	65	37 12 0	65 14 10
	Tour charges	100	77 11 2	93 8 9
	Postage charges	90	91 10 0	97 1 0
	Telegraph charges	10	11 1 0	8 10 0
	Purchase of books	..	7 3 0	..
	Office expenses	415¼	391 1 5	371 7 10
	Miscellaneous	..	5 0 0	..
	Total ..	53,510	49,000 14 0 1,673 9 0	43,048 14 9 578 2 0
	Receipts.			
	Farm sunexe	..	4,440 4 8	4,015 6 7
	College fees	..	594 0 0	940 0 0
	Rents and miscellaneous	..	239 2 3	242 11 5
	Veterinary hospital	..	1,122 6 5	1,124 14 9
	Total ..	..	6,395 13 4	6,323 0 9

* Includes Rs. 825 being exchange compensation allowance.
† Rupees 3,136-5-10 are to be charged against separate provision in the Educational budget.
‡ The figures marked with † under the head "1904–1905" are Accountant-General's adjustments *up to date*.
The figures marked with † under the head "1903–1904," are also Accountant-General's adjustments.

APPENDIX VI.

Letter—from Mr. S. L. D'Silva, Acting First Assistant, College of Agriculture, and Officer in charge, Government Veterinary hospital, Saidapet.
To—the Principal, College of Agriculture.
Dated—17th April 1905.

I beg to submit my report on the working of the hospital during 1904–1905.

I continued to be the officer in charge and M.R.Ry. S. P. Swaminathan the hospital-keeper during the year.

The number of cases was 1,232 (horses 386, cattle 489, other animals 357) against 1,218 (horses 435, cattle 471, other animals 312) in the previous year. The increase is slight, and I dare say the number of cases has well nigh reached the maximum. During the seventeen years I have been connected with the hospital, the number of cases has steadily risen from about 200 in 1888–89 to 1,232 in the year under report. It is possible to improve the cattle practice and proposals have been submitted to this effect. At present the cattle of the poor ryots are treated free and, of in-patients, also housed free, but as a rule, the owners have to make their own arrangements as regards feeding and attendance other than medical. If feeding and attendance were also undertaken at the hospital expense, their number would probably increase.

Among the cattle patients treated, there were thirteen cases of epizootic aphtha. These were calves that came from the King Institute of Preventive Medicine. All but one recovered. During the year there came up for castration three ponies, twelve bulls and sixteen dogs. There was but one casualty, and it was amongst the bulls. There were four cases of canine rabies which, of course, all ended in death.

The receipts during the year were Rs. 1,124-14-9, of which Rs. 142-11-6 were for "sundries." The receipts of last year were Rs. 1,122-6-5, of which Rs. 240-6-0 were for "sundries." So far as subscriptions, stabling, advice and medicines go, there was therefore a satisfactory increase in the receipts.

Letter—from W. Keess, Esq., m.a., m.r.a.c., Principal, Madras College of Agriculture.
To—the Director of Public Instruction.
Dated—Saidapet, 1st May 1905.
No.—D. 14.

I have the honour to submit reports on the farm and Botanical garden prepared under my direction by M.R.Ry. J. Chelvarenga Raju, acting Fourth Assistant and Farm Manager, and M.R.Ry. T. V. Narayana Rao, acting Fifth Assistant and officer in charge of the Botanical garden. I have had the reports drawn up in detail in hopes that you will furnish me with 100 printed copies, which if done will save the farm officers a great deal of writing. Recently there have been many enquiries concerning crops, experiments, etc.; and the probability is that the number of such enquiries will increase. If the reports, now submitted, were available in print, enquiries could be replied to by sending the enquirer a copy of the report with a few additional remarks. Otherwise all information must be sent in manuscript.

2. M.R.Ry. C. K. Subba Rao, acting Vice-Principal, had charge of the farm and Botanical garden till 18th July, on which date he reverted to the Agricultural Department. The charge of the farm and garden then devolved on me and I remained in charge for the remainder of the year.

3. On assuming charge I appointed M.R.Ry. J. Chelvarenga Raju, acting Fourth Assistant, Farm Manager and placed the Botanical garden under his orders. When M.R.Ry. G. Krishna Prabhu, First Assistant, reported sick in August, I removed the Botanical garden from the charge of the Farm Manager who at the time had too much to do and placed it under M.R.Ry. T. V. Narayana Rao, acting Fifth Assistant. Both the officers named have had considerable experience of the management of land and the arrangement has worked very well.

4. My first care was to attend to the instructions conveyed in paragraph 6 of your proceedings, Dis. No. 5250, dated 22nd August 1904, directing me to get the farm land into good condition as soon as possible. Being well seconded by the farm officers I think I may flatter myself that the land is now in as good condition as it ever will be and many visitors have remarked on the freedom of the farm from weeds and on the good agricultural condition of the various fields. I further made sundry changes in the duties of the officers, which I think have had a beneficial effect on the working of the farm. The bailiff has been relieved of the greater portion of his former office work and is made to spend most of his time supervising the coolies.

5. The season was most unfavourable, the rainfall amounting to only 22·30 inches. The crops on over 50 acres entirely failed and needless to say those on the remainder of the farm suffered. A bad season, however, is not without its lessons; for it accentuates the necessity, not only for providing more efficient means than at present exist for raising water but also, for cultivating the land in such a manner as to conserve moisture. Were it not for the oil-engine, which the Agricultural Department supplied, the farm would indeed have been in a desperate condition. Were it not that over 30 acres of uncropped land had been deeply and well ploughed, the farm must have lost over 30,000 lb. of green fodder, which were raised with the help of a few showers which fell during the closing months of the year. I am bound to confess that when the land in question was sown with horsegram I had serious doubts as to whether the seed was not being wasted and several experienced agriculturists were of opinion that it was hopeless to expect any outturn. The result has been stated.

6. Owing to want of water for irrigation the area under paddy was considerably restricted. Where irrigation was available fairly good crops were obtained. Ground-nut failed. The reed-cane raised from Trichinopoly seed does not seem to possess any advantage other than its immunity from the attacks of jackals. The juice obtained was poor in cane sugar (about 8 per cent.). Of course any opinion passed on a crop after a very bad season should not be accepted as final and the cane will be tried again. Cotton was distinctly successful as may be seen from the tabular statement and cottons, suitable to the soil at Saidapet, should, I think, be persevered with. The area under plantains excited much interest among visitors.

7. The livestock suffered severely from want of pasture and the young calves, in spite of artificial feeding, got into bad condition. It was impossible to get fair prices for the surplus stock and consequently the farm was overstocked. The dairy, though located in a not altogether suitable building, worked well.

8. About $10\frac{1}{2}$ acres were set aside for experiments. There was no special staff available for the additional work and much inconvenience at times resulted from the farm officers being obliged to leave their regular duties to attend to the experiments. If experiments, other than those meant for the benefit of students, are to be undertaken in future years, an agricultural Inspector should be put on duty at Saidapet to look after them and record the results. Some of the varieties of paddy tried proved excellent yielders; but before a final verdict is arrived at they should be grown on a large scale. The fodder yielding cholams from Bombay though grown under irrigation did badly. The experiments with ragi, undertaken for the benefit of students to compare the ridge and bed systems of growing it, seemed to indicate that the former was preferable, as it cost less, was easier to irrigate and yielded almost as well as the latter. The irrigation experiments with ragi undertaken at the request of the Superintending Engineer on special duty at Chepauk were interfered with by rain. The cotton experiments show that some varieties yield well at Saidapet and I think efforts should be made to grow selected varieties on a large scale. There were several varieties of indigo tried. The seeds of *Indigofera arrecta*, which is said to contain one per cent. of Indi can, germinated after the outer coating has been partially removed by rubbing. Mauritius ground-nut, which was treated as a dry crop, failed. Owing to an unfortunate misunderstanding, which was discovered too late, all the other varieties of ground-nut failed. Forty-four varieties of plantains were obtained from different parts of the Presidency and grown in a field near the farm buildings. It is probable that many of the varieties are really the same variety under different names. In any case the area growing these plantains presented a fine appearance and was one of the show spots of the farm.

9. Of all the experiments conducted during the year the one in connection with the oil-engine located on the left bank of the river Adyar excited the greatest interest and hardly a day passed without visitors coming and looking at the engine and pump and in many cases making enquiries about them. The engine is a Hornsby Ackroyd one of $6\frac{1}{2}$ horse-power and is at present fitted with a four-inch Gwynne's invincible pump. The engine began to work in June, but many difficulties arose at first such as the appearance of cracks in certain working parts, delays in connection with fitting up the pump and the apparent unsuitability of liquid fuel. The figures in connection with the engine up to the end of October are not, I consider, of much value. Those from 1st November to 31st March may be accepted as correct. The engine can raise 11,400 gallons per hour from a depth of 25 feet, the corresponding figure for a single mhote being 1,500 gallons. It can therefore be said that the engine can do the work of $7\frac{1}{2}$ single mhotes. Using the figures available for the period November-March the manager calculates that engine-raised water cost the farm 1 anna for 1,500 gallons, mhote-raised water being estimated at 1 anna for 1,000 gallons. In both calculations depreciation and interest on capital are included.

All attempts at working the engine on the farm with liquid fuel have failed. If used the engine runs well for two or three hours when certain parts become choked with soot. At present cheap kerosine-oil is being burnt.

The methods of distributing water to different fields by means of raised open channels entails a great deal of waste. Soakage into the sandy soil of Saidapet and evaporation must account for a considerable proportion of the water lifted. When the future working of the farm is settled cement covered channels might, with advantage, be constructed.

10. M.R.Ry. T. V. Narayana Rao, Acting Fifth Assistant in charge of the Botanical Garden, has submitted an interesting report on the working of the area under his care. He succeeded the late M.R.Ry. G. Krishna Prabhu as lecturer in Botany and it seems an appropriate arrangement that the lecturer in Botany should hold charge of the Botanical Garden. Under M.R.Ry. T. V. Narayana Rao's management the garden has much improved in appearance while its educational value has been increased. Perhaps the portion of the garden which excited most interest among

visitors was the one in which different varieties of sugarcane were raised. There is no doubt the garden possesses some valuable varieties of sugarcane, which thrive well under the conditions of soil and climate obtaining at Saidapet. A glance at M.R.Ry. T. V. Narayana Rao's report will show that students and visitors must have derived much instruction from the specimen and other crops and vegetables cultivated.

11. In conclusion, I desire to bring to your notice the excellent service rendered by M.R.Ry. J. Chelvaranga Raju as Farm Manager. His long experience as bailiff and his extensive acquaintance with the agricultural practices of the Presidency stood him in good stead when the management of the farm was entrusted to him. M.R.Ry. Y. Srinivasa Rao, who was bailiff till November, worked well while his successor M.R.Ry. V. S. Subramania Sastri, the present acting bailiff, has shown that he is a very good supervisor of labour. M. Raman, who was appointed to act as second clerk and assistant bailiff from 1st January 1905, has given satisfaction. In the previous paragraph I have commented on the good work done in the Botanical Garden by M.R.Ry. T. V. Narayana Rao, Acting Fifth Assistant.

Enclosures.

Letter—from M.R.Ry. J. Chelvarenga Raju, Acting Fourth Assistant and Farm Manager.
To—the Principal, College of Agriculture, Saidapet.
Dated—25th April 1905.
No.—D. 12.

I beg to submit the report on the working of the College Farm, Saidapet, for the year 1904–1905.

2. *Season.*—The season on the whole was a most unfortunate one for all crops and especially for wet land crops. The total rainfall was 22·30 inches on 81 days the average of the previous 34 years being 50·78 inches.

Hot weather.—There was no rainfall in April. In May four slight falls in the last week, amounting to 0·88 inch, did not attain the average of last 34 years. However, a hot weather crop of gingelly was sown.

South-west monsoon.—During June the rainfall was below the average, the quantity registered being 1·14 on 10 days and consequently a considerable portion of the land was not ploughed as usual. July was as usual marked by numerous small showers. The total rainfall was a little above the average and advantage was taken to utilize this in sowing horsegram for fodder, cumboo with dhall as mixture, ground-nut, and also in preparing a considerable breadth of land for dry crops. In August the rainfall was below the average. However, the rainfall of over 2 inches collected in a single day in the first week pushed on the sowing of dry crops, unirrigated cereal fodder crops and also admitted of the tillage for cold weather crops. September did not bring even half of the average. The rainfall during the third week of September tempted us to sow dry paddy and to prepare paddy nurseries under wells.

North-east monsoon.—The failure of the north-east monsoon rains in October and chiefly in November was the principal cause of the failure of wet crops, because the Mailapur tank which these rains usually replenish was not filled. The dry crops were also affected by the failure. Although the rainfall collected in December was much below the average yet the falls during the first and the third weeks favoured the sowing of unirrigated leguminous fodder crops in a large area.

Dry-weather, January—March.—The rainfall registered was slightly higher than the usual average and this helped the growth of fodder crops grown in December and January to some extent. The statement of rainfall forms Appendix 1.

3. *Implements, Machines, etc.*—The gorru (native seed drill) was used in sowing all dry paddy and the majority of dry crops. The students had the advantage of handling the same whenever opportunities afforded. The improved European implements such as ploughs, harrows, Junior hoe, winnowing machine, chaff cutter, etc., were used. So also were the double and single mhotes in lifting water. A 6½ horse power oil engine was fitted up on the left bank of the river Adyar about which a separate report is appended. Mr. Chatterton supplied the farm with a new chrome tanned bucket about the close of the official year in exchange for the one referred to in last year's report. The same is being used now and the results will be carefully noted.

4. *Manures.*—About 166 tons of farm yard manure (from loose boxes, cattle byres, and sheep pens) were collected this year as per Appendix 7. With the exception of working cattle all others were tied in byres. The manure pit referred to in last year's report was provided with a thatch cover to demonstrate to the ryots in the vicinity and to the students the benefits

of manure collected under cover. At present the collecting of urine in pots and carrying the same to the pits which are long way off entails much labour. It is proposed to have a small barrel cart like a conservancy cart for removing urine.

The night-soil manure continues to be collected from students' cottages and officers' quarters.

The manures purchased during the year cost Rs. 154–6–1 and represent the marginally-noted. In addition to the above, stable manure kindly given free by Messrs. Krcrouse Madden and Mackinnon to the extent of over 100 carts was used to several field crops after being decomposed in pits. Arrangements have already been made to cart tank silt from the Mylapore tank to several dry fields not getting manure annually. The work will be completed during the hot weather.

Lime.	Stable manure.
Ashes.	Castor cake.
Slaughter-house refuse.	Salt.
Tannery refuse.	Saltpetre.
Pigs' dung.	

5. *Crops.*—Appendix 2 contains statements regarding crops grown during the year—

Statement A.—Particulars of all crops grown.

Statement B-1.—Details of experiments undertaken at the request of the Government Botanist.

Statement B-2.—Details of experiments undertaken at the request of the Government Botanist.

Statements C and D.—Details of experiments undertaken at the request of Deputy Director of Agriculture.

Statement E.—Details of experiments undertaken at the request of the Superintending Engineer on special duty at Chepauk.

Statement F.—Experiments for the information of students.

6. At the commencement of the year the extent of land available for cultivation including the cemetery lands temporarily handed over to the farm by the Madras Corporation was 97·11 acres. Out of this area, crops were standing in 14·86 acres on the 1st of April 1904. The area of crop raised during, the year (including crops standing on 1st April 1904 and double crops) was 141·087 acres. The following figures show the state of affairs on the 31st of March 1905 :—

	Ordinary.			Experimental.			
	Already harvested.	Standing on 31st March 1905.	Failed.	Already harvested.	Standing on 31st March 1905.	Failed.	Total.
Food grains—							
Cereals { Unirrigated	6·02	..	18·36	..	..	..	24·38
Cereals { Irrigated	8·47	2·12	..	3·03	·94	..	14·56
Pulses	·50	..	..	..	..	..	·50
Fodder { Unirrigated cereals	..	..	2·94	..	..	..	2·94
Fodder { Irrigated do.	9·39	6·20	..	..	..	..	15·59
Fodder { Unirrigated Leguminous	30·77	2·66	28·10	..	..	..	61·53
Industrial	4·55	7·05	..	1·50	2·175	2·872	18·147
Miscellaneous	1·12	1·37	·81	..	·14	..	3·44
Total	60·82	19·40	50·21	4·53	3·255	2·872	141·087

7. The area of unirrigated cereal crops raised during the year was 24·38. Of this area a major portion to the extent of about 12 acres was grown with different sorts of paddy drilled under the dry system and about 4½ acres with different crops such as wheat, cumbu, tenai, shamai, common millet, and saunwa millet, all of which failed for want of rain. The only unirrigated cereal that grew was Varagu which occupied nearly 6 acres, but it gave a poor yield. Irrigated cereals occupied about 14½ acres, 4 of which were devoted to experimental purposes; of the remaining 10½ acres less than 2 acres each were occupied by ragi and white cholam, respectively, and about 5 acres by sirumani and 60 days samba paddy. The sirumani crop was transplanted and the 60 days' samba was broadcasted sprouted under puddle. Both of these received lift irrigation from wells and yielded well. A small area of less than ½ acre was grown with wheat which gave poor results. At present 2 acres of ragi remain standing in the field. About half an acre of Bengal gram was grown, but it yielded poorly.

8. *Fodder crops.*—About 3 acres of cholam were grown for fodder without irrigation and completely failed. So also did the horsegram sown for fodder purposes in about 29 acres in the month of July. These were grazed by cattle and ploughed in. About 15½ acres of irrigated cereal fodder crops, chiefly cholam, were grown, about 6 acres of which are standing now

and yielding fodder. The 9 acres already harvested yielded at 8,827 lb. of green fodder per acre. About half an acre was grown with paddy (dry variety) for fodder which yielded in one cutting 3,666 lb. of green fodder per acre.

Leguminous fodder crops were raised in 33 acres with the help of dry weather rains, of which 3 acres are standing. The remainder gave on an average 1,033 lb. of green fodder. It is a fact worthy to note that the sucdess of the crop was evidently due to the deep ploughing the fields had. Had the ryots in the vicinity taken the same precaution they would have been provided with some quantity of very good fodder especially at a season like the one experienced when the price of straw is more than Rs. 22 per ton. Several of the adjacent land-holders were struck with the crop that was raised with so small a rainfall and were quite convinced about the advantages of deep ploughing.

9. *Industrial crops.*—Out of 18 acres grown with industrial crops, in 7 acres crops are standing now, about 6½ acres were set apart for experimental cultivation of industrial crops at the request of the Government Botanist. Of the remaining area groundnut of sorts occupied about 1½ acres, reed cane ·11 acre and gingelly 3 acres.

Groundnut.—About seven sorts of groundnut stated in Appendix 2 (statement A) were grown side by side taking advantage of July rains. The variety, sine, did not germinate well even though seeds were sown twice. Only a few plants germinated, which yielded poorly. The germination of all other varieties was good and the crop was favoured by the rains in July and August in the early stages, but at a period when the plants were sending pods underground irrigation had to be deferred owing to the want of a raised water canal from the oil-engine and other unforeseen causes. The crop was however irrigated twice liberally in November, which no doubt assisted the formation of new pods. The first formed pods germinated by the rain in the latter part of December. Some of the pods were damaged by crows and jackals. The crop was also affected with a fungoid disease resembling tika; white ants boring into the pods, surul puchi, and another new disease in which the pods were damaged by a worm. These rendered the crop useless.

Gingelly.—This was sown with the help of the hot weather rains; out of the 3 acres grown with this, germination in 2 acres was far from satisfactory. The crop in one acre gave a pretty fair yield of 100 Madras measures per acre.

Reed cane.—This was obtained from Trichinopoly and planted in one of the best fields of the farm. The crop suffered from want of water owing to the constant stoppages of the oil-engine at very critical periods of its growth. During February the crop was cut and an attempt was made to demonstrate the manufacture of jaggery to students. The yield of jaggery was poor and on analysis the cane was found to contain only 8 per cent. of cane sugar in the juice. Probably the failure of timely rains and irrigation had something to do with this. A portion of the crop has been reserved for the manufacture of jaggery after it has received regular irrigations. It is a fact worthy of notice that this cane is a proof against jackals, but the commonly accepted opinion that it resists drought and disease has yet to be confirmed.

Cotton.—About 1·2 acres were grown with karungany and uppam, the varieties which yielded the best in light soil last year amongst the different cottons tried experimentally. This was sown in alternate lines with maize at a distance of 2 feet apart and 1 foot between plants. The germination was not uniform owing to dry days following immediately after sowing. Blanks were filled up subsequently and maize was harvested early which yielded some very fine cobs. These were sold green and some good ones were reserved for seed. The cotton was irrigated and continues to yield. The outturn is encouraging and full results will be completely noted for next year's report.

10. *Miscellaneous crops—Sweet potato.*—In about three-fourths of an acre the vines of nansmond variety obtained from Poona were planted. The tubers were affected with disease and did not form well probably owing to the lack of irrigation due to constant stoppage of the engine.

Brinjals were raised in about ·70 acre. The seeds were obtained from Berhampur. The field was divided into two portions of ·25 and ·45 acre and manured with half a ton of tannery refuse and 196 lb. of castor cake respectively. The latter gave better results. Both the plots were affected with three sorts of diseases and suffered from want of pump water.

Plantains.—These were grown in 1·37 acres, Mauritius or the dwarf variety occupying ·54 acre. The rest of the block was planted with local sorts, Peyan and Bengala. The former was planted according to the Gódávari system, viz., at a distance of 12 feet apart allowing suckers round the parent plant throughout its life; whereas the other sorts were planted at a distance of 6 feet apart and only one sucker was allowed by the side of the parent plant. The crop is standing and the results will be carefully noted when the plants begin yielding.

Cucumbers.—This was grown in ·42 acre in the intervening spaces of plantains with the object of utilizing the space left between the plants grown according to the Gódávari system. The crop no doubt suffered in the early stages from lack of irrigation from the oil-engine, but was protected by pot irrigation until the engine was set right. The crop was manured with tannery refuse and yielded well, the money value realized from the same being Rs. 48-11-2.

11. *Plantation and avenue trees.*—The cocoanut seedlings referred to in paragraph 7 of the previous year's report were planted in 14-B and on the road sides. The growth of those on the road sides is interfered with by the korkapilly fence situated close by. Every attempt is being made to improve the growth. The cashewnut seedlings were planted in all available portions of the farm wherever there were gaps (especially in the tamarind tope), but all of them died.

12. *Live-stock.*—Owing to the absence of sufficient pasture consequent upon the failure of the monsoon and to the constant change of diet as regards concentrated foods the condition of the cattle was not very satisfactory. Efforts have been made not to change the diets often and to grow more fodder. The animals are now showing signs of improvement. Appendix 3 shows the number of live-stock in the farm at the commencement and end of the year. Appendix 4 shows the yield of milk from the farm cows during the official year. Appendix 5 shows in regard to some cows the yield of milk between the last and previous calving in order to indicate the milking capacity comparatively under normal conditions.

13. *Breeding bulls.*—As the present bulls in the farm have much deteriorated, arrangements are being made to get one or two breeding bulls from Nellore. Some of the small-sized cows brought by ryots for service have to be sent away without being served owing to the huge size of the farm bulls. It is therefore desirable to obtain a pair of small-sized bulls of the stamp of kangayams to serve this purpose. They will besides form an object-lesson to students.

14. *Sheep.*—Some of the old, black-faced and unhealthy animals were disposed of. A fresh ram has been obtained from Mysore Province for breeding purposes. This will be put to the ewes during the ensuing season.

15. *Dairy.*—The sanctioned new dairy room not having been constructed, it was thought desirable to get the present one repaired. A small quantity of butter is being manufactured daily for the practice of students. This finds a ready sale.

General.

16. *Distribution of seeds and implements.*—Several varieties of dhall, soy beans, cholam, etc., were obtained from Poona and Madras farms and were handed over to the Botanical Garden for trial.

The marginally-noted seeds were sold to many who evinced interest in growing them. Twenty varieties of cotton-seeds were sent to Mr. Oakes of Ootacamund in exchange for barley and oats kindly sent by him for trial.

Different sorts of paddy including Bombay varieties, maize, different sorts of cotton, sun hemp, Inga dulcis etc.

A drag harrow was made in the farm and sent to the Tanjore Agricultural Association. Several persons have indented for drag harrows. The work will be undertaken whenever the farm smith can spare time. The improved ploughs (without cattle) were lent on a few occasions to ryots in the neighbourhood of Saidapet whenever the farm was able to spare them. Certain mirasidars of Tanjore have applied for small ploughs of the pattern of the Neelakanta Asary's plough exhibited by the farm at the Tanjore Agricultural Exhibition. They were informed that such ploughs can be obtained from Messrs. Massey & Co.

17. *Agricultural exhibitions.*—Samples of field products available in the farm and several implements and tools were sent to the various exhibitions held in different parts of this Presidency. Two of the farm coolies who have won prizes at various shows were deputed to demonstrate the working of improved implements and, at the Tanjore Agricultural Exhibition, they were awarded prizes.

18. *Estate and permanent improvements.*—The portion of the land referred to in paragraph 3 of last year's report as having been handed over to Mr. A. A. Hall of the Teachers' College was given back by him during the year.

Several portions of the fields had to be levelled and arranged in such a manner as to admit of the flow of irrigation water from the oil-engine, located on the left bank of the river. The irrigation courses to conduct the water from the engine to the various fields had to be raised and constructed in a substantial manner. This work has only partially been done and a good deal remains to be done next year if proper distribution of water is aimed at.

19. *Insect pests and diseases.*—The marginally-noted crops were affected with several diseases; information about which was given to the Government Botanist from time to time. In addition to the collections of specimens of diseased plants taken by the Government Botanist separate specimens were also sent by the farm for identification.

Groundnut, brinjals, sugarcane, indigo.

20. *Finances.*—The original sum (Rs. 7,000) sanctioned for the farm was found to be inadequate and a further sum of Rs. 1,500 was asked for and obtained. The reasons for this excess of expenditure are as follows:—

(1) That certain expenditure incurred in March 1904 which ordinarily would be paid during that month was met from the funds of the following year.

(2) That a portion of the money was spent in matters not connected with agriculture, such as cumbly weaving and brick manufacturing.

(3) That the failure of the monsoon necessitated the farm purchasing a large quantity of paddy straw for the cattle which could otherwise have been obtained from lands grown under the Mylapore tank.

(4) That the expenditure in cakes, etc., has increased considerably owing to the heavy prices of cattle food.

(5) That many animals more than the requirements of the farm demand were maintained.

(6) That money was spent for laying out bunds, canals and distributing water courses for facilitating irrigation by the oil-engine.

(7) That a large amount had to be spent in labour to keep the lands free from the troublesome bulb grass and other weeds infesting several fields chiefly in the experimental area.

(8) That over 10 acres of land were devoted to experiments in connection with which the expenses were heavy. Appendix 6 shows the receipt and expenditure of the farm during the year.

21. *Experimental work.*—About 10·657 acres were utilized for experimental work; of this, 3·97 acres were set apart for irrigated cereals, 6·547 acres for industrial crops and ·14 acre for miscellaneous crops. The irrigated cereal crops consisted of different varieties of paddy, cholam of sorts and ragi. The industrial crops consisted of the several varieties of Indian cottons (sent by the Inspector-General of Agriculture), American cottons of sorts, field cottons grown in light soils of this Presidency, indigos of sorts, sugarcane and ground-nuts (field as well as variety plots). The miscellaneous crops consisted of the different available sorts of plantains of this Presidency.

22. *Bombay varieties of paddy.*—The seeds of these were obtained from the crops grown in the farm last year and referred to in previous year's report. At the suggestion of the Deputy Director of Agriculture these were tried according to different methods, viz., transplanted, sprouted and broadcasted in puddle, and sown dry by drill, treating at first as dry and later on as wet. The sowings were done at different periods of the year to ascertain the time suited for different varieties.

The partially dry and wet system completely failed. The crop raised under the puddled system by sowing sprouted seeds is standing in about ·94 acre. Statement C of appendix 2 shows the results of the several sorts transplanted in 1·17 acres. With the exception of No. 6 (Bengalia), the same seed rate was used in the nursery. The statement above referred to shows the different areas transplanted by the seedlings and the different weights of straw and grain obtained from different areas. This will furnish to some extent some information regarding the growth of grain and straw under each variety. The transplanted portion received manuring before planting, in the shape of farm yard manure and during its after growth 30 lb. of castor cake for each variety alike.

The area that could be spared for the growth of these was however too small to give any accurate idea of the yield. Statement D of appendix 2 gives the quantity of rice obtained, from these varieties, under different methods. The rice used for pounding being small the figures cannot be considered very accurate.

23. *Cholam of sorts.*—The marginally-noted varieties received from the Deputy Director of Agriculture as good fodder-yielding cholams of Bombay were tried side by side in less than half an acre under irrigation. The crop was very stunted and poor. It was therefore thought desirable to allow a portion to run to seeds in order to try the same next year with acclimatized seeds. The results will be noted carefully.

Sorghum amber.	Nilva.
,, collier.	Sundhia.
Utavali.	

24. *Ragi.*—This occupied 1·6 acres, the whole of which was harvested. Two sets of experiments were conducted—one for the benefit of students, viz., to ascertain the merits of ridge versus flat-bed system, and the other at the request of the Superintending Engineer on special duty at Chepauk to decide the quantity and application of water that is required by lift to mature a crop of ragi. The ridge *versus* bed system was tried in ·3 acre each. Statement F of appendix 2 shows the respective charges and results. Though the flat-bed system had yielded slightly better than the ridge system, the cost of cultivation incurred in the latter more than compensated for this. The ridge system was simpler to manage and required less time for irrigating the same area.

Irrigation experiments.—It was proposed to grow ragi in four equal parts of not less than ¼ acre each and to treat them as follows after planting. The first block to receive an irrigation equal to ½ an inch rainfall twice a week, the second to receive 2 inches of water once a fortnight, the third to receive 1 inch of water once a week and the fourth to receive 1 inch of water twice a week. The experiment could not be continued owing to the crop having been benefited by several light showers immediately after planting. It was only on two occasions after planting that lift irrigation had to be resorted to and on both the occasions the light rains followed and matured the crop. However the results are given in statement E of appendix 2.

25. *Cotton.*—The twenty varieties of cotton reported to be standing and yielding in last year's report were removed from the field about the end of July although some of the varieties, such as Goghari and Broach Deshi had a lot of unripe bolls in them, yet, the crop had to be abandoned as it was decided that these varieties need not be tried in this Presidency. Statement B-1 of appendix 2 shows the yield obtained till end of July 1904. It is a noteworthy fact to record that some of the varieties of this Presidency, viz., Uppam and Karunganny have yielded 802 and 1,069 lb. Kappas per acre respectively. In a soil like that of Saidapet farm, the results are surprising. Taking into consideration the total area of 1·34 acres actually occupied by all the twenty varieties grown, the total yield of 723 lb. Kappas obtained is decidedly above the average of the best cotton tracts of this Presidency.

American cottons.—Nineteen American cottons of sorts were received and grown in 1·79 acres as suggested by the Government Botanist. This area had to be divided into two sections of ·92 and ·87 acre respectively owing to the different methods under which the subordinate mixture cholum was grown with cotton. In the former case the cholum was left for grain and in the latter case for fodder. Full details of the crop will be obtained from statement B-2 of the appendix 2. The crop is still yielding and stands in the field.

Light soil field cottons of this Presidency, viz., Bourbon and Yerrapatti of Siruvel (Kurnool district) were tried side by side on ·10 and ·18 acre respectively. As the seeds were received from the Government Botanist long after the cotton-sowing season was over and as the crops were to be treated as dry crops, sowing had to be deferred till rains fell in December when at the suggestion of the Government Botanist the seeds were sown. The crops remain in the field and the results will be carefully watched and noted.

26. *Indigos.*—Small quantities of the six marginally-noted indigos were sent by the Government Botanist to be grown in the farm. Three more sorts, viz., seeds obtained from Guntúr, Yerraguntla and Indigofera arrecta from Trivandrum were also grown side by side. All sorts with the exception of Indigofera arrecta from Trivandrum were sown at a distance of 2 feet apart in rows intervened with a line of coriander between two indigo rows. Coriander was removed and sold in a green state. The germination of all the varieties was tried in pots before sowing and all germinated well with the exception of Indigofera longeracemosa and Indigofera arrecta. The former however germinated after considerable time, but the latter completely failed to germinate in pots. Several methods were tried to remedy the failure of germination and in this attempt two methods succeeded, one of which is similar to the one suggested by Mr. Coventry a few days later. The first method was to mix the seeds with equal quantities or more of sand, tie the same in a bag and soak it for an hour or two daily according to the method adopted for paddy seeds for sprouting. On the third day the seeds sprout and when this was sown plants germinated in the pot. The second and most convenient method was to add some fine sand to the seeds and to place the whole on a rough surface such as a stone or over a plank and to rub the mixture with feet wearing shoes on just as the ryots treat coriander seeds. The rubbing was discontinued when the external dull coating was brightened. When the seeds were treated like this the germination was good. The indigos were and are being irrigated whenever necessary. Herbarium specimens of the plants in flower were taken by the Government Botanist in March. Careful observations are being made as to which variety is affected by the dry weather. A fungoid disease hitherto not observed in indigo was noted in some of the varieties and the fact was communicated to the Government Botanist who declared it to be rust.

Indigofera arrecta, Sibpur.	Dehli indigo.
,, longeracemosa.	Nandyal.
Nandyal from Villupuram bazaars.	Proddatur.

27. *Sugarcane.*—Six sets, each of three new varieties of sugarcane received from Barbados by the Government Botanist were planted in an enclosed and protected area. One sort did not germinate at all. A few plants germinated in the rest and these were removed to the Botanical garden and planted there by the Assistant of the Government Botanist in February last.

28. *Ground-nuts.*—About 2·56 acres were sown with Mauritius ground-nut seeds obtained from Messrs. Parry & Co, Pondicherry. The sowing took place in August and the crop was treated dry without irrigation at the suggestion of the Government Botanist. The crop failed completely.

Groundnut variety plots.—The marginally-noted varieties of groundnut were sown in ·312 acre. The Government Botanist suggested that these should be tried side by side without irrigation to note which variety could resist drought and disease better. The sowing had to be deferred till 24th October for want of rain to prepare the land as suggested by the Government Botanist. Between each variety of groundnut two to three rows of lablab were grown to demarcate the portion, which were subsequently removed as per Government Botanist's suggestion. The crop completely failed.

Japan.	Gambie.
Sine.	Hant Saloum.
Ruffisque.	Senegal.
Mauritius.	Country.
Small Japan.	Spanish.
Tata's groundnut.	Virginia.

29. *Miscellaneous crops.*—Experimental plantains occupied ·14 acre. A few suckers of different varieties of plantains noted in the margin were obtained from different parts of the Presidency to ascertain their characteristics and to note which sort yields the best fruit. They are all doing well, but have not yielded any fruit. It is probable that the same variety goes by different names in different localities. Several applications from different parts of the Presidency were received for suckers, but owing to the plants not having come to maturity the requests were not complied with.

Kallar.

Mondan.	Rasthali.
Ladan.	Anaikomban.
Poovan.	Rasa valai.
Manilla.	Durai valai.
Nenthran.	Gundy.
Black plantains.	Red plantains.

Vangal, Coimbatore district.

Mula valai.	Mondan valai.
Rasthali.	Kuli valai.
Mada valai.	Pacha Nadan.
Pu valai.	

Samalkot.

Vamanakeli.	Malabar.
Korpura chakrakeli.	Battissa.
Amritapani.	Pai bonta.
Jagannathakeli.	Kommu areti.
Sapota.	Bonta botisa.
Bonta.	Pai valai.
Chakrakeli.	Guineas.
Yerra-chakrakeli.	Nalla-chakrakeli.
Budithe bonta.	

Chingleput district.

Kattai bondan.	Anai valai.
Poovan Sundan.	Poovadiyan.
Than valai.	Sevvalai.
Namaran valai.	Bengala.
Raja rasthali.	

30. *Oil-engine.*—About the end of January 1904, Mr. Chatterton informed the Acting Vice Principal, then in charge of the farm, that he meant putting up an oil-engine at Saidapet Farm and enquired how many acres the farm could undertake to cultivate with the aid of the engine. The Acting Vice Principal replied that an area of not less than 45 acres could be placed under the engine provided the engine was worked daily for 16 hours and that it could lift at 300 gallons per minute from a depth of 26 feet. Accordingly about the first week of February the plans and elevation of the riverside well where the oil-engine was proposed to be put up were sent to Mr. Chatterton.

During the first week of May the flooring and arrangements for fixing the engine were done by Messrs. Massey & Co. About the middle of that month an oil-engine of $6\frac{1}{2}$-horse power (Hornsby arkroyd) arrived; about the end of the same month the pump and its accessories arrived and the well wall was removed to fix the pump.

The pump was fitted up by Messrs. Massey & Co. about the 13th June 1904, when it was tried for the first time by the driver of Messrs. Massey & Co., using liquid fuel. The whole day a good deal of trouble was experienced as the engine often stopped. During the subsequent days the engine did not fare better and consequently Messrs. Massey & Co. decided to leave the engine in charge of the farm only when it was in complete working order. A driver who was in the employ of Messrs. Massey & Co. was deputed to be in charge of the same, Messrs. Massey & Co. supplying liquid fuel and paying the expenses of the driver during the month. The engine was very irregular during the whole of that week. During next week, the engine was working fairly though stopping often owing to the vapouriser cap being choked up with soot. About the end of the month two slits appeared in the water jacket chamber and this was duly reported to Messrs. Massey & Co., who attributed the same to some mistake in casting. The slit was followed by a small hole in the compression chamber. At this stage, an intelligent cooly of the farm was placed to learn the work under Messrs. Massey & Co.'s driver. On the 18th July the Principal took charge of the farm from the Acting Vice Principal. About the last week of July the supervisor of pumping stations removed the pump to Kadiampatty (Salem) and consequently the engine was without a pump till 10th August, when a pump was received from Kadiampatty which was fitted up on the 12th. This did not work owing to want of a foot valve. Messrs. Massey & Co. supplied the foot valve and even then the same state of affairs continued. About the 18th August a new pump "Invincible" was supplied by Messrs. Massey & Co., which worked smoothly. The engine, however, stopped constantly owing to soot blocking up the vapouriser cap. On the 1st September the driver of Messrs. Massey & Co. was sent back as the cooly of the farm was able to manage the work under the guidance of M.R.Ry. Y. Sreinivasa Rao, who was the then bailiff of the farm.

From the 1st August the charges of the driver of Messrs. Massey & Co. and the liquid fuel, etc., were borne by the farm. From 1st September records were maintained in the day-book regarding the working.

The expenditure statement, appendix 8, is divided into two sections, A and B; A shows the charges incurred by the farm (excluding the cost of oil supplied by Messrs. Massey & Co. and the wages of the driver till 1st August) from the time the engine commenced work till 31st October 1904 (period in which water lifted was not measured in cistern). B shows the expenses from 1st November to 31st March 1905 (period in which water lifted was measured in the cistern.

Different proportions of liquid fuel and kerosine oil were tried from time to time. When liquid fuel was mixed with kerosine oil in the proportion of $\frac{3}{4}$ of the latter to $\frac{1}{4}$ of the former, which was found suitable at Melrosapuram, the engine gave trouble and did not run. With the following proportion the engine worked fairly smooth but not without stopping:—4 gallons of kerosine oil to 10 gallons of liquid fuel and well mixed, the mixture being consumed at the rate of $4\frac{3}{8}$ gallons for 8 hours. Consequently kerosine oil (Burmese Victoria Bulk) was obtained and used from 6th February 1905 and was found to suit the engine well. The engine is not giving trouble after the use of this oil.

The approximate area that was under the influence of oil-engine was 24 acres.

APPENDIX 1.

Rainfall statement for 1904–1905.

Month.	1903–1904. Total collected.	1903–1904. Rainy days.	1903–1904. * Wet days.	1904–1905. Total collected.	1904–1905. Rainy days.	1904–1905. * Wet days.	Average of last 34 years at Saidapet.	
1904.								
April	..	..	..	..	..	..	0·39	Hot weather.
May	4·52	4	4	0·88	4	3	1·75	
June	1·81	4	3	1·14	10	5	2·10	South-west monsoon.
July	3·63	10	9	5·41	15	7	4·04	
August	7·62	12	10	3·82	11	6	5·14	
September	9·98	15	14	2·70	8	7	5·42	
October	9·51	13	12	2·92	12	8	11·41	North-east monsoon.
November	18·58	11	11	0·34	4	1	13·59	
December	19·55	9	9	3·16	8	7	5·79	
1905.								
January	1·83	2	2	0·83	3	3	0·47	Dry weather.
February	..	..	..	0·35	3	1	0·46	
March	..	..	..	0·75	3	2	0·24	
Total ..	77·03	80	74	22·30	81	50	50·78	

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

APPENDIX 2.

Statement A.—Cropping statement, 1904–1905.

Crops.	Area in acres.	Outturn. Grain or seed. Amount.	Outturn. Grain or seed. Per acre.	Outturn. Straw or fodder. Amount.	Outturn. Straw or fodder. Per acre.	Remarks.
		Rs.	Lb.	Rs.	Lb.	
Paddy— Sirumoni transplanted ..	·50	1,041	2,082	1,624	3,248	Raised chiefly by lift irrigation supplemented by small amount of rain.
Sixty days' samba sprouted and sown in puddle.	4·35	9,270	2,131	6,936	1,594·5	Do. do.
Wheat	·40	50	125	*Nil.*	*Nil.*	Last year's crop poor crop. Straw not worth cutting.
Ragi irrigated	1·86	1,502	807·5	7,392	3,974·2	....
White cholam	1·36	353	259·6	7,840	5,764·5	Crops received two waterings in addition to 6·83 inches of rainfall registered during its growth.
Varagu and dholl ..	6·02	1,992	330·9	2,000	332·2 green fodder.	Dholl failed and abandoned and used as green manure.

APPENDIX 2—*cont.*

Statement A.—Cropping statement, 1904-1905—*cont.*

Crops.	Area in acres.	Outturn. Grain or seed. Amount.	Grain or seed. Per acre.	Straw or fodder. Amount.	Straw or fodder. Per acre.	Remarks.
		LB.	LB.	LB.	LB. green fodder.	
Fodder crops—						
Cholam	8·97	..	..	79,296	8,829	5·47 acres gave two cuttings and 3·50 one cutting.
Horsegram	30·77	..	..	31,864	1,035·6	Crops sown between 10th December 1904 and 6th January 1905 and harvested in February and March respectively; rainfall collected during the period being 3·93 inches.
Paddy (pisni)	·42	..	..	1,540	3,666·6	Raised by lift irrigation supplemented by rainfall. Yield represents one cutting.
Pulses—						
Bengal gram and safflower (in borders).	·50	34 lb. Bengal gram and 15 lb. of safflower.	68 and 30	..	..	Crop poor.
Miscellaneous—						
Cucumbers	·42	14,000 fruits.	33,333·3 fruits.	..	..	The crop was grown in the interspaces of plantains, weight of 14,000 fruits = 7,000 lb., realised Rupees 48-11-2 by sale.
Brinjals	·70	2,883	4,118·6	..	..	Crop affected a good deal with two or three diseases and suffered from want of irrigation owing to stoppage of engine on various days when irrigation was necessary.
Industrial crops—						
Sugarcane (reed) ..	·11	..	..	..	..	2,160 canes weighing 1,561 lb. including tops which yielded 100 lb. jaggery. * The cane was found on analyses to contain only 8 per cent. of cane sugar in the juice.
Gingelly	3·00	358	119·3	..	..	Crop in two acres was very poor owing to bad germination.
Groundnuts of sorts—						
Sini	·16	⅜	2·3	..	..	Only four plants germinated even though sown twice. The crop was affected with disease. At a time when the crop required watering pump and engine were out of order. Jackals and crows removed pods from the surface.
Gambi	·16	20·25	126·5	..	..	Crops affected with fungoid disease and suffered from want of irrigation. Jackals and crows removed the pods.
Hantsaloum	·16	12	75	..	..	
Ruffisque	·16	12·5	78	..	..	
Jappan	·16	7	43·8	..	..	Suffered from want of irrigation and attacked with fungoid disease as well as by white ants boring the pods. Jackals and crows removed the pods.
Senegal	·16	13·25	82·7	..	..	Crop affected with disease and suffered for want of irrigation. Jackals and crows spoiled the crop.
Mauritius	·16	3	8·8	..	..	Crop affected with disease and suffered for want of irrigation. Jackals and crows removed pods.
Country	·32	17	53·1	..	..	Do. do.
Crop standing.						
Cereals—						
Ragi	2·12	..	..	..	..	....
Fodder—						
Cholam	6·20	..	..	..	..	....
Horsegram	2·66	..	..	..	..	....
Industrial—						
Sugarcane	5·04	..	..	..	..	....
Gingelly and indigo (mixed).	·81	..	..	..	..	....

APPENDIX 2—*cont.*

Statement A.—Cropping statement, 1904-1905—*cont.*

Crops.	Area in acres.	Outturn. Grain or seed. Amount.	Grain or seed. Per acre.	Straw or fodder. Amount.	Straw or fodder. Per acre.	Remarks.
Crop standing—cont.		LB.	LB.	LB.	LB.	
Industrial—*cont.*						
Cotton	1·20	..	..	..	..	·51 under Uppam and ·51 under Karunkani. Maize was grown in alternate lines, which yielded 4,532 cobs (reserved for seed and sold as cobs) + 132 lb. clean grain and 673 lb. straw. Maize received five irrigations and cotton even till the end of official year. The yield of cotton till the end of official year is as below :— LB. Karunkani .. 115 Uppam .. 130 } The crops is still yielding.
Miscellaneous—						
Plantains	1·37	..	..	..	..	....
Crops failed.						
Cereals—						
Bombay varieties of paddy drilled by gorru.	2·50	..	..	..	..	
Paddy (pisni) drilled ..	1·17	..	..	..	..	
Paddy (gundu samba) drilled.	1·30	..	..	..	..	
Paddy (anaikombu sirumoni and gundu samba).	3·64	..	..	..	..	
Paddy anaikombu and pisni (broad casted dry).	2·10	..	..	..	..	
Do. do. ..	1·10	..	..	..	..	
Paddy nursery (gundu samba and anaikombu).	0·22	..	..	..	..	
Wheat	0 50	..	..	..	..	
Cholam for grain	0·90	..	..	..	..	
Cambu and dholl (mixed).	0·97	..	..	..	..	
Tenai (Italian millet) ..	0·99	..	..	..	..	
Shamai (little millet) ..	0·99	..	..	..	..	
Pani varagu (common millet).	0·99	..	..	..	..	
Kudiraival (sannvu millet).	0·99	..	..	..	..	
Cholam for fodder dry ..	2·94	..	..	..	..	
Pulses—						
Horsegram (for fodder) ..	28·10	..	..	..	..	
Miscellaneous—						
Sweet Potatoes	0·81	..	..	..	..	
Experimental cultivation.						
Paddy—			LB.			
Bombay varieties transplanted from nursery.	1·17	1,483·5	1,268	1,890	1,615	Full details are given in appended statements regarding yields and of individual sorts.
Cholam of sorts	·26	42·0	161·5	336	1,292	Details given in the body of the report.
Ragi	1·00	1,132·5	1,132·5	6,048	6,048	Separate statement shows results. This is the block in which irrigation experiments were conducted.
Do. bed	·30	361·0	1,203 3	1,456	4,853·3	....
Do. ridge	·30	347·0	1,156·6	1,400	4,666·6	Cost of cultivation (such as forming ridges, transplanting, irrigation, weeding and harvesting) is comparatively cheaper than bed system. Details are given in separate statement.
Cotton of sorts—		LB. OZ.	LB. OZ.			
Standing on 1st April 1904.	1·5	723 12	* 482 8	..	..	This includes 262 lb. 7 oz. yield shown in last year's report. * The yield per acre should be more as the area in which the plants were actually standing was 1·34 acres. Some space was left between the sorts. The area sown in the first column 1·5 represents area of field. Information regarding yields of different sorts is given in separate statements.

APPENDIX 2—*cont.*

Statement A.—Cropping statement, 1904-1905—*cont.*

Crops.	Area in acres.	Outturn. Grain or seed. Amount.	Grain or seed. Per acre.	Straw or fodder. Amount.	Straw or fodder. Per acre.	Remarks.
Experimental crops standing.						
Paddy—						
Bombay varieties sown, sprouted and broadcasted in puddle.	0·94	..	..	..	..	
American cottons of sorts.	1·79	..	..	..	..	Grown mixed with cholam for grain and fodder. Cholam was harvested. Cotton still yielding. Number of bolls obtained till 30th March is 2,881, weighing 385 oz. Full information regarding this is given in separate statement.
Field cotton—	0·10	..	..	..	..	} Just flowering and bearing.
Bourbone	0 18	..	..	..	..	
Yerrapathy of Sirvel ..	0·091	..	..	..	..	Details are given in body of report regarding respective sorts.
Indigo of sorts	0 014	..	..	..	..	The crop was removed and planted in the Botanical Garden on 18th February 1905 by the Government Botanist.
Sugarcane	0·14	..	..	..	..	Details are given in the body of report.
Plantain of sorts	2·56	..	..	..	..	Failed for want of irrigation
Experimental crops failed—	0·312	..	..	..	..	Sown late and the rain fall was not sufficient to maintain the crop. Details are given in the body of the report.
Mauritius ground nut ..						
Ground-nut of sorts ..						

Statement B.—showing the area occupied by each variety of cotton, the quantity of seed sown, and the outturn (lint and seed) of each plot till 26th July 1904.

Serial number.	Name of variety.	Area in square feet.	Amount of seed sown.	Yield till 26th April (1904 April) as shown in the previous year's report.	Yield till 26th July 1904.	Total yield of crop.	Seed rate per acre.	Yield per acre.	Rank in yield.
			lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	
1	Kumpta	2,043	0 6	6 0	15 4	21 4	8 0	453 1	13
2	Goghari	2,270	0 8	3 2	18 14	22 0	9 10	422 0	14
3	Broach desi	5,675	1 0	8 14	43 12	52 10	7 10	414 0	15
4	Javari Hathi (black seeded).	3,178	0 8	7 14	20 0	27 14	6 13	382 0	17
5	Javari Hathi (white seeded).	3,632	0 8	14 12	27 4	42 0	6 0	503 0	11
6	Mungari	3,178	0 8	12 11	25 9	38 4	6 13	524 0	10
7	Uppam*	2,951	0 8	16 4	38 2	54 6	7 6	802 10	2
8	Northerns	2,497	0 8	11 7	21 9	33 0	8 12	575 0	7
9	Karangani*	2,270	0 8	15 0	40 12	55 12	9 8	1,069 0	1
10	Kuppam	2,724	0 8	17 7	31 10	49 1	8 0	785 0	3
11	Proddatur	2,951	0 8	12 8	26 1	38 9	7 6	569 0	8
12	Bani	5,448	1 0	30 1	20 15	51 0	8 0	408 0	16
13	Chanda cold weather ..	1,362	0 2	8 3	10 9	18 12	4 0	600 0	6
14	Varadi	3,632	0 8	27 3	26 5	53 8	6 0	642 0	5
15	Moto Mathia	4,540	0 8	27 8	31 8	59 0	4 13	566 0	9
16	Jari	2,270	0 8	18 11	21 1	39 12	9 10	762 0	4
17	Yerrapathy	1,816	0 8	7 13	7 15	15 12	12 0	378 0	18
18	Coconada	2,497	0 8	9 4	19 4	28 8	8 12	497 0	12
19	Mathio	1,135	0 4	4 13	4 1	8 14	9 10	340 0	19
20	Nadan	2,270	0 6	3 0	7 14	10 14	7 14	201 0	20
	Total ..	..	.. ..	262 7	458 5	720 12	.. ..	.. ..	..

* Messrs. Binny & Co. kindly valued the two samples on 20th January 1905 at As. 3-6 a pound (ginned cotton) and said that this would have been worth at As. 4-6 per pound about the same time last year.

APPENDIX 2—*cont.*

Statement B.

Government Botanist's number.	Name.	Seeds. Weight of seeds.	Seeds. Number of seeds in each sort.	Number of seeds sown in each hole.	Date of sowing.	Number of plants remained after germination. Single.	Number of plants remained after germination. Double.	Distance between. Two cotton rows.	Distance between. Two cotton plants.	Quantity of manure applied. Before sowing.	Quantity of manure applied. During Growth.	Number of plants remained. After thinning and filling up blanks.	Number of plants remained. During flowering.	Number of plants remained. When gathering first bolls.	Date of First flowering.	Date of First gathering bolls.	After cultivation and irrigation. Number of hoeings given till the end of official year with date.	After cultivation and irrigation. Number of irrigations given by 1st fall end of official year with dates.	Total rainfall collected during growth from date of sowing till end of official year. Amount.	Total rainfall collected during growth from date of sowing till end of official year. Number of days rain fell.	Yield till the end of official year. Number of bolls.	Yield till the end of official year. Weight.	Remarks.
A.		oz.																	Inches. Days.		lbs. oz.		
1 2416	Rassel	2½	507	2	15th October 1904.	67	74	4 feet from centre to centre.	3 feet apart in rows.	8½ tons of farm yard manure.	9 tons of farm yard manure.	215	205	200	19th Dec. 1904.	10th Feb. 1905.	Four hoeings (November 25th, December 16th, January 16th and February 25th).	Ten irrigations (2nd November, 8th December, 21st January, 30th January, 2nd February, 13th February, 1st, 10th, 21st and 27th March).	* October 2·27 8	+ 29 days.	166 1 4	1. Previous crop grown in this portion was cumbu and dholl. The land was ploughed with improved plough and ridged 2 feet apart. The furrows were subsoiled and farm yard manure was applied in furrows and the ridges were split up. 2. Black cholam for grain was sown in the alternate ridges on either side of ridge; cotton occupying a distance of 4 feet in the top of ridges. Cholam was harvested on 26th January 1905, which yielded 112 lbs. grain and 1,792 lbs. straw. Area .. .. .. 0·92.
2 2417	Fruit	2½	447	2	,,	60	74					208	199	192	16th ,,	8th ,,			* November 0·34 4		210 2 3	
3 2418	Mattio	2½	706	2	,,	25	133					291	270	262	16th ,,	14th ,,			* December 3·16 8		158 1 4	
4 2419	Christopher ..	2½	498	2	,,	50	41					132	127	120	23rd ,,	8th ,,			January 0·83 3		119 0 14	
5 2420	Chiese	2½	510	2	,,	65	69					208	190	181	16th ,,	11th ,,			February 0·35 3		222 2 1	
6 2421	Whittle	2½	525	2	,,	60	67					194	184	175	20th ,,	11th ,,			March 0·75 3		200 1 9	
7 2422	W. A. Cook ..	2½	586	2	,,	56	61					178	171	165	20th ,,	3rd ,,					160 1 5	
8 2423	Boyd's Prolific	2½	700	2	,,	40	100					240	230	228	12th ,,	8th ,,					234 1 14	
9 2424	Holy's Prolific	2½	705	2	,,	42	95					232	226	217	16th ,,	8th ,,					207 1 11	
10 2425	Harendon ..	2½	622	2	,,	46	76					198	168	158	16th ,,	8th ,,						
B.																							
11 2426	Cameron	2½	656	2	18th October 1904.	22	66			4 tons of farm yard manure.		154	140	134	25th Dec. 1904.	15th Feb. 1905.			+ 29 days.		67 0 9	
12 2427	Dearing	2½	740	2	,,	50	63					176	158	144	20th ,,	11th ,,					167 1 5	
13 2428	Mathew's long staple.	2½	685	2	,,	42	48					138	120	108	1st Jan. 1905.	23rd ,,					106 0 12	
14 2429	Texas Burr ..	2½	510	2	,,	30	25					74	60	54	20th Dec. 1904.	11th ,, 1905.					106 0 15	1. Same as above. 2. On either side of the intervening ridges, cholam was grown for fodder which was cut from 21st December 1904 to 27th January 1905 little by little for calves which yielded 1,560 lbs. of green fodder. Area .. .. .. 0·87.
15 2430	Braddy	2½	727	2	,,	52	65					182	160	148	3rd Jan. 1905.	23rd ,, 1904.					206 1 9	
16 2431	King's improved.	2½	712	2	,,	56	50					156	130	122	23rd Dec. 1904.	27th ,, 1905.					129 1 2	
17 2432	Smith's improved.	2½	608	2	,,	40	35					110	90	81	3rd Jan. 1905.	27th ,, 1904.					85 0 12	
18 2433	Dickens	2½	825	2	,,	50	37					124	100	91	23rd Dec. 1904.	15th ,, 1905.					100 0 14	
19 2300	Seeds from England.	2½	430	2	,,	40	15					70	50	49	3rd Jan. 1905.	27th ,, 1905.					8 0 1	

APPENDIX 2—*cont.*

STATEMENT C.—Bombay and other varieties of paddy.

Number of varieties.	Names of varieties.	Date of sowing in the nursery.	Quantity of seeds sown in the nursery.	Area transplanted from seedlings obtained.	Date of transplanting in the field.	Date of harvest.	Yield. Grain. Immediately after thrashing.	Yield. Grain. When fit for storing.	Yield. Straw. Weight immediately after thrashing.	Yield. Straw. Weight when fit to be stacked.	Yield per acre. Grain. On the day of thrashing.	Yield per acre. Grain. On the day of storing.	Yield per acre. Straw. On the day of thrashing.	Yield per acre. Straw. On the day of stacking.	Rank in yield. Grain. On the day of thrashing.	Rank in yield. Grain. On the day of storing.	Rank in yield. Straw. On the day of thrashing.	Rank in yield. Straw. On the day of stacking.	Remarks.
							MDS. LB.	MDS. LB.	LB.	LB.	LB.	LB.	LB.	LB.	NO.	NO.	NO.	NO.	
	Bombay varieties.			CENTS.															
1	Shirbathi	9th Sept. 1904.	1 M.M.	4·2	15th Oct. 1904	29th Dec. 1904.	18 44	16 39	70	252	1,047	928	6,000	1,667	19	20	11	2	Nos. 3, 4, 8, 10, 11, 12, 13, 14, 15, 17, 18 and 19 could have been harvested a week earlier, had it not been for rainy and cloudy days.
2	Zina Columbia	Do.	Do.	5·6	Do.	3rd Jan. 1905.	41 106	30 89	112	280	1,893	1,602	5,000	2,000	4	5	5	7	
3	Tin Punkhali ambi mohar	Do.	Do.	4·62	Do.	10th do.	30 65	25 61	84	168	1,418	1,336	3,636	1,818	11	11	8	14	
4	Jirasal	Do.	Do.	5·6	Do.	10th do.	28 70	26 66	84	168	1,250	1,165	3,000	1,500	16	16	12	6	
5	Halwa gudya	Do.	Do.	4·48	Do.	3rd do.	40 105	36 86	84	252	2,343	1,926	5,625	1,875	3	3	3	3	
6	Bengalia	Do.	5 ollooks.	·72	Do.	29th Dec. 1904.	8 21	7 18	28	28	2,916	2,604	3,889	3,889	2	2	7	2	
7	Rajavel	Do.	1 M.M.	4·32	Do.	3rd Jan. 1905.	25 61	24 58	84	224	1,423	1,348	5,385	2,019	10	10	4	4	
8	Ambi mohar	Do.	Do.	5·76	Do.	11th do.	32 76	28 73	84	140	1,292	1,280	2,431	1,459	15	12	17	15	
9	Do. (Thana district)	Do.	Do.	9·1	Do.	28th Dec. 1904.	37 88	29 70	70	196	868	774	2,164	769	21	21	20	22	
10	Sukhvel	Do.	Do.	4·8	Do.	11th Jan. 1905.	30 70	27 65	56	98	1,643	1,510	2,356	1,346	6	6	18	18	
11	Do. (Surat district)	Do.	Do.	4·32	Do.	Do.	34 79	30 70	70	126	1,414	1,241	2,234	1,241	12	14	19	19	
12	Kamod (Surat farm) ..	Do.	Do.	5·64	Do.	Do.	38 90	35 82	112	196	1,250	1,149	2,722	1,555	17	17	15	13	
13	Do. (Kaira district) ..	Do.	Do.	7·2	Do.	Do.	42 96	38 87	196	336	1,557	1,378	4,800	2,800	7	8	6	3	
14	Welchi (Surat farm) ..	Do.	Do.	7·0	Do.	Do.	47 109	42 96	98	196	1,308	1,236	3,500	1,750	14	15	9	8	
15	Do. (Thana district)	Do.	Do.	5·6	Do.	Do.	33 76	29 66	98	196	1,000	933	3,500	1,750	20	19	10	9	
16	Tin Punkhali (early)	Do.	Do.	5·6	Do.	23rd Dec. 1904.	25 56	22 50	98	196	1,353	1,243	2,600	1,400	13	18	16	17	
17	Columbia	Do.	Do.	7·0	Do.	11th Jan. 1905.	42 96	38 87	98	182									
	Bengal varieties.																		
18	Dadkhani	9th Sept. 1904.	1 M.M.	5 6	15th Oct. 1904.	11th Jan. 1905.	39 84	35 79	154	154	1,501	1,419	2,750	1,750	8	7	10		
19	Badshah bhog	Do.	Do.	7·7	Do.	Do.	38 84	35 77	112	112	1,079	1,006	1,455	909	18	18	21		
	Central Provinces varieties.																		
20	Chennur	9th Sept. 1904.	1 M.M.	1·2	15th Oct. 1904.	17th Jan 1905.	26 57	23 51	70	112	4,812	4,250	9,333	5,833	1	1	1	1	
21	Halki	Do.	Do.	4·8	Do.	Do.	11 25	10 23	56	84	521	484	1,750	1,166	22	22	21	20	
	Banko	Do.	Do.	6·0	Do.	Do.	45 87	41 82	98	196	1,450	1,363	3,266	1,633	9	9	11	12	

APPENDIX 2—*cont.*

STATEMENT D.—Rice statement of Bombay and other varieties of paddy.

Number.	Names.	Quantity taken.	Pounded raw. Yield of rice.	Pounded raw. Yield of husk.	Pounded after boiling. Yield of rice.	Pounded after boiling. Yield of husk.
		M. OL.	M. OL.	M. OL.	M. OL.	M. OL.
1	Shirbathi	2 4	1 1⅜	1 6	1 2	1 6
2	Zina Columbia	2 4	1 0⅜	2 1	1 1½	2 0
3	Tin Punkhali Ambi mohar	2 4	1 0½	2 0	1 1½	2 0
4	Jirasal	2 4	1 2	2 0	1 2¼	2 0¼
5	Halwa gudya	2 4	1 1½	1 6	1 2½	2 0¼
6	Bengalia	.. ..	.. ..	.. ..	.. ..	.. ..
7	Rajavel	2 4	1 2	1 4	1 3	1 6
8	Ambi mohar	2 4	1 1⅜	1 6	1 2¼	1 2
9	Do.	2 4	1 2⅜	2 0	1 3¼	2 1½
10	Sukhvel	2 4	1 1⅜	1 6	1 2	1 6
11	Do.	2 4	1 1⅜	1 6	1 3	2 1½
12	Kamod	2 4	1 1⅜	1 6	1 3	2 0½
13	Do.	2 4	1 2	2 0	1 2¾	2 1
14	Welchi	2 4	1 2	2 0	1 3	2 0¾
15	Do.	2 4	1 2	1 6	1 2½	1 6
16	Tin Punkhali (early)	2 4	1 1	1 6	1 2¼	1 6
17	Columbia	2 4	1 1⅛	1 6	1 2½	2 0½
18	Dadkhani	2 4	1 1¼	2 0	1 2½	1 6
19	Badsha bhog	2 4	1 1¼	2 0	1 2½	2 3½
20	Chennur	2 4	1 0½	1 6	1 1½	1 6
21	Halki	2 4	1 0⅜	1 4	1 2	2 0
22	Banko	2 4	1 0¾	1 5	1 2	1 6

APPENDIX 2—*cont.*

STATEMENT E.—Ragi experiments in No. 7
(required by the Superintending Engineer for Irrigation).

Number of plot.	Area.	Date of sowing in the nursery.	Date of transplanting in the field.	Date of harvest.	Manure used.	Yield. Grain. Measures.	Yield. Grain. Pounds.	Yield. Straw.	Water received. By lift. Date.	Water received. By lift. Quantity of water applied on each day after transplanting.	Water received. By rain. Date.	Water received. By rain. Rainfall collected after transplanting.
1	0·25	17th May 1904.	27th June 1904.	8th Sept. 1904.	1½ tons F. yd.	580	1,452	4 tons straw.	5th July	94 buckets of 30 gallons each = 2,820 gallons.	29th June	·10
										Do.	1st July	·06
									17th Aug.		3rd ,,	·06
											6th ,,	·08
										188 buckets = 5,640 gallons.	10th ,,	·07
											15th ,,	·48
											16th ,,	1·29
											17th ,,	·03
2	0·25	17th May 1904.	28th June 1904.	8th Sept. 1904.	1½ tons F. yd.	456	1,140	3¼ tons.	6th July	376 buckets of 30 gallons each = 11,280 gallons.	19th ,,	·12
										Do.	20th ,,	·05
									18th Aug.		21st ,,	·03
											22nd ,,	·05
										22,560 gallons.	23rd ,,	·76
											24th ,,	·68
											25th ,,	1·53
3	0·25	17th May 1904.	29th June 1904.	9th Sept. 1904.	1½ tons F. yd.	452	1,132	1⅝ tons.	7th July	188 buckets of 30 gallons each = 5,640 gallons.	31st ,,	·12
										Do.	1st Aug.	·20
									20th Aug.		4th ,,	2·40
											5th ,,	·01
											6th ,,	·20
										11,280 gallons.	7th ,,	·01
											8th ,,	·03
4	0·25	17th May 1904.	30th June 1904.	9th Sept. 1904.	1½ tons ..	324	812	1⅝ tons.	8th July	188 buckets of 30 gallons each = 5,640 gallons.	11th ,,	·41
										Do.	12th ,,	·01
									20th July		13th ,,	·31
											16th ,,	·05
											30th ,,	·19
										11,280 gallons.	2nd Sept.	·14
											3rd ,,	·35
											4th ,,	·25
											5th ,,	·14
											6th ,,	·01
												10·22
1	0·25	17th May 1904.	27th June 1904.	8th Sept. 1904.	1½ tons F. yd.	145	363	1 ton.				
2	0·25	17th May 1904.	28th June 1904.	8th Sept. 1904.	1½ tons F. yd.	114	285	¾ ton.				
3	0·25	17th May 1904.	29th June 1904.	9th Sept. 1904.	1½ tons F. yd.	113	283	$\frac{2}{3}$ ton.				
4	0·25	17th May 1904.	30th June 1904.	9th Sept. 1904.	1½ tons ..	81	203	$\frac{2}{3}$ ton.				

APPENDIX 2—*cont.*

STATEMENT F—Showing results of ragi experiments tried at Saidapet farm in bed and ridge systems in 1904–1905.

System of cultivation.	Area tried.	Charges before planting. General operations before planting including manuring.	Charges before planting. Special operations such as forming beds and ridges.	Charges incurred in planting.	Charges after planting. Hoeing. No.	Charges after planting. Hoeing. Cost.	Charges after planting. Irrigating. No.	Charges after planting. Irrigating. Cost.
1	2	3	4	5	6	7	8	9
		RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.		RS. A. P.
Bed system	·3	5 10 0	0 9 0	2 3 0	1	0 7 0	7	3 13 4
Ridge system	·3	5 11 0	0 3 0	1 8 0	1	0 5 0	7	2 4 9

System of cultivation.	Charges after planting—*cont.* Harvesting cost.	Total cost.	Yield. Grain. Amount.	Yield. Grain. Per acre.	Yield. Straw. Amount.	Yield. Straw. Per acre.	Total cost per acre.
	10	11	12	13	14	15	16
	RS. A. P.	RS. A. P.	LBS.		LBS.		RS. A. P.
Bed system	0 15 6	13 9 10	361	1,203·3	1,456	4,853·3	45 6 1
Ridge system	0 12 0	10 11 9	347	1,156·6	1,400	4,666·6	35 12 6

APPENDIX 3.

STATEMENT showing the number of stock at the commencement and at the end of the year 1904–1905.

Description.	Comencement.	Disposed of during the year. By death.	Disposed of during the year. By sale.	End.	Remarks.
	No.	No.	No.	No.	
Cows	19	..	1	22	
Heifers	6	..	1	9	
Heifer calves	18	..	..	22	
Bulls	21	2	..	18	
Bullocks	6	2	..	12	
Bull calves	10	2	..	4	
Total ..	80	6	2	87	
Sheep.					
Rams	2	..	3	9	
Ewes	38	3	..	41	
Gimmers	19	..	..	24	
Lambs	41	10	10	36	
Total ..	100	13	13	110	

APPENDIX 4.

Statement showing the yield of milk by the College Farm herd during the year 1904–1905.

Number.	Names of cows.	Age.	Yield in 1904–1905 in		Number of days cows yielded.	Average per day in	
			Madras measures of 100 cubic inches.	Pounds.		Madras measures of 100 cubic inches.	Pounds.
1	Alamelu	10	824·50	3,091·88	258	3·19	11·97
2	Bhaghyam I	14	125·12	469·20	139	0·90	3·37
3	Bhaghyam II	7	706·00	2,647·50	279	2·53	9·49
4	Draupadi	8	346·12	1,297·95	174	1·99	7·46
5	Kuttikunju	10	480·87	1,803·27	160	3·00	11·27
6	Padmavati	8	648·62	2,432·33	217	2·99	11·21
7	Kapila	7	102·25	383·44	127	0·81	3·02
8	Mandothary	9	728·87	2,733·26	303	2·41	9·02
9	Kamadhenu	8	215·50	808·12	178	1·21	4·54
10	Tara II	11	654·25	2,453·44	365	1·79	6·72
11	Kamala	8	564·87	2,118·27	218	2·59	9·72
12	Govindu	6	487·62	1,828·58	347	1·41	5·29
13	Kaustubham	8	841·50	3,155·62	279	3·01	11·31
14	Seetha II	9	669·87	2,512·03	188	3·56	13·36
15	Sybil Elenor	7	442·62	1,659·84	252	1·76	6·59
16	Meenakshi IV	6	406·87	1,525·77	183	2·22	8·33
17	Meenakshi III	11	696·25	2,610·94	266	2·62	9·82
18	Ramabhai	8	342·37	1,283·89	172	1·99	7·46
19	Lakshmibhai	8	658·75	2,470·31	241	2·74	10·25
	Total ..	..	9,942·87	37,285·77	..	..	..

APPENDIX 5.

Number.	Name of cow.	Interval between the last and the previous calving.	No. of days in the interval during which milk was yielded.	Quantity of milk yielded during the interval between the calving in		Average quantity per day during the whole interval.	
				Measures.	Pounds.	Measures.	Pounds.
		DAYS.	DAYS.				
1	Alamelu	440	299	757·37	2,840·13	1·72	6·45
2	Draupadi	528	332	740·25	2,775·94	1·40	5·26
3	Kuttikunju	525	148	467·37	1,752·64	0·89	3·34
4	Padmavati	413	264	795·75	2,984·06	1·93	7·23
5	Ramabhai	526	328	717·87	2,692·01	1·36	5·12
6	Lakshmibhai	373	249	617·62	2,316·08	1·66	6·21
7	Mandodari	397	335	775·87	2,909·51	1·95	7·33

APPENDIX 6.

Financial statement of the College Farm for 1904–1905.

Receipts.	Amount.	Amount.	Charges.	Amount.	Amount.
	RS. A. P.	RS. A. P.	*Cattle food.*	RS. A. P.	RS. A. P.
Field produce	..	1,068 13 11	Ground-nut cake	636 12 6	
Live stock.			Gingelly-oil cake	488 14 4	
Sale of cows, calves, etc.	157 2 0		Safflower cake	71 14 8	
Sale of milk, butter, etc.	2,019 5 9	2,257 15 9	Cotton-seed cake	146 9 0	
Covering fees	81 8 0		Dholl-husk	432 4 7	
Wood and miscellaneous.	..	688 8 11	Wheat-bran	120 6 0	
			Rice-bran	108 13 1	2,865 0 5
			Horse-gram	4 0 0	
			Cumboo	6 0 0	
			Salt	34 2 11	
			Paddy straw	803 2 7	
			Sundries	12 0 9	
			Manure	..	154 6 1
			Seeds and plants	..	355 10 6
			Labour	..	3,015 14 7
			Machines and implements ..	..	193 11 11
			Do. do. (weaving apparatus).	..	70 2 11
			Workshop	..	198 6 6
			Estate improvements ..	..	627 7 8
			Livestock	..	170 9 8
			Oil-engine	..	493 3 6
			Contingencies	..	355 6 8
Total ..	..	4,015 6 7	Total ..	..	8,500 0 5

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APPENDIX 7.

	RS. A. P.
Value of services rendered by the Livestock for the Botanical Garden during 1904–1905 (one pair continuously working throughout the year)	257 4 0
Value of labour to be charged against Livestock	462 0 0
Value of labour to be charged against the farm	828 5 0
Value of manure obtained 166 tons at Rs. 3 per ton	498 0 0
Value of farm-grown fodder consumed by stock	754 3 11
*Fees realised by bull-service (for 163 outside and 19 farm cows)	81 8 0

* Owing to prevalence of foot and mouth disease in the vicinity of Saidapet bull-service for outside cows was stopped after 9th February 1905.

APPENDIX 8.

Oil Engine.

	Month.	Liquid fuel.		Shafting oil.	Lubricating oil.	Kerosine oil.		Kerosine oil for lamp.	
		Quantity in gallons.	Value.			Quantity in gallons.	Value.	Quantity in gallons.	Value.
	1	2	3	4	5	6	7	8	9
			RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.		RS. A. P.
A	June 1904 ..	..	* ..	..	..	..	..	4	1 13 0
A	July ,, ..	..	† ..	..	0 8 3	..	..	12	5 4 0
A	August ,, ..	..	27 3 0	..	1 4 3	..	..	12	5 4 0
A	September ,, ..	..	23 12 0	8 12 0	1 12 3	..	..	16	7 0 0
A	October ,, ..	..	..	..	..	..	..	12	3 8 0
	Total ..	..	50 15 0	8 12 0	3 8 9	..	..	..	22 13 0
B	November 1904 ..	40	7 8 0	..	4 2 0	..	14 0 0	..	8 12 0
B	December ,, ..	50	9 6 0	..	0 11 0	..	3 8 0	..	..
B	January 1905 ..	..	..	3 9 9	0 8 2	..	26 4 0	..	7 0 0
B	February ,, ..	..	..	0 15 6	0 11 0	..	19 8 0	..	3 4 0
B	March ,, ..	..	..	5 6 3	3 5 6	..	70 8 3	..	4 6 0
	Total ..	90	16 14 0	9 15 6	9 5 8	288	133 12 3	56	23 6 0

	Month.	Asbestos.	Wages.	Repairs.	Contingencies.	Soap.	Emery.	Sundry articles.	Total.
		10	11	12	13	14	15	16	17
		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
A	June 1904 ..	..	† ..	..	0 2 0	..	..	..	1 15 0
A	July ,, ..	..	..	..	1 4 9	..	..	..	7 1 0
A	August ,, ..	..	‡30 0 0	..	14 4 0	..	..	..	77 15 3
A	September ,, ..	42 4 0	‡24 8 0	..	4 4 0	..	..	..	112 4 3
A	October ,, ..	..	§13 0 0	..	..	..	0 12 0	..	17 4 0
	Total ..	42 4 0	67 8 0	..	19 14 9	..	0 12 0	..	216 7 6
B	November 1904 ..	..	15 4 0	..	0 15 6	..	0 10 0	..	51 3 6
B	December ,, ..	..	14 8 0	..	2 8 0	..	..	..	30 9 0
B	January 1905 ..	..	13 0 0	5 6 9	0 5 6	..	..	..	56 2 2
B	February ,, ..	..	13 0 0	..	0 3 0	..	..	0 5 10	37 15 4
B	March ,, ..	..	13 0 0	2 13 0	0 5 0	..	..	1 2 0	100 14 0
	Total ..	..	‖68 12 0	8 3 9	4 5 0	..	0 10 0	1 7 10	276 12 0

* Supplied by Messrs. Massey & Co.
† Paid by Messrs. Massey & Co.
‡ An additional man on Rs. 6 was employed to learn work also beside this.
§ Includes wages of two men.
‖ This includes wages of two men attending on engine work.

N.B.—All big repairs are not included in this as they were paid for by the Supervisor, pumping stations.

As the quantity of water and the expenses incurred are available from 1st November 1905, expenses for working the engine and quantity of water raised can be judged more accurately. Hence calculation has been done only for five months commencing from 1st November 1904 to 31st March 1905.

* 1. Data connected with pump from 1st September to 27th October—

Number of days pump worked		21
,, of hours ,,		126 50′
Average height the water was lifted	Feet	21

* 2. From 28th October to 31st October when cistern was available for measurement, but expenses cannot be accurately calculated.

Number of days pump worked		3
,, of hours ,,		16
Average height water was lifted	Feet	21
Total quantity of water raised	Galls.	165,800

Data connected with engine and pump from 1st November 1904 to 31st March 1905—

Number of days pump worked		85
,, of hours ,,		711¾
Average time each day pump worked	Hours	8·4
Total number of gallons of oil including liquid fuel consumed during the period		434
Consumption of oil per working hour	Galls.	·61
Total cost of oil and liquid fuel during the period	Rs.	174 0 3
Cost of oil per working hour	,,	0 3 11
Average height of lift of water by pump in the period	Feet	23·32
Height of water lifted when pump began work for first time	,,	21
Total quantity of water lifted during the period	Galls.	10,107,416⅔
Average number of gallons lifted per day	,,	118,910·8
,, ,, per hour	,,	14,060·3
Total cost of working engine and pump including driver's wages and all sundry repairs and oil consumed but excluding big repairs paid by supervisor, pumping stations, and excluding depreciation and interest	Rs.	276 12 0
Cost of working engine and pumps including driver's wages and all sundry repairs and oil consumed but excluding big repairs paid by supervisor, pumping stations, and excluding depreciation and interest per hour	,,	0 6 2½

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Actual cost.

Value of 6½ horse-power engine and pump	Rs.	2,500 0 0
Wear and tear per year at 10 per cent.	,,	250 0 0
Interest at 6 per cent. per year	,,	150 0 0
Total	,,	400 0 0
Interest on Rs. 2,500 from 1st November 1904 to 31st March 1905 at 6 per cent. (five months)	Rs.	62 8 0
Wear and tear for five months at 10 per cent.	,,	104 2 8
Total	,,	166 10 8
Number of days engine worked during five months		85
Interest and wear and tear per day	Rs.	1 15 4
Number of hours engine worked during five months		711¾
Interest and wear and tear per hour	Rs.	0 3 9
Total cost (small repairs, oil, interest and wear and tear per hour)	,,	0 9 11½
		or say 10 annas.
For 10 annas engine lifts	Galls.	14,060·3 per hour.
For 1 anna ,, ,,	,,	1,406 ,,

* For expenses refer to statement A.

Single mhote.

From an average depth of 25 feet 50 buckets of 30 gallons each can be raised in one hour	Galls.	1,500
Value spent on single mhote and cattle including wear and tear, interest, etc., for a day of eight working hours.	Rs.	0 12 0
Value spent on single mhote and cattle including wear and tear, interest, etc., for one hour	,,	0 1 6
For 1½ annas single mhote lifts	Galls.	1,500
For 1 anna ,, ,,	,,	1,000

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Letter—from M.R.Ry. T. V. Narayana Rao Avargal, Acting Fifth Assistant and Officer in charge, Botanical Garden, Saidapet.
To—the Principal, College of Agriculture.
Dated—26th April 1905.
No.—D. 13.

I beg to submit the annual report on the Botanical Garden for the year 1904–1905.

2. Till the 13th of August the direct working of the garden was in the hands of Mr. Y. Srinivasa Rao; from the 14th idem I held charge.

3. The garden sufferred very much from the failure of both the south-west and the north-east monsoons. Owing, however, to water being supplied from the river Adyar by the oil-engine working on the farm and whenever the oil-engine was out of order by a single mhote, the garden was fully cropped.

4. A mixture of red earth and horse dung was applied to almost every garden crop, while farm yard manure, sheep's dung, castor cake, tannery refuse and pig's dung were applied to certain crops.

5. In the upper terrace and in some other portions of the garden the following specimen crops were grown for the benefit of students :—

(*a*) *Cereals.*	(*b*) *Pulses.*	(*c*) *Oil crops.*	(*d*) *Fibre crops.*	(*e*).
1. Broom corn	1. Field bean (red and white).	1. Soy beans	1. Cotton	1. Sugarcane.
2. Sorghum amber	2. Cowgram	2. Sunflower	2. Jute	2. Arrowroot.
3. Early amber sugarcane.	3. Blackgram	(*a*) Coimbatore Jail.	3. Sunhemp	3. Tapioca.
4. Maize (5 varieties)	4. Greengram	(*b*) Ordinary	4. Roselle (3 varieties).	4. Tobacco.
5. Cholam (38 varieties)	5. Bengalgram	3. Ground-nut	5. Rhea	
6. Wheat (failed)	6. Dewgram	4. Safflower	6. Sisal hemp	
7. (*a*) Cumbu (ordinary)	7. Horsegram	5. Linseed		
(*b*) Cumbu (awned)	8. Dholl (9 varieties).	6. Gingelly		
8. Ragi	9. Kabuligram from Poona farm (failed).	7. Niger		
9. Shamai		8. Castor (major)		
10. Tinai		9. Castor (minor)		
11. Kudiraivali (2 varieties).				
12. Varagu				
13. Pani varagu				
14. Oats				
15. Barley (failed)				

6. (*a*) The seeds of the first two cereals broom corn and sorghum amber were obtained from the Poona farm and those of early amber sugarcane from the Manjri farm. Seeds of four * varieties of maize were supplied by the farm. Seeds of red maize (local) were obtained from the Conjeeveram exhibition. As the latter were badly weevilled very few plants came up and these did not give good cobs.

* Yellow dent from Manjri farm. Golden beauty from Manjri farm. Early mastadon from Manjri farm. Janupore maize from United Provinces.

Thirty-four varieties of cholam were received from the Deputy Director of Agriculture, Madras. One of these (No. 32-S.) was lost, and the remaining 33 varieties together with 5 varieties received from the Conjeeveram exhibition were grown. Of the first named 33 varieties i-B Belai Jola and ii-B Nalla Pusi Jonna were in flower 2½ months after sowing and the earheads were gathered on 25th January, *i.e.*, about four months after sowing the seed. The earheads were not very big but the grain was well formed. The stalks were between 8 and 9 feet high with a circumference of 2 to 2¼ inches. All the other varieties were in flower about two months after sowing and the earheads were gathered on 28th December, *i.e.*, about 3 months and 1 week from the date of sowing. The earheads of some of these varieties might have been cut

perhaps earlier. The height of the stalks of most of the varieties was from 7 to 9 feet though that of a few was only 6 feet. The stalks of the following varieties were very thin and poor :—

3. M-777. White Irungu.
4. M-812. Reddish white Irungu.
5. M-916. do. do.
11. M-786. Black Irungu.
12. M-788 (*b*). Black Irungu.

In almost all the other varieties the circumference of the stalks was from 1¼ to 2 inches except No. 28-S. Dawr of Nagpur Farm which had a circumference of 2¼ inches. No. 8-M. (787) Purple Irungu, 19-M. (869) yellow sort probably mediocris, 31-S. Lagwar Red of Cawnpore Farm, 34-S. Gari of Surat Farm, were among the good yielders and they were specially selected by Mr. K. Rangachariyar Avergal, M.A., L. T., of the Central Museum, Madras, for photographing and mounting. Mounted specimens and photographs have been kindly promised by him for the College Museum. The earheads of—

23 M. (805), red sort, probably mediocris.
25 S. Bani of Nagpur farm.
26 S. Bagle of Nagpur farm.
27 S. Baidwa of ,,
28 S. Dawr of ,,
29 S. Deolari of ,,
30 S. Deola of ,,
31 S. Lagwa red of Cawnpore Farm.
33 S. Dugadia zard of ,,
34 S. Gari of Surat farm

bent down while the grain was maturing.

Cumbu (awned) was received from the Manjri farm. Although the crop grew well, it failed to develop proper grain.

Three varieties of barley and two varieties of oats were received from a planter in Ootacamund. They were sown in October and January. The seeds sown in October did not germinate, but there was a fair crop from the seeds sown in January. Only one variety of oats, however, developed grain.

(*b*) For the first time bengalgram developed grain in the garden. This was perhaps due to the crop not having been affected by untimely and heavy rain and to the crop having been watered artificially in time.

Four ounces of each of the following nine varieties of dholl were obtained from the Manjri farm and sown in the garden :—

(i) *Bilaspur.*—Sown 19th September. Germination 23rd September. In flower 15th December. Pods gathered 31st January. Flowers yellow. Plants unbranched. Stems with reddish tinge. Height of plants 5½ ft. Pods few, of fair size.

(ii) *Bilaspur.*—Sown 15th September. Germination 20th September. In flower 8th December. Pods gathered 31st January. Flowers red. Stem reddish green. Height of plants 4 ft. Pods fairly good and fairly in clusters.

(iii) *Bilaspur.*—Sown 15th September. Germination 20th September. In flower 8th December. Pods gathered 31st January. Flowers yellow. Stem reddish green. Height of plants 3¾ ft. Pods poor.

(xiii) *Bangalore.*—Sown 19th September. Germination 22nd September. In flower 8th December. Pods gathered 31st January. Flowers yellow. Stem normal green. Height 3 ft. Pods single and poorest of the lot.

(xviii) *Bangalore.*—Sown 15th September. Germination. 20th September. In flower 15th December. Pods gathered 20th January. Flowers yellow. Stem green. Height 4 ft. Pods normal.

(xx) *Variegated Bangalore.*—Sown 15th September. Germination 20th September. In flower 8th December. Pods gathered 31st January. Flowers red. Stems slightly branched and green. Height 3½ ft. Pods good and fairly in clusters.

(xxi) *Variegated Bangalore.*—Sown 15th September. Germination 20th September. In flower 8th December. Pods gathered 24th January. Flowers red. Stems green. Height 4¼ ft. Pods good and in clusters.

(xxii) *Variegated Bangalore.*—Sown 19th September. Germination 22nd September. In flower 3rd December. Pods gathered 31st January. Flowers red. Stems normal green. Height 4 ft. Pods good and in fair clusters.

Arhar.—Sown 19th September. Germination 23rd September. *In flower 7th January. Pods gathered 2nd March.* Flowers yellow. Stems normal green. Height 4½ ft. Pods fairly good.

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According to their growth the nine varieties may be ranked as follow :—

(i) Variegated Bangalore No. XXI.
(ii) Do. do. No. XXII.
(iii) Do. do. No. XX.
(iv) Bilaspur No. II.
(v) Do. No. I.
(vi) Bangalore No. XVIII.
(vii) Arhar .....
(viii) Bilaspur No. III.
(ix) Bangalore No. XIII.

The roots of some of the plants were affected by the larvæ of a borer.

(*c*) Seeds of 16 varieties of Soy beans numbered 2 and 3 and 6 to 19 were received from the Manjri farm. One half of the seeds of all the varieties was sown on 14th September and the remaining half on 29th November. The second crop utterly failed. Most of the varieties of the first crop grew fairly well, but were attacked when the crop was developing its pods with *Surul puchi*, about a month and ten days from the date of sowing. The crop was sprayed with kerosine emulsion but with very little effect. Seeds of varieties Nos. 3, 6, 7, 8, 9, 10, 12 and 18 have been collected. No. 12 was a good variety ; No. 9 a very early variety ; Nos. 7, 8 and 10 fairly so, and No. 6 a very late variety. A mixture of 56 lb. of castor cake and some cattle dung was applied to the crop.

One pound of sunflower seed was obtained from the Superintendent, Coimbatore Jail. The plants grew fairly well and produced fair sized flowers with fully developed seeds. The seeds produced were given to the Principal of the Teachers' College for being sown in the College garden and it is gratifying to note that the seeds produced excellent plants according to his information.

The same remarks as for bengalgram apply to linseed.

Twelve varieties of castor (major) were received from Messrs. Rengasami & Co., Oil Merchants, Wall Tax Road, Madras, but from the plants only five seemed to be distinct varieties as shown below :—

(i) Spineless fruits on plants with red bloom.
(ii) Do. do. white bloom.
(iii) Spinous fruits on plants (bushy) with white bloom.
(iv) Spinous fruits with spines further apart on plants with white bloom.
(v) Ordinary spinous fruits on plants with red bloom.

These and other varieties deserve to be grown again in the garden.

(*d*) Under instructions from the Government Botanist, Madras, the seeds of 35 varieties of tree cottons of the Presidency, sent by him, were sown in the garden. The seeds of the fourth variety Jadapathi Palkonda (C.A.B., No. 2439) did not germinate at all ; while those of Jadapathi Madakasira, Ladam (Nadam) paruthi Sankaranayinárkóyil, Pagadipathi Sirvel, Parangipathi Atmakur, Jadapathi Atmakur, Jadaprathi Vinukonda, Pamidiprathi Palnad, Seemapathi, Palnad, germinated rather poorly, leaving in some cases only one plant. Twenty-three of the surviving 34 varieties seem to be Americans. Herbarium specimens of all the 34 varieties were taken for the Government Botanist's office by his establishment. Cotton in seed of all the varieties is being collected and the seeds of a few of the varieties will be sown this year in a new plot. The plants now growing may be allowed to stand for a few years more. In addition to the above, the following varieties of cotton were grown from seeds collected on the farm :—

1. Sea Island cotton.
2. Nankin cotton.
3. Semparuthi.
4. Uppam.
5. Kuppam.
6. Karunganni.
7. Nadam.
8. Javari Hathi (black seeded).

From varieties 1, 2 and 3 and from typical plants of Nos. 4 to 8 kindly pointed out by Mr. C. Benson, M.R.A.C., cotton in seed is being collected and the seeds will be sown this year.

(*e*) The following 14 varieties of Samalkot sugarcanes referred to in paragraph 16 of the Vice-Principal's report of last year were grown on 9 cents of land and local striped (namam) and Rastali from Cumbum on 7 and 3 cents respectively.

1. Vansia.
2. Yerracheruku.
3. White Mauritius.
4. Bontha.
5. Sanna bile.
6. The Hospet cane.
7. The Gódáveri striped cane.
8. Red Mauritius.
9. Válu.
10. Poondia.
11. The Cumbum striped cane.
12. Kéli.
13. Mogali.
14. Seema.

These were visited on two or three occasions by the Government Botanist and notes taken. Vansia, Yerracheruku, Bontha, Sanna Bile, Red Mauritius, Mogali and Seema came up very well and some like Red Mauritius to a good height of 20 feet with a circumference of 5 inches average. The Cumbum striped cane did not develop any stripes at all and Keli developed stripes, probably due to difference of soil and climate. Pig's dung, farm-yard manure, castor cake and ashes were applied as manure on different occasions to the canes. Fifty canes of each of Vansia, Red Mauritius, Sanna Bile, Bontha and Seema were cut and sent by the Government Botanist's establishment to the Cuddalore farm on 18th February. Twelve canes of each of the sixteen varieties mentioned in the first portion and of the Trichinopoly reed cane grown on the farm, were exhibited at the last Flower Show, Madras, held on 25th February. The canes exhibited at the Flower Show and a few more of some of the varieties mentioned above were given to the farm for sets. A few were cut and sold and a few are standing still. From some of the Samalkot varieties, juice was extracted and good jaggery was made as an experiment. Three canes of each of the following varieties were kindly sent by the Government Botanist for growing in the garden on the 25th and 27th February. Some of the canes were attacked with red fungus. The sets were planted on 28th February and the number of shoots in each of the varieties is mentioned below. Some of the sets had only two nodes.

Variety.	Number of sets.	Number of shoots.
1. Mogali	34	12
2. White Mauritius	30	14
3. Ivory „	33	18
4. Striped „	37	7
5. Red „	34	15
6. Yerra Samalkot	34	12
7. Seema	37	26
8. Striped Mauritius	38	24
9. Sanna Bile	33	27
10. Purple Mauritius	38	28
11. Ashy Mauritius	30	27
12. Green Sports Mauritius	29	18
13. Poovan	33	9
14. Red Sports Mauritius	36	25

There are now growing in the garden thirty-one varieties of sugarcane in one block thus—

Fourteen Samalkot varieties received on 10th March 1904.
One Striped cane, local namam.
One Rasthali Cumbum.
One Trichinopoly reed cane.
Fourteen Samalkot varieties received in February 1905.

Some of these are very likely duplicates. In addition, the following varieties of Barbados sugarcane, which were growing in the farm, were transplanted in the garden on the 18th February and are doing well :—

(1) B. 376, C.A.B. 2363—Two shoots ; one in bad condition.
(2) B. 208, C.A.B. 2362—Three shoots.

Sets of black, white and red Mauritius sugarcane, as named by the Pallávaram ryots, were planted on 28th December and the shoots are growing vigorously.

Arrow root was grown on about 4 cents of land ; tapioca on 1½ cents.

Tobacco seeds were collected from some of the plants mentioned in paragraph 16 of the Vice-Principal's report of last year and sown in a very small portion. The seedlings were transplanted on 2 cents of land and seeds are now being collected under the varieties of Yerumaikappal and Voosikappal.

7. Turmeric was grown on 43 cents of land. About 470 lb. of seed rhizomes were planted. The yield was 3,190 lb. or about 3⅓ tons of rhizomes per acre. 956 lb. of rhizomes were cured and 204 lb. of dried turmeric were obtained.

8. *Plantains.*—A crop consisting of the varieties Nendram, Pachainadam, Pachai Valai, Bonthan, Bangala or Poovan, Payan and Kottaivashai were planted on 34 cents of land in about the first week of November. Applications of tannery refuse and castor cake were given. The crop is doing well.

9. Lucerne was grown on 17 cents of land, the seeds having been obtained from Messrs. Pestonjee Poochaji Poocha, seeds-men, Poona, at about Rs. 1-8-0 a lb. 2½ lb. seeds were sown on 13th December on the ridge and furrow system.

On 15th February, 714 lb. lucerne were cut and converted into hay, the yield being 175 lb. 42 lb. green lucerne were sold as fodder before 15th February.

On 20th March, 850 lb. lucerne were cut and converted into hay, the yield being 218 lb. 6 lb. green lucerne were sold as fodder from 15th February to 20th March.

Thus, 1,612 lb. of green lucerne were obtained in two cuttings and 1,564 lb. green lucerne yielded 455 lb. hay. The crop suffered from the attack of dodder and is still on the field.

10. The 14 Liberian coffee trees and 6 trees of Arabian coffee referred to in the last report are yielding small quantities of berries. It is impossible to stop theft from these trees. The Batavian orange trees are not yet in bearing.

11. The following English and country vegetables, etc., were grown :—

(*A*) *English.*	(*B*) *Country.*
1. Goa beans.	1. Brinjals.
2. Kidney beans.	2. Ginger and mango-ginger.
3. Celery.	3. Snake-gourds.
4. Tomatoes of sorts.	4. Sword beans.
5. Cabbages of sorts.	5. Cow beans.
6. Cauliflower (did not yield flower).	6. Ribbed gourd.
7. Knol khol.	7. Chillies from Tanjore and Poona.
8. Carrot.	8. Chillies, ordinary.
9. Beet root of sorts.	9. Dioscorea.
10. Radish of sorts.	10. Telingana potato.
11. Turnips of sorts.	11. Peas (ordinary).
12. French beans of sorts.	12. Cucumbers.
13. Peas, English.	Some minor ones as coriander, fenugreek, etc.
14. Lettuce cabbage.	
15. Vegetable marrow of sorts.	

12. (*A*) Except cabbage, cauliflower and peas, all the others grew well and in some cases very well. Goa beans, tomatoes, knol khol and French beans find a ready sale. Tomatoes and knol khol were grown on fairly large areas, 43 cents and 23½ cents, respectively, but as portions of the crop are still in the field, the exact sum of money realized by their sale cannot now be given. A crop of French beans on 2 cents of land yielded 9,700 beans sold at 1 anna per 100 ; yield in money Rs. 6-1-0.

(*B*) Brinjals were grown on 66 cents. The crop on 11 cents is still standing. The varieties grown in the remaining 55 cents were Berhampur and Tirupasore (near Tiruvallúr) ones. The area was divided into three portions—

(i) 13 cents. A mixture of 616 lb. tannery refuse and one cartload of ashes was applied. Yield 105 visses of brinjals. Value Rs. 9-13-6.
(ii) 11 cents. A mixture of 140 lb. castor cake and half cartload of ashes was applied. Yield 121 visses. Value Rs. 11-5-6.
(iii) 31 cents. Ten cartloads of farm-yard manure applied. Yield 76 visses. Value Rs. 7-2-0.

Thus, from 55 cents, 302 visses of brinjals valued at Rs. 28-5-0 were obtained. The crop must be described as poor, which can be attributed to the failure of the monsoons. The third block was a piece of extremely retentive clay. The first block was the first to yield.

Mango-ginger.—12 visses were obtained from ½ cent.

Snake-gourds.—These were grown on 11 cents of land which were divided into four plots—

			Yield.
Plot No. I, 15 pits.	616 lb. tannery refuse and 100 lb. ashes applied.	First to yield and second to stop yielding.	71⅞ visses. (say) 72 „
Plot No. II, 15 pits.	84 lb. castor cake and 100 lb. ashes applied.	Second to yield and last to stop yielding.	74½ „
Plot No. III, 15 pits.	308 lb. pig's dung and 100 lb. ashes applied.	Third to yield and first to stop yielding.	55¾ „
Plot No. IV, 19 pits.	840 lb. farm-yard manure applied.	Fourth to yield and third to stop yielding.	41¾ „
Add weight of gourds left for seed, about			12 „
		Total ...	256 „

Yield in money Rs. 16 or about Rs. 145 an acre.

Yams (Vethilaivalli Kishangu).—130 visses of yams (Dioscorea) were planted on 8 cents of land and the yield was 812 lb. or about 4½ tons per acre.

Telinganapotato (Karanai Kishangu).—135 visses of the corm were planted on 13 cents of land and the yield was 347 lb. or about 1¼ tons per acre.

13. The following quantities of fodder were supplied to the farm :—

	LB.
Cholam straw	3,276
Lucerne hay	455
Field bean (green fodder)	1,344

14. The botanical specimens require to be rearranged and the work will be taken on hand during the north-east monsoon when I hope to find time for the work. The labelling of the specimens will be attended to as soon as the services of a man who can print labels are secured as a permanent cooly of the garden. Arrangements will be made to secure for the garden plants of economic value in December next, after the heavy rains.

15. The following prizes were awarded to the garden at the late Flower Show held in the Agri-Horticultural Gardens, Teynampet, in February last :—

(i) A silver medal for the best collection of sugarcanes.

(ii) Rs. 10 for the best collection of sorghums in ear.

(iii) Rs. 5 and a certificate in lieu of a bronze medal for collection of fibres.

(iv) A certificate for collection of English vegetables mentioned in paragraph 11A *supra*.

N.R.O.C. No. 4072 *of* 1905.

Forwarded to the Secretary to the Board of Revenue (Revenue Settlement, Land Records and Agriculture), for favour of remarks and return.

T. R Scott,
for *Director of Public Instruction.*

18*th May* 1905.

Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), Mis. No. 3563, *dated* 1*st July* 1905.

The Hon'ble Mr. A. E. Castlestuart Stuart, I.C.S.

Read—the following paper :—

Endorsement by the Director of Public Instruction, Madras, dated 18*th May* 1905, *N.R.O.C. No.* 4072.

Abstract.—Forwarding the report on the College of Agriculture for 1904–1905, submitted by the Principal, College of Agriculture.

Resolution—Mis. No. 3563, *dated* 1*st July* 1905.

The reports received with the endorsement of the Director of Public Instruction read above will be returned to him with the following remarks.

2. The Board notes the losses to the College staff, caused by the transfer of Rao Bahadur M.R.Ry. C. K. Subba Rao to the Agricultural Department, where his services were more urgently required, and by the death of M.R.Ry. G. Krishna Prabhu. It is also noted that the College had to work for almost the whole of the year without a Professor of Agriculture.

3. It is noteworthy that the number of students rose from 46 in the previous year to 58 in the year under review; but it is to be regretted that the additional number was made up almost wholly of students of inferior general education. The increase, however, indicates the greater interest that has been aroused in Agriculture in this Presidency.

4. The remarks in paragraph 4 of the Principal's report show that he has more clearly grasped the recommendations of the Committee, which revised the College course three years ago, as he has endeavoured to get the subsidiary subjects finished as early as possible. The results of the labours of the College staff, so far as they can be judged by the examinations of the students, are given in paragraph 8 of the report, and they appear to be more satisfactory than in 1903–1904.

5. The work of the Veterinary hospital attached to the College continued to progress satisfactorily.

6. The season at the College farm from September 1904 onwards was very unfavourable, and as this is the active cultivation season in the locality, the cropping results were poor. The provision on the farm, for the first time, of mechanical power for raising water from the Adyar was of great value during a period of deficient rainfall, but the working of the oil-engine was apparently owing to want of experience, not altogether satisfactory. A noteworthy feature in the working of the farm was the utilization of a few showers of rain for producing fodder in a season of drought. The experiments carried on were in almost all cases made on too small a scale to be of much value, and the Board considers it unnecessary to comment on them in detail.

(True Extract.)

L. D. Swamikannu,
Ag. Secretary.

To the Director of Public Instruction,
with one proof and reports in original returned.

Proceedings, Dis. No. 5866 of 1905.

Recorded.

2. The Acting Vice-Principal, M.R.Ry. C. K. Subba Rao, reverted to his permanent appointment in July 1904, and the post has been vacant ever since. The Director heard with regret of the death of M.R.Ry. G. Krishna Prabhu, who had rendered efficient service as first assistant of the College for twenty-two years.

3. The strength of the college rose from 46 to 58. This is satisfactory in so far as it indicates a growing interest in agriculture in the Presidency; but as observed by the Board of Revenue it is to be regretted that a large number of the students were men of inferior attainments. Compared with the figures for the previous year, the results of the Government Technical examinations held during the year under review showed a decided improvement. It is observed that the majority of the students who entered for the examinations appeared for the first time. This was not the case last year.

4. There was a slight increase in the total number of animals treated at the Veterinary Hospital, but the officer in charge of the hospital considers that the number of cases has well nigh reached the maximum.

5. Owing to the unfavourable character of the season during the greater portion of the year, the cropping results were not satisfactory. The results of the working of the oil-engine newly introduced into the farm were much below expectation, and, as surmised by the Board, this was probably due to want of experience on the part of those entrusted with the working of it.

6. Excluding the amount spent on scholarships, the total expenditure fell from Rs. 50,674 to Rs. 43,627 and the receipts from Rs. 6,396 to Rs. 6,323. The net cost to Government and the cost per student also decreased from Rs. 44,278 and Rs. 1,230 to Rs. 37,304 and Rs. 982, respectively.

7. The reorganization of the College with reference to Mr. Mollison's report is still under consideration.

A. G. Bourne,
Director of Public Instruction.

To the Principal, College of Agriculture,
with 20 spare copies, and 100 copies of the reports on the farm and botanical garden.
,, Principals of other professional colleges.
,, Principals of Government first-grade colleges.
Copy to the Board of Revenue (Revenue Settlement, Land Records and Agriculture).
,, Superintendent, Civil Veterinary Department.
,, Government, with covering letter.
,, Director-General of Education.

Order—No. 648, Educational, dated 29th September 1905.

Recorded.

(True Extract.)

H. D. Taylor,
Ag. Secretary to Government.

To the Director of Public Instruction.
,, the Revenue Department.
,, all Collectors.
,, the Director-General of Statistics (with C.L.).

Educational Department.

NOTES CONNECTED WITH G.O., No. 648, EDUCATIONAL, DATED 29th SEPTEMBER 1905.

[Subject.—*Report on the working of the College of Agriculture during* 1904–1905.]

From the Director of Public Instruction, dated 20th September 1905, *No.* 8060.

As the College on its present basis is soon to be abolished, the report may be simply recorded. Please see the draft placed below.

P. T. Tharyan—23-9-05.

A. Galletti—25-9-05.
H. D. Taylor—26-9-05.
J. T[homson]—27-9-05.

Issue.

H. D. Taylor—29-9-05.

[G.O., No. 648, Educational, dated 29th September 1905.]

Government of Madras.

EDUCATIONAL DEPARTMENT.

Recd. } 1905. *Enclosures*

Regd. *Spare copies*

G.O., No. 648, 29th September 1905.

Why is not a copy of this sent to the Dir. of Commerce! Please send two copies

Sent 28/10/05

College of Agriculture.

Recording the report on the working of the — during 1904-1905.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

Read—the following paper :—

Letter—from the Hon'ble Mr. A. G. Bourne, D.Sc., F.R.S., Director of Public Instruction, Madras.
To—the Secretary to Government, Educational Department.
Dated—20th September 1905.
No.—Cur. 8060.

I have the honour to submit herewith a copy of my Proceedings, Dis. No. 5866, dated 7th September 1905, reviewing the report on the working of the College of Agriculture during 1904–1905.

Enclosure.

Proceedings of the Director of Public Instruction, Dis. No. 5866, dated 7th September 1905.

Letter—from W. Keess, Esq., M.A., M.R.A.C., Principal, Madras College of Agriculture.
To—the Director of Public Instruction.
Dated—Saidapet, 1st May 1905.
No.—384.

I have the honour to submit the report on the College of Agriculture for the year 1904–1905.

2. *Staff.*—On 18th July 1904, M.R.Ry. C. K. Subba Rao, Acting Vice-Principal, reverted to his permanent post in the Agricultural Department. The Vice-Principalship remained vacant for the remainder of the official year. On 23rd August M.R.Ry. G. Krishna Prabhu reported sick. On 17th September he died of gastritis. Mr. D'Silva, second assistant, was promoted to be acting first assistant. It was not till 12th November that the other four assistants went up a step, thus allowing M.R.Ry. T. Srinivasa Rao, bailiff, to be added to the staff as acting sixth assistant. The acting promotions were made with retrospective effect from the 17th September, so that the promoted officers drew their increased salaries from that date. It will be noticed that from 23rd August to 12th November, a period of more than two-and-a half months during which the college was at full work, there were only six lecturers instead of the sanctioned number of eight. It was fortunate that at this critical time the staff contained officers who were able to carry on the duties of M.R.Rys. C. K. Subba Rao and G. Krishna Prabhu in addition to their own. I consider, however, that the work of two of the assistants during the two-and-a half months mentioned was excessive and it is highly creditable to them that they did it so well.

The death of M.R.Ry. G. Krishna Prabhu referred to above entailed the loss to the institution of the officer who had served it longest. The deceased belonged to the first batch of students who entered the college. He passed out in 1879 second in order of merit. In 1883 he was appointed first assistant and therefore at the time of his death had filled that post for 22 years. During this period he proved himself an efficient teacher and won the respect of his colleagues and students.

3. The number of students on 31st March rose from 46 to 58, the increase being due to the large number of men who joined the college in January. In fact for the first time during the nineteen years I have been connected with the college, class I attained its maximum strength and applicants had to be refused admission. As in the previous year, I declined to admit casual students for "Surveying and Levelling" and "Agricultural Engineering" only.

—	Class I.		Class II.		Class III.		Casuals.		Total.	
	31st March 1904.	31st March 1905.	31st March 1904.	31st March 1905.	31st March 1904.	31st March 1905.	31st March 1904.	31st March 1905.	31st March 1904.	31st March 1905.
1. Europeans and Eurasians.	..	..	..	..	..	..	1	.	1	..
2. Native Christians ..	..	..	2	1	1	1	..	..	3	2
3. Muhammadans ..	2	2	2	1	..	2	1	3	5	8
4. Brahmans	11	12	11	8	3	7	1	1	26	28
5. Non-Brahman Caste Hindus ..	8	16	1	4	2	..	..	..	11	20
6. Panchamas and kindred classes.	..	..	..	..	..	..	..	..	..	..
Total ..	21	30	16	14	6	10	3	4	* 46	58

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

N.B.—The above table does not include the minors under the Court of Wards resident at Newington who attended field classes.

Classification according to general educational qualifications—

B.A.'s. †	2
F.A.'s.	8
Matriculates	26
Non-Matriculates	22
Total	58

† One of these is a B.A. of the Calcutta University.

4. *Instruction.*—This was carried out in accordance with the orders embodied in G.O., No. 429, Educational, dated 24th July 1902.

April to December.

Class III.—The unfavourable season tended to restrict the amount of practical work in agriculture done by students, but the class being a small one each student was given, I think, a sufficient amount. The students took turns at farm-supervision and dairy-work and most of them did well, especially one, whose excellent supervision has been noted in the college books. The class undertook a tour of enquiry in the southern districts from 1st to 19th October—*vide* Board's Proceedings (Revenue Settlement, Land Records and Agriculture), Mis. No. 177, dated 12th January 1905. The men spent one day a week in the Chemical Laboratory at quantitative analysis and the results of the examination in Agricultural Chemistry Advanced show that in spite of the breakdown in the water-supply to the laboratory and of the use of spirit for heating instead of gas they reached the high standard demanded by the examiner. For instruction in veterinary the class attended the hospital twice a week.

Class II.—The men of this class had their first year's course extended by six months and completed "field cultivation" during their first year, but to find employment for them, I set aside an acre on the farm to be cultivated by them without any assistance. Owing, however, to the unfavourable season very little could be done on the land. They, however, took part at times in the general work of the farm. For instruction in quantitative analysis and agricultural engineering the class was divided into two batches, which devoted one day every alternate week to each of the subjects. Qualitative analysis was done whenever time could be spared for it. The class went into camp at Pallávaram from 13th to 29th April for the purpose of preparing the prescribed engineering plans and estimates. I visited the camp on three occasions. The practical instruction in veterinary consisted of dissections.

Class I.—The students were given as much work as possible on the farm. In botany they had field and microscope classes, and in general chemistry a small amount of qualitative analysis. The class went into camp at Pallávaram with class II from 13th to 29th April for the purpose of preparing the prescribed survey plans.

As before mentioned, I paid the camp three visits.

January to March.

Class III.—The remarks made concerning the class III of April to December apply to this class except that the tour of enquiry was undertaken in the Cuddapah district from 7th January to 1st February—*vide* my letter No. 348, dated 20th April 1905.

Class II.—This class has of course not yet commenced field cultivation. I pressed on the work in agricultural engineering so as to allow of the men having time during the next monsoons for "field cultivation". The students devoted one day a week to quantitative analysis, and, they went on with qualitative analysis whenever they could spare time. The practical work in veterinary consisted of dissections.

Class I.—The students of this class seem to be very keen on farm work. The oil engine enabled the men to do a fair amount of it. I pressed on the work in "Surveying and Levelling" so as to enable the students to work long hours on the farm during the next cultivation season. In general chemistry the class had qualitative analysis for two hours a week. For instruction in botany the class was divided into two batches, each batch having a field class once a week.

5. *Veterinary Hospital.*—Mr. S. L. D'Silva was in charge during the whole year with M.R.Ry. S. P. Swaminathan as hospital-keeper. The number of cases treated showed a small increase, the maximum under the present conditions having, I think, been reached. I have, however, submitted proposals to you which, if adopted, will, I hope, increase the number of bovine patients—*vide* your Proceedings, Ref. on C. No. 3590/4, dated 14th June 1904, and Dis. No. 6268, dated 11th October 1904.

The following are the figures usually given in the annual report:—

	1903-1904.	1904-1905.
Number of cases treated—		
Horses	435	386
Cattle	471	489
Other animals	312	357
Total ...	1,218	1,232
	Rs. A. P.	Rs. A. P.
Expenditure including establishment ...	2,249 9 0	1,984 9 8
Income	1,122 6 5	1,124 14 9

A report by Mr. D'Silva is submitted.

6. It is gratifying to note that a demand has arisen both in and out of Government service for passed students and that the supply is not equal to the demand. A list of students is maintained in my office and not a single man, who is worth employing, is unemployed.

7. All three classes underwent gymnastic instruction.

The "Recreation club" is in a satisfactory condition. The cricket pitch was relaid early in the year, but want of rain prevented its being brought into playing condition. Cricket was consequently handicapped during the year, but a few matches were played. Tennis and badminton were regularly played.

The Students' Association held fourteen meetings at which papers were read. In connection with the association, the celebration of the "College day" was held as a private function on 22nd October, and included a tennis tournament, athletic sports and a musical entertainment.

8. *Examinations.*—Five students of class III, the remnant of a class of nine men recruited in July 1901 by Mr. Thorne, appeared for the diploma in December and two passed. Taking individual subjects, the results in the two advanced ones were, I consider, very good, while those in the six intermediate ones, for which candidates appeared for the first time, were, I think, satisfactory, the percentages of passes in four of them being over 58. No candidate appeared for the first time in "Meteorology and Geology" as the students of the class II of 1904 appeared in it in April and December 1903.

Subject.	Candidates who appeared for first time.			Candidates who appeared after having previously failed.		
	Number.	Passed.	Percentage.	Number.	Passed.	Percentage.
1. Botany, Intermediate (Special) ..	12	7	58·3	2	1	50·0
2. Meteorology and Geology, Intermediate (Special).	..	..	..	3	1	33·3
3. General Chemistry, Intermediate (Special).	13	5	38·5	2	1	50·0
4. Anatomy and Physiology, Intermediate (Special).	15	12	80·0	..	..	..
5. Veterinary Science and Hygiene, Intermediate (Special).	5	4	80·0	..	..	..
6. Surveying and Levelling, Intermediate (Special).	12	7	58·3	7	3	42·9
7. Agricultural Engineering, Intermediate (Special).	16	6	37·5	2	..	·0
8. Agriculture, Advanced	5	3	60·0	..	..	..
9. Agricultural Chemistry, Advanced.	5	4	80·0	1	..	·0

9. The guaranteed appointment of Rs. 40, the Robertson prize of the value of Rs. 87-4-6 and the Clogstoun prize of the value of Rs. 45-6-2 were all won by K. Narayana Aiyangar, Matriculate, stipendiary student from the Tinnevelly district.

10. *Museum.*—Owing to the numerical weakness of the staff the museum naturally suffered. M.R.Ry. Y. Srinivasa Rao, however, after his appointment as acting sixth assistant, did some useful work in renewing specimens and adding to their number.

11. In conclusion, I desire to acknowledge the services of the staff and officers of the college. In several ways the year which has just closed was a very trying one and it speaks well for the assistant lecturers and other officers that my report contains no unfavourable feature.

APPENDIX I.

Statement giving particulars called for in Proceedings No. 10543 of 1898 (the occupation of parents added as in previous years).

Class.	Distribution of scholars according to wealth.			Occupation of parents.				
	Richer class.	Middle class.	Poorer class.	Officials.	Petty officials.	Traders.	Land-holders.	Others.
Class I	6	23	..	..	..	1	18	10
,, II	..	12	2	6	..	1	7	..
,, III	3	7	1	6	..	..	5	..
Casuals	4	..	..	1	..	..	2	1
Total ..	13	42	3	13	..	2	32	11

Average number on the rolls = 42 (41·6) Average daily attendance = 38 (38·2).

APPENDIX II.

Statement showing the distribution of students according to districts.

Districts or Provinces.	Class I.	Class II.	Class III.	Casuals.
1. Gódávari	3	1	..	..
2. Kistna	4	1	2	..
3. Guntúr	1	..	..	..
4. Bellary	1	..	..	..
5. Kurnool	..	..	..	1
6. Cuddapah	2	1	..	..
7. Nellore	..	1	..	..
8. Madras	..	..	..	1
9. Chingleput	..	1	..	..
10. North Arcot	2	..	..	..
11. South Arcot	..	1	..	..
12. Tanjore	3	..	2	..
13. Trichinopoly	..	1	..	..
14. Tinnevelly	2	1	1	..
15. Coimbatore	1	..	..	..
16. Salem	1	1	1	..
17. Nilgiris	..	1	..	..
18. Malabar	2	..	..	..
19. South Canara	..	..	..	1
20. Bombay Presidency	1	..	..	..
21. Mysore	..	1	..	..
22. Travancore	3	..	..	..
23. Hyderabad	..	..	2	1
24. Indore State	1	1	2	..
25. Gwalior State	..	1	..	..
26. Barwani State	..	1	..	..
27. Kathiawar	2	..	..	..
28. Punjab	1	..	..	..
Total ..	30	14	10	4

APPENDIX III.

Statement showing expenditure and income at Veterinary Hospital.

	1903–1904.	1904–1905.
Expenditure—	Rs. A. P.	Rs. A. P.
Establishment	1,066 12 0	858 0 0
Hospital charges	728 8 8	435 0 10
	* 185 13 8	* 503 13 10
Repairs to Veterinary hospital buildings ...	268 6 8	187 11 0
Total ...	2,249 9 0	1,984 9 8
Income—		
Subscriptions	24 0 0	24 0 0
Payment on account of stabling	259 12 5	298 13 3
Payment on account of advice and medicine.	598 4 0	659 6 0
Payment on account of sundry matters ...	240 6 0	142 11 6
Total ...	1,122 6 5	1,124 14 9

Note.—The figures marked with * are Accountant-General's adjustments.

APPENDIX IV.

Number of books in stock on 1st April 1904	2,309	(4 lost)
Number added during 1904–1905	41	
Total ...	2,350	
Books taken by staff	317	
Books taken by students	541	
Total ...	858	

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APPENDIX V.

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

No.	Items.	Budget estimate, 1904–1905.	Expenditure. 1903–1904.	Expenditure. 1904–1905.
		Rs.	Rs. A. P.	Rs. A. P.
1	Principal and Vice-Principal	20,400	19,001 10 3	15,345 0 0
2	Masters and teachers	12,570	11,293 5 9	10,586 8 8
3	Establishment	2,508	2,393 4 8	2,412 9 8
4	Travelling allowances	350	329 10 9	271 12 9
5	Veterinary hospital establishment	858	1,066 12 0	858 0 0
6	Supplies and services—			
	Library allowance	150	210 7 0	53 2 0
	Prize allowance			50 0 0
	Scholarships	..	..	..†
	Petty works of construction	50	1,484 13 5	14 13 6
	Laboratory charges	450	462 11 6	459 13 5
	Hospital charges	1,184	728 8 8	435 0 10
	Repairs to Veterinary hospital buildings		326 12 2‡	503 13 10‡
			268 6 8	187 11 0
	Furniture and appliances including Europe stores and purchase of live-stock	2,900	1,040 15 0	274 5 0
			1,346 12 10‡	74 4 2‡
	Batta and carriage to agricultural students	450	372 2 5	499 5 11
	Farm sunexe	8,500	7,151 13 8	8,500 0 5
	Botanical garden	1,000	848 2 4	999 15 7
7	Contingencies—			
	Petty repairs to buildings	1,200	1,515 2 7	1,206 14 7
	Cleaning charges	43	40 0 9	40 7 0
	Rents, rates and taxes	216¾	171 8 0	216 12 0
	Repairs to furniture	65	37 12 0	65 14 10
	Tour charges	100	77 11 2	93 8 9
	Postage charges	90	91 10 0	97 1 0
	Telegraph charges	10	11 1 0	8 10 0
	Purchase of books	..	7 3 0	..
	Office expenses	415¼	391 1 5	371 7 10
	Miscellaneous	..	5 0 0	..
	Total ..	53,510	49,000 14 0	43,048 14 9
			1,673 9 0	578 2 0
	Receipts.			
	Farm sunexe	..	4,440 4 8	4,015 6 7
	College fees	..	594 0 0	940 0 0
	Rents and miscellaneous	..	239 2 3	242 11 5
	Veterinary hospital	..	1,122 6 5	1,124 14 9
	Total ..	..	6,395 13 4	6,323 0 9

* Includes Rs. 825 being exchange compensation allowance.
† Rupees 3,136-5-10 are to be charged against separate provision in the Educational budget.
‡ The figures marked with ‡ under the head "1904–1905" are Accountant-General's adjustments *up to date*.
The figures marked with † under the head "1903–1904," are also Accountant-General's adjustments.

APPENDIX VI.

Letter—from Mr. S. L. D'Silva, Acting First Assistant, College of Agriculture, and Officer in charge, Government Veterinary hospital, Saidapet.
To—the Principal, College of Agriculture.
Dated—17th April 1905.

I beg to submit my report on the working of the hospital during 1904–1905.

I continued to be the officer in charge and M.R.Ry. S. P. Swaminathan the hospital-keeper during the year.

The number of cases was 1,232 (horses 386, cattle 489, other animals 357) against 1,218 (horses 435, cattle 471, other animals 312) in the previous year. The increase is slight, and I dare say the number of cases has well nigh reached the maximum. During the seventeen years I have been connected with the hospital, the number of cases has steadily risen from about 200 in 1888–89 to 1,232 in the year under report. It is possible to improve the cattle practice and proposals have been submitted to this effect. At present the cattle of the poor ryots are treated free and, of in-patients, also housed free, but as a rule, the owners have to make their own arrangements as regards feeding and attendance other than medical. If feeding and attendance were also undertaken at the hospital expense, their number would probably increase.

Among the cattle patients treated, there were thirteen cases of epizootic aphtha. These were calves that came from the King Institute of Preventive Medicine. All but one recovered. During the year there came up for castration three ponies, twelve bulls and sixteen dogs. There was but one casualty, and it was amongst the bulls. There were four cases of canine rabies which, of course, all ended in death.

The receipts during the year were Rs. 1,124-14-9, of which Rs. 142-11-6 were for "sundries." The receipts of last year were Rs. 1,122-6-5, of which Rs. 240-6-0 were for "sundries." So far as subscriptions, stabling, advice and medicines go, there was therefore a satisfactory increase in the receipts.

Letter—from W. Keess, Esq., M.A., M.R.A.C., Principal, Madras College of Agriculture.
To—the Director of Public Instruction.
Dated—Saidapet, 1st May 1905.
No.—D. 14.

I have the honour to submit reports on the farm and Botanical garden prepared under my direction by M.R.Ry. J. Chelvarenga Raju, acting Fourth Assistant and Farm Manager, and M.R.Ry. T. V. Narayana Rao, acting Fifth Assistant and officer in charge of the Botanical garden. I have had the reports drawn up in detail in hopes that you will furnish me with 100 printed copies, which if done will save the farm officers a great deal of writing. Recently there have been many enquiries concerning crops, experiments, etc.; and the probability is that the number of such enquiries will increase. If the reports, now submitted, were available in print, enquiries could be replied to by sending the enquirer a copy of the report with a few additional remarks. Otherwise all information must be sent in manuscript.

2. M.R.Ry. C. K. Subba Rao, acting Vice-Principal, had charge of the farm and Botanical garden till 18th July, on which date he reverted to the Agricultural Department. The charge of the farm and garden then devolved on me and I remained in charge for the remainder of the year.

3. On assuming charge I appointed M.R.Ry. J. Chelvarenga Raju, acting Fourth Assistant, Farm Manager and placed the Botanical garden under his orders. When M.R.Ry. G. Krishna Prabhu, First Assistant, reported sick in August, I removed the Botanical garden from the charge of the Farm Manager who at the time had too much to do and placed it under M.R.Ry. T. V. Narayana Rao, acting Fifth Assistant. Both the officers named have had considerable experience of the management of land and the arrangement has worked very well.

4. My first care was to attend to the instructions conveyed in paragraph 6 of your proceedings, Dis. No. 5250, dated 22nd August 1904, directing me to get the farm land into good condition as soon as possible. Being well seconded by the farm officers I think I may flatter myself that the land is now in as good condition as it ever will be and many visitors have remarked on the freedom of the farm from weeds and on the good agricultural condition of the various fields. I further made sundry changes in the duties of the officers, which I think have had a beneficial effect on the working of the farm. The bailiff has been relieved of the greater portion of his former office work and is made to spend most of his time supervising the coolies.

5. The season was most unfavourable, the rainfall amounting to only 22·30 inches. The crops on over 50 acres entirely failed and needless to say those on the remainder of the farm suffered. A bad season, however, is not without its lessons; for it accentuates the necessity, not only for providing more efficient means than at present exist for raising water but also, for cultivating the land in such a manner as to conserve moisture. Were it not for the oil-engine, which the Agricultural Department supplied, the farm would indeed have been in a desperate condition. Were it not that over 30 acres of uncropped land had been deeply and well ploughed, the farm must have lost over 30,000 lb. of green fodder, which were raised with the help of a few showers which fell during the closing months of the year. I am bound to confess that when the land in question was sown with horsegram I had serious doubts as to whether the seed was not being wasted and several experienced agriculturists were of opinion that it was hopeless to expect any outturn. The result has been stated.

6. Owing to want of water for irrigation the area under paddy was considerably restricted. Where irrigation was available fairly good crops were obtained. Ground-nut failed. The reed-cane raised from Trichinopoly seed does not seem to possess any advantage other than its immunity from the attacks of jackals. The juice obtained was poor in cane sugar (about 8 per cent.). Of course any opinion passed on a crop after a very bad season should not be accepted as final and the cane will be tried again. Cotton was distinctly successful as may be seen from the tabular statement and cottons, suitable to the soil at Saidapet, should, I think, be persevered with. The area under plantains excited much interest among visitors.

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7. The livestock suffered severely from want of pasture and the young calves, in spite of artificial feeding, got into bad condition. It was impossible to get fair prices for the surplus stock and consequently the farm was overstocked. The dairy, though located in a not altogether suitable building, worked well.

8. About 10½ acres were set aside for experiments. There was no special staff available for the additional work and much inconvenience at times resulted from the farm officers being obliged to leave their regular duties to attend to the experiments. If experiments, other than those meant for the benefit of students, are to be undertaken in future years, an agricultural Inspector should be put on duty at Saidapet to look after them and record the results. Some of the varieties of paddy tried proved excellent yielders; but before a final verdict is arrived at they should be grown on a large scale. The fodder yielding cholams from Bombay though grown under irrigation did badly. The experiments with ragi, undertaken for the benefit of students to compare the ridge and bed systems of growing it, seemed to indicate that the former was preferable, as it cost less, was easier to irrigate and yielded almost as well as the latter. The irrigation experiments with ragi undertaken at the request of the Superintending Engineer on special duty at Chepauk were interfered with by rain. The cotton experiments show that some varieties yield well at Saidapet and I think efforts should be made to grow selected varieties on a large scale. There were several varieties of indigo tried. The seeds of *Indigofera arrecta*, which is said to contain one per cent. of Indi can, germinated after the outer coating has been partially removed by rubbing. Mauritius ground-nut, which was treated as a dry crop, failed. Owing to an unfortunate misunderstanding, which was discovered too late, all the other varieties of ground-nut failed. Forty-four varieties of plantains were obtained from different parts of the Presidency and grown in a field near the farm buildings. It is probable that many of the varieties are really the same variety under different names. In any case the area growing these plantains presented a fine appearance and was one of the show spots of the farm.

9. Of all the experiments conducted during the year the one in connection with the oil-engine located on the left bank of the river Adyar excited the greatest interest and hardly a day passed without visitors coming and looking at the engine and pump and in many cases making enquiries about them. The engine is a Hornsby Ackroyd one of 6½ horse-power and is at present fitted with a four-inch Gwynne's invincible pump. The engine began to work in June, but many difficulties arose at first such as the appearance of cracks in certain working parts, delays in connection with fitting up the pump and the apparent unsuitability of liquid fuel. The figures in connection with the engine up to the end of October are not, I consider, of much value. Those from 1st November to 31st March may be accepted as correct. The engine can raise 11,400 gallons per hour from a depth of 25 feet, the corresponding figure for a single mhote being 1,500 gallons. It can therefore be said that the engine can do the work of 7½ single mhotes. Using the figures available for the period November-March the manager calculates that engine-raised water cost the farm 1 anna for 1,500 gallons, mhote-raised water being estimated at 1 anna for 1,000 gallons. In both calculations depreciation and interest on capital are included.

All attempts at working the engine on the farm with liquid fuel have failed. If used the engine runs well for two or three hours when certain parts become choked with soot. At present cheap kerosine-oil is being burnt.

The methods of distributing water to different fields by means of raised open channels entails a great deal of waste. Soakage into the sandy soil of Saidapet and evaporation must account for a considerable proportion of the water lifted. When the future working of the farm is settled cement covered channels might, with advantage, be constructed.

10. M.R.Ry. T. V. Narayana Rao, Acting Fifth Assistant in charge of the Botanical Garden, has submitted an interesting report on the working of the area under his care. He succeeded the late M.R.Ry. G. Krishna Prabhu as lecturer in Botany and it seems an appropriate arrangement that the lecturer in Botany should hold charge of the Botanical Garden. Under M.R.Ry. T. V. Narayana Rao's management the garden has much improved in appearance while its educational value has been increased. Perhaps the portion of the garden which excited most interest among

visitors was the one in which different varieties of sugarcane were raised. There is no doubt the garden possesses some valuable varieties of sugarcane, which thrive well under the conditions of soil and climate obtaining at Saidapet. A glance at M.R.Ry. T. V. Narayana Rao's report will show that students and visitors must have derived much instruction from the specimen and other crops and vegetables cultivated.

11. In conclusion, I desire to bring to your notice the excellent service rendered by M.R.Ry. J. Chelvaranga Raju as Farm Manager. His long experience as bailiff and his extensive acquaintance with the agricultural practices of the Presidency stood him in good stead when the management of the farm was entrusted to him. M.R.Ry. Y. Srinivasa Rao, who was bailiff till November, worked well while his successor M.R.Ry. V. S. Subramania Sastri, the present acting bailiff, has shown that he is a very good supervisor of labour. M. Raman, who was appointed to act as second clerk and assistant bailiff from 1st January 1905, has given satisfaction. In the previous paragraph I have commented on the good work done in the Botanical Garden by M.R.Ry. T. V. Narayana Rao, Acting Fifth Assistant.

Enclosures.

Letter—from M.R.Ry. J. Chelvarenga Raju, Acting Fourth Assistant and Farm Manager.
To—the Principal, College of Agriculture, Saidapet.
Dated—25th April 1905.
No.—D. 12.

I beg to submit the report on the working of the College Farm, Saidapet, for the year 1904–1905.

2. *Season.*—The season on the whole was a most unfortunate one for all crops and especially for wet land crops. The total rainfall was 22·30 inches on 81 days the average of the previous 34 years being 50·78 inches.

Hot weather.—There was no rainfall in April. In May four slight falls in the last week, amounting to 0·88 inch, did not attain the average of last 34 years. However, a hot weather crop of gingelly was sown.

South-west monsoon.—During June the rainfall was below the average, the quantity registered being 1·14 on 10 days and consequently a considerable portion of the land was not ploughed as usual. July was as usual marked by numerous small showers. The total rainfall was a little above the average and advantage was taken to utilize this in sowing horsegram for fodder, cumboo with dhall as mixture, ground-nut, and also in preparing a considerable breadth of land for dry crops. In August the rainfall was below the average. However, the rainfall of over 2 inches collected in a single day in the first week pushed on the sowing of dry crops, unirrigated cereal fodder crops and also admitted of the tillage for cold weather crops. September did not bring even half of the average. The rainfall during the third week of September tempted us to sow dry paddy and to prepare paddy nurseries under wells.

North-east monsoon.—The failure of the north-east monsoon rains in October and chiefly in November was the principal cause of the failure of wet crops, because the Mailapur tank which these rains usually replenish was not filled. The dry crops were also affected by the failure. Although the rainfall collected in December was much below the average yet the falls during the first and the third weeks favoured the sowing of unirrigated leguminous fodder crops in a large area.

Dry-weather, January—March.—The rainfall registered was slightly higher than the usual average and this helped the growth of fodder crops grown in December and January to some extent. The statement of rainfall forms Appendix 1.

3. *Implements, Machines, etc.*—The gorru (native seed drill) was used in sowing all dry paddy and the majority of dry crops. The students had the advantage of handling the same whenever opportunities afforded. The improved European implements such as ploughs, harrows, Junior hoe, winnowing machine, chaff cutter, etc., were used. So also were the double and single mhotes in lifting water. A 6½ horse power oil engine was fitted up on the left bank of the river Adyar about which a separate report is appended. Mr. Chatterton supplied the farm with a new chrome tanned bucket about the close of the official year in exchange for the one referred to in last year's report. The same is being used now and the results will be carefully noted.

4. *Manures.*—About 166 tons of farm yard manure (from loose boxes, cattle byres, and sheep pens) were collected this year as per Appendix 7. With the exception of working cattle all others were tied in byres. The manure pit referred to in last year's report was provided with a thatch cover to demonstrate to the ryots in the vicinity and to the students the benefits

of manure collected under cover. At present the collecting of urine in pots and carrying the same to the pits which are long way off entails much labour. It is proposed to have a small barrel cart like a conservancy cart for removing urine.

The night-soil manure continues to be collected from students' cottages and officers' quarters.

The manures purchased during the year cost Rs. 154–6–1 and represent the marginally-noted. In addition to the above, stable manure kindly given free by Messrs. Krcrouse Madden and Mackinnon to the extent of over 100 carts was used to several field crops after being decomposed in pits. Arrangements have already been made to cart tank silt from the Mylapore tank to several dry fields not getting manure annually. The work will be completed during the hot weather.

Lime.	Stable manure.
Ashes.	Castor cake.
Slaughter-house refuse.	Salt.
Tannery refuse.	Saltpetre.
Pigs' dung.	

5. *Crops.*—Appendix 2 contains statements regarding crops grown during the year—

Statement A.—Particulars of all crops grown.

Statement B-I.—Details of experiments undertaken at the request of the Government Botanist.

Statement B-2.—Details of experiments undertaken at the request of the Government Botanist.

Statements C and D.—Details of experiments undertaken at the request of Deputy Director of Agriculture.

Statement E.—Details of experiments undertaken at the request of the Superintending Engineer on special duty at Chepauk.

Statement F.—Experiments for the information of students.

6. At the commencement of the year the extent of land available for cultivation including the cemetery lands temporarily handed over to the farm by the Madras Corporation was 97·11 acres. Out of this area, crops were standing in 14·86 acres on the 1st of April 1904. The area of crop raised during, the year (including crops standing on 1st April 1904 and double crops) was 141·087 acres. The following figures show the state of affairs on the 31st of March 1905 :—

—	Ordinary.			Experimental.			
	Already harvested.	Standing on 31st March 1905.	Failed.	Already harvested.	Standing on 31st March 1905.	Failed.	Total.
Food grains—							
Cereals { Unirrigated	6·02	..	18·36	..	..	..	24·38
Cereals { Irrigated	8·47	2·12	..	3·03	·94	..	14·56
Pulses	·50	..	..	..	..	..	·50
Fodder { Unirrigated cereals	..	..	2·94	..	..	..	2·94
Fodder { Irrigated do.	9·39	6·20	..	..	..	..	15·59
Fodder { Unirrigated Leguminous	30·77	2·66	28·10	..	..	..	61·53
Industrial	4·55	7·05	..	1·50	2·175	2·872	18·147
Miscellaneous	1·12	1·37	·81	..	·14	..	3·44
Total	60·82	19·40	50·21	4·53	3·255	2·872	141·087

7. The area of unirrigated cereal crops raised during the year was 24·38. Of this area a major portion to the extent of about 12 acres was grown with different sorts of paddy drilled under the dry system and about 4½ acres with different crops such as wheat, cumbu, tenai, shamai, common millet, and saunwa millet, all of which failed for want of rain. The only unirrigated cereal that grew was Varagu which occupied nearly 6 acres, but it gave a poor yield. Irrigated cereals occupied about 14½ acres, 4 of which were devoted to experimental purposes; of the remaining 10½ acres less than 2 acres each were occupied by ragi and white cholam, respectively, and about 5 acres by sirumani and 60 days samba paddy. The sirumani crop was transplanted and the 60 days' samba was broadcasted sprouted under puddle. Both of these received lift irrigation from wells and yielded well. A small area of less than ½ acre was grown with wheat which gave poor results. At present 2 acres of ragi remain standing in the field. About half an acre of Bengal gram was grown, but it yielded poorly.

8. *Fodder crops.*—About 3 acres of cholam were grown for fodder without irrigation and completely failed. So also did the horsegram sown for fodder purposes in about 29 acres in the month of July. These were grazed by cattle and ploughed in. About 15½ acres of irrigated cereal fodder crops, chiefly cholam, were grown, about 6 acres of which are standing now

and yielding fodder. The 9 acres already harvested yielded at 8,827 lb. of green fodder per acre. About half an acre was grown with paddy (dry variety) for fodder which yielded in one cutting 3,666 lb. of green fodder per acre.

Leguminous fodder crops were raised in 33 acres with the help of dry weather rains, of which 3 acres are standing. The remainder gave on an average 1,033 lb. of green fodder. It is a fact worthy to note that the success of the crop was evidently due to the deep ploughing the fields had. Had the ryots in the vicinity taken the same precaution they would have been provided with some quantity of very good fodder especially at a season like the one experienced when the price of straw is more than Rs. 22 per ton. Several of the adjacent land-holders were struck with the crop that was raised with so small a rainfall and were quite convinced about the advantages of deep ploughing.

9. *Industrial crops.*—Out of 18 acres grown with industrial crops, in 7 acres crops are standing now, about 6½ acres were set apart for experimental cultivation of industrial crops at the request of the Government Botanist. Of the remaining area groundnut of sorts occupied about 1½ acres, reed cane ·11 acre and gingelly 3 acres.

Groundnut.—About seven sorts of groundnut stated in Appendix 2 (statement A) were grown side by side taking advantage of July rains. The variety, sine, did not germinate well even though seeds were sown twice. Only a few plants germinated, which yielded poorly. The germination of all other varieties was good and the crop was favoured by the rains in July and August in the early stages, but at a period when the plants were sending pods underground irrigation had to be deferred owing to the want of a raised water canal from the oil-engine and other unforeseen causes. The crop was however irrigated twice liberally in November, which no doubt assisted the formation of new pods. The first formed pods germinated by the rain in the latter part of December. Some of the pods were damaged by crows and jackals. The crop was also affected with a fungoid disease resembling tika; white ants boring into the pods, surul puchi, and another new disease in which the pods were damaged by a worm. These rendered the crop useless.

Gingelly.—This was sown with the help of the hot weather rains; out of the 3 acres grown with this, germination in 2 acres was far from satisfactory. The crop in one acre gave a pretty fair yield of 100 Madras measures per acre.

Reed cane.—This was obtained from Trichinopoly and planted in one of the best fields of the farm. The crop suffered from want of water owing to the constant stoppages of the oil-engine at very critical periods of its growth. During February the crop was cut and an attempt was made to demonstrate the manufacture of jaggery to students. The yield of jaggery was poor and on analysis the cane was found to contain only 8 per cent. of cane sugar in the juice. Probably the failure of timely rains and irrigation had something to do with this. A portion of the crop has been reserved for the manufacture of jaggery after it has received regular irrigations. It is a fact worthy of notice that this cane is a proof against jackals, but the commonly accepted opinion that it resists drought and disease has yet to be confirmed.

Cotton.—About 1·2 acres were grown with karungany and uppam, the varieties which yielded the best in light soil last year amongst the different cottons tried experimentally. This was sown in alternate lines with maize at a distance of 2 feet apart and 1 foot between plants. The germination was not uniform owing to dry days following immediately after sowing. Blanks were filled up subsequently and maize was harvested early which yielded some very fine cobs. These were sold green and some good ones were reserved for seed. The cotton was irrigated and continues to yield. The outturn is encouraging and full results will be completely noted for next year's report.

10. *Miscellaneous crops—Sweet potato.*—In about three-fourths of an acre the vines of nansmond variety obtained from Poona were planted. The tubers were affected with disease and did not form well probably owing to the lack of irrigation due to constant stoppage of the engine.

Brinjals were raised in about ·70 acre. The seeds were obtained from Berhampur. The field was divided into two portions of ·25 and ·45 acre and manured with half a ton of tannery refuse and 196 lb. of castor cake respectively. The latter gave better results. Both the plots were affected with three sorts of diseases and suffered from want of pump water.

Plantains.—These were grown in 1·37 acres, Mauritius or the dwarf variety occupying ·54 acre. The rest of the block was planted with local sorts, Peyan and Bengala. The former was planted according to the Gódávari system, viz., at a distance of 12 feet apart allowing suckers round the parent plant throughout its life; whereas the other sorts were planted at a distance of 6 feet apart and only one sucker was allowed by the side of the parent plant. The crop is standing and the results will be carefully noted when the plants begin yielding.

Cucumbers.—This was grown in ·42 acre in the intervening spaces of plantains with the object of utilizing the space left between the plants grown according to the Gódávari system. The crop no doubt suffered in the early stages from lack of irrigation from the oil-engine, but was protected by pot irrigation until the engine was set right. The crop was manured with tannery refuse and yielded well, the money value realized from the same being Rs. 48-11-2.

11. *Plantation and avenue trees.*—The cocoanut seedlings referred to in paragraph 7 of the previous year's report were planted in 14-B and on the road sides. The growth of those on the road sides is interfered with by the korkapilly fence situated close by. Every attempt is being made to improve the growth. The cashewnut seedlings were planted in all available portions of the farm wherever there were gaps (especially in the tamarind tope), but all of them died.

12. *Live-stock.*—Owing to the absence of sufficient pasture consequent upon the failure of the monsoon and to the constant change of diet as regards concentrated foods the condition of the cattle was not very satisfactory. Efforts have been made not to change the diets often and to grow more fodder. The animals are now showing signs of improvement. Appendix 3 shows the number of live-stock in the farm at the commencement and end of the year. Appendix 4 shows the yield of milk from the farm cows during the official year. Appendix 5 shows in regard to some cows the yield of milk between the last and previous calving in order to indicate the milking capacity comparatively under normal conditions.

13. *Breeding bulls.*—As the present bulls in the farm have much deteriorated, arrangements are being made to get one or two breeding bulls from Nellore. Some of the small-sized cows brought by ryots for service have to be sent away without being served owing to the huge size of the farm bulls. It is therefore desirable to obtain a pair of small-sized bulls of the stamp of kangayams to serve this purpose. They will besides form an object-lesson to students.

14. *Sheep.*—Some of the old, black-faced and unhealthy animals were disposed of. A fresh ram has been obtained from Mysore Province for breeding purposes. This will be put to the ewes during the ensuing season.

15. *Dairy.*—The sanctioned new dairy room not having been constructed, it was thought desirable to get the present one repaired. A small quantity of butter is being manufactured daily for the practice of students. This finds a ready sale.

General.

16. *Distribution of seeds and implements.*—Several varieties of dhall, soy beans, cholam, etc., were obtained from Poona and Madras farms and were handed over to the Botanical Garden for trial.

The marginally-noted seeds were sold to many who evinced interest in growing them. Twenty varieties of cotton-seeds were sent to Mr. Oakes of Ootacamund in exchange for barley and oats kindly sent by him for trial.

Different sorts of paddy including Bombay varieties, maize, different sorts of cotton, sun hemp, Inga dulcis etc.

A drag harrow was made in the farm and sent to the Tanjore Agricultural Association. Several persons have indented for drag harrows. The work will be undertaken whenever the farm smith can spare time. The improved ploughs (without cattle) were lent on a few occasions to ryots in the neighbourhood of Saidapet whenever the farm was able to spare them. Certain mirasidars of Tanjore have applied for small ploughs of the pattern of the Neelakanta Asary's plough exhibited by the farm at the Tanjore Agricultural Exhibition. They were informed that such ploughs can be obtained from Messrs. Massey & Co.

17. *Agricultural exhibitions.*—Samples of field products available in the farm and several implements and tools were sent to the various exhibitions held in different parts of this Presidency. Two of the farm coolies who have won prizes at various shows were deputed to demonstrate the working of improved implements and, at the Tanjore Agricultural Exhibition, they were awarded prizes.

18. *Estate and permanent improvements.*—The portion of the land referred to in paragraph 3 of last year's report as having been handed over to Mr. A. A. Hall of the Teachers' College was given back by him during the year.

Several portions of the fields had to be levelled and arranged in such a manner as to admit of the flow of irrigation water from the oil-engine, located on the left bank of the river. The irrigation courses to conduct the water from the engine to the various fields had to be raised and constructed in a substantial manner. This work has only partially been done and a good deal remains to be done next year if proper distribution of water is aimed at.

19. *Insect pests and diseases.*—The marginally-noted crops were affected with several diseases; information about which was given to the Government Botanist from time to time. In addition to the collections of specimens of diseased plants taken by the Government Botanist separate specimens were also sent by the farm for identification.

Groundnut, brinjals, sugarcane, indigo.

20. *Finances.*—The original sum (Rs. 7,000) sanctioned for the farm was found to be inadequate and a further sum of Rs. 1,500 was asked for and obtained. The reasons for this excess of expenditure are as follows:—

(1) That certain expenditure incurred in March 1904 which ordinarily would be paid during that month was met from the funds of the following year.

(2) That a portion of the money was spent in matters not connected with agriculture, such as cumbli weaving and brick manufacturing.

(3) That the failure of the monsoon necessitated the farm purchasing a large quantity of paddy straw for the cattle which could otherwise have been obtained from lands grown under the Mylapore tank.

(4) That the expenditure in cakes, etc., has increased considerably owing to the heavy prices of cattle food.

(5) That many animals more than the requirements of the farm demand were maintained.

(6) That money was spent for laying out bunds, canals and distributing water courses for facilitating irrigation by the oil-engine.

(7) That a large amount had to be spent in labour to keep the lands free from the troublesome bulb grass and other weeds infesting several fields chiefly in the experimental area.

(8) That over 10 acres of land were devoted to experiments in connection with which the expenses were heavy. Appendix 6 shows the receipt and expenditure of the farm during the year.

21. *Experimental work.*—About 10·657 acres were utilized for experimental work; of this, 3·97 acres were set apart for irrigated cereals, 6·547 acres for industrial crops and ·14 acre for miscellaneous crops. The irrigated cereal crops consisted of different varieties of paddy, cholam of sorts and ragi. The industrial crops consisted of the several varieties of Indian cottons (sent by the Inspector-General of Agriculture), American cottons of sorts, field cottons grown in light soils of this Presidency, indigos of sorts, sugarcane and ground-nuts (field as well as variety plots). The miscellaneous crops consisted of the different available sorts of plantains of this Presidency.

22. *Bombay varieties of paddy.*—The seeds of these were obtained from the crops grown in the farm last year and referred to in previous year's report. At the suggestion of the Deputy Director of Agriculture these were tried according to different methods, viz., transplanted, sprouted and broadcasted in puddle, and sown dry by drill, treating at first as dry and later on as wet. The sowings were done at different periods of the year to ascertain the time suited for different varieties.

The partially dry and wet system completely failed. The crop raised under the puddled system by sowing sprouted seeds is standing in about ·94 acre. Statement C of appendix 2 shows the results of the several sorts transplanted in 1·17 acres. With the exception of No. 6 (Bengalia), the same seed rate was used in the nursery. The statement above referred to shows the different areas transplanted by the seedlings and the different weights of straw and grain obtained from different areas. This will furnish to some extent some information regarding the growth of grain and straw under each variety. The transplanted portion received manuring before planting, in the shape of farm yard manure and during its after growth 30 lb. of castor cake for each variety alike.

The area that could be spared for the growth of these was however too small to give any accurate idea of the yield. Statement D of appendix 2 gives the quantity of rice obtained, from these varieties, under different methods. The rice used for pounding being small the figures cannot be considered very accurate.

23. *Cholam of sorts.*—The marginally-noted varieties received from the Deputy Director of Agriculture as good fodder-yielding cholams of Bombay were tried side by side in less than half an acre under irrigation. The crop was very stunted and poor. It was therefore thought desirable to allow a portion to run to seeds in order to try the same next year with acclimatized seeds. The results will be noted carefully.

Sorghum amber.	Nilva.
,, collier.	Sundhia.
Utavali.	

24. *Ragi.*—This occupied 1·6 acres, the whole of which was harvested. Two sets of experiments were conducted—one for the benefit of students, viz., to ascertain the merits of ridge versus flat-bed system, and the other at the request of the Superintending Engineer on special duty at Chepauk to decide the quantity and application of water that is required by lift to mature a crop of ragi. The ridge *versus* bed system was tried in ·3 acre each. Statement F of appendix 2 shows the respective charges and results. Though the flat-bed system had yielded slightly better than the ridge system, the cost of cultivation incurred in the latter more than compensated for this. The ridge system was simpler to manage and required less time for irrigating the same area.

Irrigation experiments.—It was proposed to grow ragi in four equal parts of not less than ¼ acre each and to treat them as follows after planting. The first block to receive an irrigation equal to ½ an inch rainfall twice a week, the second to receive 2 inches of water once a fortnight, the third to receive 1 inch of water once a week and the fourth to receive 1 inch of water twice a week. The experiment could not be continued owing to the crop having been benefited by several light showers immediately after planting. It was only on two occasions after planting that lift irrigation had to be resorted to and on both the occasions the light rains followed and matured the crop. However the results are given in statement E of appendix 2.

25. *Cotton.*—The twenty varieties of cotton reported to be standing and yielding in last year's report were removed from the field about the end of July although some of the varieties, such as Goghari and Broach Deshi had a lot of unripe bolls in them, yet, the crop had to be abandoned as it was decided that these varieties need not be tried in this Presidency. Statement B-1 of appendix 2 shows the yield obtained till end of July 1904. It is a noteworthy fact to record that some of the varieties of this Presidency, viz., Uppam and Karunganny have yielded 802 and 1,069 lb. Kappas per acre respectively. In a soil like that of Saidapet farm, the results are surprising. Taking into consideration the total area of 1·34 acres actually occupied by all the twenty varieties grown, the total yield of 723 lb. Kappas obtained is decidedly above the average of the best cotton tracts of this Presidency.

American cottons.—Nineteen American cottons of sorts were received and grown in 1·79 acres as suggested by the Government Botanist. This area had to be divided into two sections of ·92 and ·87 acre respectively owing to the different methods under which the subordinate mixture cholum was grown with cotton. In the former case the cholum was left for grain and in the latter case for fodder. Full details of the crop will be obtained from statement B-2 of the appendix 2. The crop is still yielding and stands in the field.

Light soil field cottons of this Presidency, viz., Bourbon and Yerrapatti of Siruvel (Kurnool district) were tried side by side on ·10 and ·18 acre respectively. As the seeds were received from the Government Botanist long after the cotton-sowing season was over and as the crops were to be treated as dry crops, sowing had to be deferred till rains fell in December when at the suggestion of the Government Botanist the seeds were sown. The crops remain in the field and the results will be carefully watched and noted.

26. *Indigos.*—Small quantities of the six marginally-noted indigos were sent by the Government Botanist to be grown in the farm. Three more sorts, viz., seeds obtained from Guntúr, Yerraguntla and Indigofera arrecta from Trivandrum were also grown side by side. All sorts with the exception of Indigofera arrecta from Trivandrum were sown at a distance of 2 feet apart in rows intervened with a line of coriander between two indigo rows. Coriander was removed and sold in a green state. The germination of all the varieties was tried in pots before sowing and all germinated well with the exception of Indigofera longeracemosa and Indigofera arrecta. The former however germinated after considerable time, but the latter completely failed to germinate in pots. Several methods were tried to remedy the failure of germination and in this attempt two methods succeeded, one of which is similar to the one suggested by Mr. Coventry a few days later. The first method was to mix the seeds with equal quantities or more of sand, tie the same in a bag and soak it for an hour or two daily according to the method adopted for paddy seeds for sprouting. On the third day the seeds sprout and when this was sown plants germinated in the pot. The second and most convenient method was to add some fine sand to the seeds and to place the whole on a rough surface such as a stone or over a plank and to rub the mixture with feet wearing shoes on just as the ryots treat coriander seeds. The rubbing was discontinued when the external dull coating was brightened. When the seeds were treated like this the germination was good. The indigos were and are being irrigated whenever necessary. Herbarium specimens of the plants in flower were taken by the Government Botanist in March. Careful observations are being made as to which variety is affected by the dry weather. A fungoid disease hitherto not observed in indigo was noted in some of the varieties and the fact was communicated to the Government Botanist who declared it to be rust.

Indigofera arrecta, Sibpur.	Dehli indigo.
,, longeracemosa.	Nandyal.
Nandyal from Villupuram bazaars.	Proddatur.

27. *Sugarcane.*—Six sets, each of three new varieties of sugarcane received from Barbados by the Government Botanist were planted in an enclosed and protected area. One sort did not germinate at all. A few plants germinated in the rest and these were removed to the Botanical garden and planted there by the Assistant of the Government Botanist in February last.

28. *Ground-nuts.*—About 2·56 acres were sown with Mauritius ground-nut seeds obtained from Messrs. Parry & Co., Pondicherry. The sowing took place in August and the crop was treated dry without irrigation at the suggestion of the Government Botanist. The crop failed completely.

Groundnut variety plots.—The marginally-noted varieties of groundnut were sown in ·312 acre. The Government Botanist suggested that these should be tried side by side without irrigation to note which variety could resist drought and disease better. The sowing had to be deferred till 24th October for want of rain to prepare the land as suggested by the Government Botanist. Between each variety of groundnut two to three rows of lablab were grown to demarcate the portion, which were subsequently removed as per Government Botanist's suggestion. The crop completely failed.

Japan.	Gambie.
Sine.	Hant Saloum.
Ruffisque.	Senegal.
Mauritius.	Country.
Small Japan.	Spanish.
Tata's groundnut.	Virginia.

29. *Miscellaneous crops.*—Experimental plantains occupied ·14 acre. A few suckers of different varieties of plantains noted in the margin were obtained from different parts of the Presidency to ascertain their characteristics and to note which sort yields the best fruit. They are all doing well, but have not yielded any fruit. It is probable that the same variety goes by different names in different localities. Several applications from different parts of the Presidency were received for suckers, but owing to the plants not having come to maturity the requests were not complied with.

Kallar.

Mondan.	Rasthali.
Ladan.	Anaikomban.
Poovan.	Rasa valai.
Manilla.	Durai valai.
Nenthran.	Gundy.
Black plantains.	Red plantains.

Vangal, Coimbatore district.

Mula valai.	Mondan valai.
Rasthali.	Kuli valai.
Mada valai.	Pacha Nadan.
Pu valai.	

Samalkot.

Vamanakeli.	Malabar.
Korpura chakrakeli.	Battissa.
Amritapani.	Pai bonta.
Jagannathakeli.	Kommu areti.
Sapota.	Bonta botisa.
Bonta.	Pai valai.
Chakrakeli.	Guineas.
Yerra-chakrakeli.	Nalla-chakrakeli.
Budithe bonta.	

Chingleput district.

Kattai bondan.	Anai valai.
Poovan Sundan.	Poovadiyan.
Then valai.	Sevvalai.
Namaran valai.	Bengala.
Raja rasthali.	

30. *Oil-engine.*—About the end of January 1904, Mr. Chatterton informed the Acting Vice Principal, then in charge of the farm, that he meant putting up an oil-engine at Saidapet Farm and enquired how many acres the farm could undertake to cultivate with the aid of the engine. The Acting Vice Principal replied that an area of not less than 45 acres could be placed under the engine provided the engine was worked daily for 16 hours and that it could lift at 300 gallons per minute from a depth of 26 feet. Accordingly about the first week of February the plans and elevation of the riverside well where the oil-engine was proposed to be put up were sent to Mr. Chatterton.

During the first week of May the flooring and arrangements for fixing the engine were done by Messrs. Massey & Co. About the middle of that month an oil-engine of $6\frac{1}{2}$-horse power (Hornsby arkroyd) arrived; about the end of the same month the pump and its accessories arrived and the well wall was removed to fix the pump.

The pump was fitted up by Messrs. Massey & Co. about the 13th June 1904, when it was tried for the first time by the driver of Messrs. Massey & Co., using liquid fuel. The whole day a good deal of trouble was experienced as the engine often stopped. During the subsequent days the engine did not fare better and consequently Messrs. Massey & Co. decided to leave the engine in charge of the farm only when it was in complete working order. A driver who was in the employ of Messrs. Massey & Co. was deputed to be in charge of the same, Messrs. Massey & Co. supplying liquid fuel and paying the expenses of the driver during the month. The engine was very irregular during the whole of that week. During next week, the engine was working fairly though stopping often owing to the vapouriser cap being choked up with soot. About the end of the month two slits appeared in the water jacket chamber and this was duly reported to Messrs. Massey & Co., who attributed the same to some mistake in casting. The slit was followed by a small hole in the compression chamber. At this stage, an intelligent cooly of the farm was placed to learn the work under Messrs. Massey & Co.'s driver. On the 18th July the Principal took charge of the farm from the Acting Vice Principal. About the last week of July the supervisor of pumping stations removed the pump to Kadiampatty (Salem) and consequently the engine was without a pump till 10th August, when a pump was received from Kadiampatty which was fitted up on the 12th. This did not work owing to want of a foot valve. Messrs. Massey & Co. supplied the foot valve and even then the same state of affairs continued. About the 18th August a new pump "Invincible" was supplied by Messrs. Massey & Co., which worked smoothly. The engine, however, stopped constantly owing to soot blocking up the vapouriser cap. On the 1st September the driver of Messrs. Massey & Co. was sent back as the cooly of the farm was able to manage the work under the guidance of M.R.Ry. Y. Sreinivasa Rao, who was the then bailiff of the farm.

From the 1st August the charges of the driver of Messrs. Massey & Co. and the liquid fuel, etc., were borne by the farm. From 1st September records were maintained in the day-book regarding the working.

The expenditure statement, appendix 8, is divided into two sections, A and B; A shows the charges incurred by the farm (excluding the cost of oil supplied by Messrs. Massey & Co. and the wages of the driver till 1st August) from the time the engine commenced work till 31st October 1904 (period in which water lifted was not measured in cistern). B shows the expenses from 1st November to 31st March 1905 (period in which water lifted was measured in the cistern.

Different proportions of liquid fuel and kerosine oil were tried from time to time. When liquid fuel was mixed with kerosine oil in the proportion of $\frac{2}{3}$ of the latter to $\frac{1}{3}$ of the former,

which was found suitable at Melrosapuram, the engine gave trouble and did not run. With the following proportion the engine worked fairly smooth but not without stopping:—4 gallons of kerosine oil to 10 gallons of liquid fuel and well mixed, the mixture being consumed at the rate of $4\frac{2}{3}$ gallons for 8 hours. Consequently kerosine oil (Burmese Victoria Bulk) was obtained and used from 6th February 1905 and was found to suit the engine well. The engine is not giving trouble after the use of this oil.

The approximate area that was under the influence of oil-engine was 24 acres.

APPENDIX 1.

Rainfall statement for 1904–1905.

Month.	1903–1904. Total collected.	1903–1904. Rainy days.	1903–1904. * Wet days.	1904–1905. Total collected.	1904–1905. Rainy days.	1904–1905. * Wet days.	Average of last 34 years at Saidapet.	
1904.								
April	..	..	..	..	..	..	0·39	Hot weather.
May	4·52	4	4	0·88	4	3	1·75	Hot weather.
June	1·81	4	3	1·14	10	5	2·10	South-west monsoon.
July	3·63	10	9	5·41	15	7	4·04	South-west monsoon.
August	7·62	12	10	3·82	11	6	5·14	South-west monsoon.
September	9·98	15	14	2·70	8	7	5·42	South-west monsoon.
October	9·51	13	12	2·92	12	8	11·41	North-east monsoon.
November	18·58	11	11	0·34	4	1	13·59	North-east monsoon.
December	19·55	9	9	3·16	8	7	5·79	North-east monsoon.
1905.								
January	1·83	2	2	0·83	3	3	0·47	Dry weather.
February	..	..	..	0·35	3	1	0·46	Dry weather.
March	..	..	..	0·75	3	2	0·24	Dry weather.
Total	77·03	80	74	22·30	81	50	50·78	

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

APPENDIX 2.

Statement A.—Cropping statement, 1904–1905.

Crops.	Area in acres.	Outturn. Grain or seed. Amount.	Outturn. Grain or seed. Per acre.	Outturn. Straw or fodder. Amount.	Outturn. Straw or fodder. Per acre.	Remarks.
		Rs.	lb.	Rs.	lb.	
Paddy—						
Sirumoni transplanted	·50	1,041	2,082	1,624	3,248	Raised chiefly by lift irrigation supplemented by small amount of rain.
Sixty days' samba sprouted and sown in puddle.	4·35	9,270	2,131	6,936	1,594·5	Do. do.
Wheat	·40	50	125	*Nil.*	*Nil.*	Last year's crop poor crop. Straw not worth cutting.
Ragi irrigated	1·86	1,502	807·5	7,392	3,974·2	....
White cholam	1·36	353	259·6	7,840	5,764·5	Crops received two waterings in addition to 6·83 inches of rainfall registered during its growth.
Varagu and dholl	6·02	1,992	330·9	2,000	332·2 green fodder.	Dholl failed and abandoned and used as green manure.

APPENDIX 2—*cont.*

Statement A.—Cropping statement, 1904-1905—*cont.*

Crops.	Area in acres.	Outturn. Grain or seed. Amount.	Outturn. Grain or seed. Per acre.	Outturn. Straw or fodder. Amount.	Outturn. Straw or fodder. Per acre.	Remarks.
		LB.	LB.	LB.	LB. green fodder.	
Fodder crops—						
Cholam	8·97	..	..	79,296	8,829	5·47 acres gave two cuttings and 3·50 one cutting.
Horsegram	30·77	..	..	31,864	1,035·6	Crops sown between 10th December 1904 and 6th January 1905 and harvested in February and March respectively; rainfall collected during the period being 3·93 inches.
Paddy (pisni)	·42	..	..	1,540	3,666·6	Raised by lift irrigation supplemented by rainfall. Yield represents one cutting.
Pulses—						
Bengal gram and safflower (in borders).	·50	34 lb. Bengal gram and 15 lb. of safflower.	68 30	..	..	Crop poor.
Miscellaneous—						
Cucumbers	·42	14,000 fruits.	33,333·3 fruits.	..	..	The crop was grown in the interspaces of plantains, weight of 14,000 fruits = 7,000 lb., realised Rupees 48-11-2 by sale.
Brinjals	·70	2,883	4,118·6	..	..	Crop affected a good deal with two or three diseases and suffered from want of irrigation owing to stoppage of engine on various days when irrigation was necessary.
Industrial crops—						
Sugarcane (reed) ..	·11	..	..	..	..	2,160 canes weighing 1,561 lb. including tops which yielded 100 lb. jaggery. * The cane was found on analyses to contain only 8 per cent. of cane sugar in the juice.
Gingelly	3·00	358	119·3	..	..	Crop in two acres was very poor owing to bad germination.
Groundnuts of sorts—						
Sini	·16	3/8	2·3	..	..	Only four plants germinated even though sown twice. The crop was affected with disease. At a time when the crop required watering pump and engine were out of order. Jackals and crows removed pods from the surface.
Gambi	·16	20·25	126·5	..	..	Crops affected with fungoid disease and suffered from want of irrigation. Jackals and crows removed the pods.
Hantsaloum	·16	12	75	..	..	
Ruffisque	·16	12·5	78	..	..	
Jappan	·16	7	43·8	..	..	Suffered from want of irrigation and attacked with fungoid disease as well as by white ants boring the pods. Jackals and crows removed the pods.
Senegal	·16	13·25	82·7	..	..	Crop affected with disease and suffered for want of irrigation. Jackals and crows spoiled the crop.
Mauritius	·16	3	8·8	..	..	Crop affected with disease and suffered for want of irrigation. Jackals and crows removed pods.
Country	·32	17	53·1	..	..	Do. do.
Crop standing.						
Cereals—						
Ragi	2·12	..	..	..	..	....
Fodder—						
Cholam	6·20	..	..	..	..	....
Horsegram	2·66	..	..	..	..	....
Industrial—						
Sugarcane	5·04	..	..	..	..	....
Gingelly and indigo (mixed).	·81	..	..	..	..	....

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APPENDIX 2—*cont.*

Statement A.—Cropping statement, 1904-1905—*cont.*

Crops.	Area in acres.	Outturn. Grain or seed. Amount.	Outturn. Grain or seed. Per acre.	Outturn. Straw or fodder. Amount.	Outturn. Straw or fodder. Per acre.	Remarks.
Crop standing—cont.		LB.	LB.	LB.	LB.	
Industrial—*cont.*						
Cotton	1·20	..	..	..	..	·51 under Uppam and ·51 under Karunkani. Maize was grown in alternate lines, which yielded 4,532 cobs (reserved for seed and sold as cobs) + 132 lb. clean grain and 673 lb. straw. Maize received five irrigations and cotton seven till the end of official year. The yield of cotton till the end of official year is as below :— LB. Karunkani .. 115 Uppam .. 130 } The crops is still yielding.
Miscellaneous—						
Plantains	1·37	..	..	..	..	....
Crops failed.						
Cereals—						
Bombay varieties of paddy drilled by gorru.	2·50	..	..	..	..	
Paddy (pisni) drilled ..	1·17	..	..	..	..	
Paddy (gundu samba) drilled.	1·30	..	..	..	..	
Paddy (anaikombu sirumoni and gundu samba).	3·64	..	..	..	..	
Paddy anaikombu and pisni (broad casted dry).	2·10	..	..	..	..	
Do. do. ..	1·10	..	..	..	..	
Paddy nursery (gundu samba and anaikombu).	0·22	..	..	..	..	
Wheat	0 50	..	..	..	..	
Cholam for grain	0·90	..	..	..	..	
Cambu and dholl (mixed).	0·97	..	..	..	..	
Tenai (Italian millet) ..	0·99	..	..	..	..	
Shamai (little millet) ..	0·99	..	..	..	..	
Pani varagu (common millet).	0·99	..	..	..	..	
Kudiraival (sannvu millet).	0·99	..	..	..	..	
Cholam for fodder dry ..	2·94	..	..	..	..	
Pulses—						
Horsegram (for fodder) ..	28·10	..	..	..	..	
Miscellaneous—						
Sweet Potatoes	0·81	..	..	..	..	
Experimental cultivation.						
Paddy—			LB.			
Bombay varieties transplanted from nursery.	1·17	1,483·5	1,268	1,890	1,615	Full details are given in appended statements regarding yields and of individual sorts.
Cholam of sorts	·26	42·0	161·5	336	1,292	Details given in the body of the report.
Ragi	1·00	1,132·5	1,132·5	6,048	6,048	Separate statement shows results. This is the block in which irrigation experiments were conducted.
Do. bed	·30	361·0	1,203 3	1,456	4,853·3	....
Do. ridge	·30	347·0	1,156·6	1,400	4,666·6	Cost of cultivation (such as forming ridges, transplanting, irrigation, weeding and harvesting) is comparatively cheaper than bed system. Details are given in separate statement.
Cotton of sorts—		LB. OZ.	LB. OZ.			
Standing on 1st April 1904.	1·5	723 12	* 482 8	..	..	This includes 262 lb. 7 oz. yield shown in last year's report. * The yield per acre should be more as the area in which the plants were actually standing was 1·34 acres. Some space was left between the sorts. The area sown in the first column 1·5 represents area of field. Information regarding yields of different sorts is given in separate statements.

APPENDIX 2—*cont.*

Statement A.—Cropping statement, 1904–1905—*cont.*

Crops.	Area in acres.	Outturn. Grain or seed. Amount.	Grain or seed. Per acre.	Straw or fodder. Amount.	Straw or fodder. Per acre.	Remarks.
Experimental crops standing.						
Paddy—						
Bombay varieties sown, sprouted and broadcasted in puddle.	0·94	..	..	..	..	
American cottons of sorts.	1·79	..	..	..	..	Grown mixed with cholam for grain and fodder. Cholam was harvested. Cotton still yielding. Number of bolls obtained till 30th March is 2,881, weighing 385 oz. Full information regarding this is given in separate statement.
Field cotton—	0·10	..	..	..	..	
Bourbone	0 18	..	..	..	..	Just flowering and bearing.
Yerrapathy of Sirvel ..	0·091	..	..	..	..	
Indigo of sorts	0 014	..	..	..	..	Details are given in body of report regarding respective sorts.
Sugarcane	0·14	..	..	..	..	The crop was removed and planted in the Botanical Garden on 18th February 1905 by the Government Botanist.
Plantain of sorts	2·56	..	..	..	..	Details are given in the body of report.
Experimental crops failed—	0·312	..	..	..	..	
Mauritius ground nut ..		..	..	..	..	Failed for want of irrigation
Ground-nut of sorts ..		..	..	..	..	Sown late and the rain fall was not sufficient to maintain the crop. Details are given in the body of the report.

Statement B.—showing the area occupied by each variety of cotton, the quantity of seed sown, and the outturn (lint and seed) of each plot till 26th July 1904.

Serial number.	Name of variety.	Area in square feet.	Amount of seed sown.	(1904 April). Yield till 26th April as shown in the previous year's report.	Yield till 26th July 1904.	Total yield of crop.	Seed rate per acre.	Yield per acre.	Rank in yield.
			lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	
1	Kumpta	2,043	0 6	6 0	15 4	21 4	8 0	453 1	13
2	Goghari	2,270	0 8	3 2	18 14	22 0	9 10	422 0	14
3	Broach desi	5,675	1 0	8 14	43 12	52 10	7 10	414 0	15
4	Javari Hathi (black seeded).	3,178	0 8	7 14	20 0	27 14	6 13	382 0	17
5	Javari Hathi (white seeded).	3,632	0 8	14 12	27 4	42 0	6 0	503 0	11
6	Mungari	3,178	0 8	12 11	25 9	38 4	6 13	524 0	10
7	Uppam*	2,951	0 8	16 4	38 2	54 6	7 6	802 10	2
8	Northerns	2,497	0 8	11 7	21 9	33 0	8 12	575 0	7
9	Karangani*	2,270	0 8	15 0	40 12	55 12	9 8	1,069 0	1
10	Kuppam	2,724	0 8	17 7	31 10	49 1	8 0	785 0	3
11	Proddatur	2,951	0 8	12 8	26 1	38 9	7 6	569 0	8
12	Bani	5,448	1 0	30 1	20 15	51 0	8 0	408 0	16
13	Chanda cold weather ..	1,362	0 2	8 3	10 9	18 12	4 0	600 0	6
14	Varadi	3,632	0 8	27 3	26 5	53 8	6 0	642 0	5
15	Moto Mathia	4,540	0 8	27 8	31 8	59 0	4 13	566 0	9
16	Jari	2,270	0 8	18 11	21 1	39 12	9 10	762 0	4
17	Yerrapathy	1,816	0 8	7 13	7 15	15 12	12 0	378 0	18
18	Coconada	2,497	0 8	9 4	19 4	28 8	8 12	497 0	12
19	Mathio	1,135	0 4	4 13	4 1	8 14	9 10	340 0	19
20	Nadan	2,270	0 6	3 0	7 14	10 14	7 14	201 0	20
	Total ..	..	.. ..	262 7	458 5	720 12	.. ..	.. ..	..

* Messrs. Binny & Co. kindly valued the two samples on 20th January 1905 at As. 3–6 a pound (ginned cotton) and said that this would have been worth at As. 4–6 per pound about the same time last year.

APPENDIX 2—*cont.*

Statement B-2.

Number.	Name.	Seeds. Weight of seeds.	Seeds. Number of seeds in each sort.	Date of sowing.	Number of plants remained after germination. Single.	Number of plants remained after germination. Double.	Distance between. Two cotton rows.	Distance between. Two cotton plants.	Quantity of manure applied. Before sowing.	Quantity of manure applied. During growth.	Number of plants remained. After thinning and filling up blanks.	Number of plants remained. During flowering.	Number of plants remained. When gathering first bolls.	Date of First flowering.	Date of First gathering bolls.	After cultivation and irrigation. Number of irrigations given by 31st end of official year with dates.	Total rainfall collected during growth from date of sowing till end of official year. Amount.	Total rainfall collected during growth from date of sowing till end of official year. Number of days rain fell.	Yield till the end of official year. Weight.	Yield till the end of official year. Number of bolls.	Remarks.
	A.	oz.															Inches. Days.		lbs. oz.		
1 2416	Rassel	2½	507	2	67	74	4 feet from centre to centre.	3 feet apart in rows.	8½ tons of farm yard manure.		215	205	200	19th Dec. 1904.	10th Feb. 1905.	Four hoeings (November 25th, December 16th, January 16th and February 25th).	* October 2·27	+29 days.	1 4		1. Previous crop grown in this portion was cumbu and dholl. The land was ploughed with improved plough and ridged 2 feet apart. The furrows were subsoiled and farm yard manure was applied in furrows and the ridges were split up. 2. Black cholam for grain was sown in the alternate ridges on either side of ridge; cotton occupying a distance of 4 feet in the top of ridges. Cholam was harvested on 26th January 1905, which yielded 112 lbs. grain and 1,792 lbs. straw. Area .. .. .. 0·92.
2 2417	Fruit	2½	447	2	60	74					208	199	192	16th ,,	,,		November 3·16		1 3		
3 2418	Mathio	2½	706	2	25	133					291	270	262	16th ,,	,,		December 0·83		1 14		
4 2419	Christopher ..	2½	498	2	50	41					132	127	120	28rd ,,	,,		January 0·35		1 9		
5 2420	Chiese	2½	510	2	50	69					208	190	181	16th ,,	,,		February 0·76		1 5		
6 2421	Whittle	2½	625	2	60	67					194	184	175	20th ,,	,,		March 0·75		1 1		
7 2422	W. A. Cook ..	2½	586	2	56	61					178	171	165	20th ,,	,,				1 14		
8 2423	Boyd's Prolific ..	2½	700	2	40	100					240	230	228	12th ,,	,,				1 11		
9 2424	Holy's Prolific ..	2½	705	2	42	95					232	226	217	16th ,,	,,						
10 2425	Hareudon ..	2½	622	2	46	76					198	168	158	16th ,,	,,						
	B.																				
11 2426	Cameron	2½	656	2	22	66					154	140	134	25th Dec. 1904.	15th Feb. 1905.						
12 2427	Dearing	2½	740	2	50	63					176	158	144	20th ,,	11th ,,						
13 2428	Mathew's long staple.	2½	685	2	42	48					138	120	108	1st Jan. 1905	23rd ,,						
14 2429	Texas Burr ..	2½	510	2	30	22					74	60	54	19th Dec. 1904.	11th ,,						
15 2430	Braddy	2½	727	2	52	65					182	160	148	16th ,,	27th ,,						
16 2431	King's improved.	2½	712	2	56	50					156	130	122	28rd Dec. 1904.	15th ,,						
17 2432	Smith's improved.	2½	608	2	40	35					110	90	81	3rd Jan. 1905.	27th ,,						
18 2433	Dickens	2½	825	2	50	37					124	100	91	28rd Dec. 1904.	15th ,,						
19 2300	Seeds from England.	2½	480	2	40	15					70	50	49	3rd Jan. 1905.	27th ,,						

APPENDIX 2—*cont.*

STATEMENT C.—Bombay and other varieties of paddy.

Number of varieties.	Names of varieties.	Date of sowing in the nursery.	Quantity of seeds sown in the nursery.	Area transplanted from seedlings obtained.	Date of transplanting in the field.	Yield. Grain. Immediately after threshing.	Yield. Grain. When fit for storing.	Yield. Straw. Weight immediately after threshing.	Yield. Straw. Weight when fit to be stacked.	Yield per acre. Grain. On the day of threshing.	Yield per acre. Grain. On the day of storing.	Yield per acre. Straw. On the day of threshing.	Yield per acre. Straw. On the day of stacking.	Rank in yield. Grain. On the day of threshing.	Rank in yield. Grain. On the day of storing.	Rank in yield. Straw. On the day of threshing.	Rank in yield. Straw. On the day of stacking.	Remarks.
	Bombay varieties.			CENTS.		MDS. Lb.	MDS. Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	No.	No.	No.	No.	
1	Shirbathi	9th Sept. 1904.	1 M.M.	4·2	15th Oct. 1904.	18½ 44	16½ 39	252	70	1,047½	928½	6,000	1,667	19	20	11	5	29th Dec. 1904. Nos. 3, 4, 8, 10, 11, 12, 13, 14, 15, 17, 18 and 19 could have been harvested a week earlier, had it not been for rainy and cloudy days.
2	Zina Columbia	Do.	Do.	5·6	Do.	41 106	39¼ 89½	280	112	1,893	1,602½	5,000	2,000	4	5	5	7	3rd Jan. 1905.
3	Tin Punkhali ambi mohar	Do.	Do.	4·62	Do.	30 65½	25½ 61½	168	84	1,418	1,336½	3,636	1,818	11	11	8	14	10th do.
4	Jirasal	Do.	Do.	5·6	Do.	28 70	26 65½	168	84	1,250	1,165	3,000	1,500	16	16	12	6	10th do.
5	Halwa gudya	Do.	Do.	4·48	Do.	40 105	36½ 86½	252	84	2,343½	1,925½	5,625	1,875	3	3	3	2	3rd do.
6	Bengalia	Do.	5 ollocks.	·72	Do.	8 21	7 18½	28	28	2,916½	2,604	3,889	3,889	2	2	7	4	29th Dec. 1904.
7	Rajavel	Do.	1 M.M.	4·32	Do.	25½ 61½	24 58½	224	84	1,423½	1,348½	5,385	2,019	10	2	4	2	3rd Jan. 1905.
8	Ambi mohar	Do.	Do.	5·76	Do.	32½ 74½	29½ 73	140	84	1,297½	1,280½	2,431	1,459	15	12	17	15	11th do.
9	Do. (Thana district)	Do.	Do.	9·1	Do.	33½ 79	29⅝ 70½	196	70	808	774½	2,154	769	21	21	20	22	28th Dec. 1904.
10	Sukhvel	Do.	Do.	4·8	Do.	37 88	36 84	140	70	1,845½	1,760	2,917	1,459	6	4	13	16	11th Jan. 1905.
11	Do. (Surat district)	Do.	Do.	4·32	Do.	30⅝ 70	27⅝ 65½	98	56	1,637½	1,510½	2,356	1,346	6	6	18	18	Do.
12	Kamod (Surat farm) ..	Do.	Do.	5·64	Do.	34½ 79	30⅝ 70	126	70	1,414	1,241	2,234	1,241	12	14	19	19	Do.
13	Do. (Kaira district) ..	Do.	Do.	7·2	Do.	38½ 90¼	35 82	196	112	1,250	1,149½	2,722	1,555	17	17	15	13	Do.
14	Welchi (Surat farm) ..	Do.	Do.	7·0	Do.	60¼ 109	42½ 96	336	196	1,557	1,378½	4,800	2,800	7	8	6	8	Do.
15	Do. (Thana district)	Do.	Do.	5·6	Do.	33½ 73¼	29½ 69	196	98	1,308	1,236½	3,500	1,750	14	15	9	9	Do.
16	Tin Punkhali (early) ..	Do.	Do.	5·6	Do.	25 56	22¼ 52¼	196	98	1,000	933	3,500	1,750	20	19	10	9	23rd Dec. 1904.
17	Columbia	Do.	Do.	7·0	Do.	42¼ 94⅜	37⅝ 87	182	98	1,358½	1,243	2,600	1,400	13	13	16	17	11th Jan. 1905.
	Bengal varieties.																	
18	Dadkhani	9th Sept. 1904.	1 M.M.	5 6	15th Oct. 1904.	39 88½	35½ 79½	154	98	1,501	1,419⅜	2,750	1,750	8	7	14	10	29th Dec. 1904.
19	Badshah bhog	Do.	Do.	7·7	Do.	37 84½	32⅝ 77½	112	70	1,079½	1,006½	1,455	909	18	18	22	21	11th Jan. 1905.
	Central Provinces varieties.																	
20	Chennur	9th Sept. 1904.	1 M.M.	1·2	15th Oct. 1904.	26¼ 57¾	23 51	112	70	4,812⅜	4,250	9,333	5,833	1	1	1	1	17th Jan. 1905.
21	Halki	Do.	Do.	4·8	Do.	11½ 25	10¼ 23¼	84	56	521	484⅓	1,750	1,166	22	22	21	20	Do.
	Banko	Do.	Do.	6·0	Do.	45 87	41½ 82	196	98	1,450	1,366¾	3,266	1,633	9	9	11	12	Do.

APPENDIX 2—*cont.*

STATEMENT D.—Rice statement of Bombay and other varieties of paddy.

Number.	Names.	Quantity taken.	Pounded raw. Yield of rice.	Pounded raw. Yield of husk.	Pounded after boiling. Yield of rice.	Pounded after boiling. Yield of husk.
		M. OL.	M. OL.	M. OL.	M. OL.	M. OL.
1	Shirbathi	2 4	1 1¾	1 6	1 2	1 6
2	Zina Columbia	2 4	1 0¾	2 1	1 1½	2 0
3	Tin Punkhali Ambi mohar	2 4	1 0½	2 0	1 1½	2 0
4	Jirasal	2 4	1 2	2 0	1 2¼	2 0¾
5	Halwa gudya	2 4	1 1½	1 6	1 2½	2 0¾
6	Bengalia	.. ..	.. ..	.. ..	.. ..	.. ..
7	Rajavel	2 4	1 2	1 4	1 3	1 6
8	Ambi mohar	2 4	1 1¾	1 6	1 2¼	1 2
9	Do.	2 4	1 2¾	2 0	1 3½	2 1½
10	Sukhvel	2 4	1 1¾	1 6	1 2	1 6
11	Do.	2 4	1 1¾	1 6	1 3	2 1½
12	Kamod	2 4	1 1¾	1 6	1 3	2 0¾
13	Do.	2 4	1 2	2 0	1 2¾	2 1
14	Welchi	2 4	1 2	2 0	1 3	2 0¾
15	Do.	2 4	1 2	1 6	1 2½	1 6
16	Tin Punkhali (early)	2 4	1 1	1 6	1 2¼	1 6
17	Columbia	2 4	1 1½	1 6	1 2½	2 0½
18	Dadkhani	2 4	1 1¾	2 0	1 2½	1 6
19	Badsha bhog	2 4	1 1¼	2 0	1 2⅔	2 3¼
20	Chennur	2 4	1 0¾	1 6	1 1½	1 6
21	Halki	2 4	1 0¾	1 4	1 2	2 0
22	Banko	2 4	1 0¾	1 5	1 2	1 6

APPENDIX 2—*cont.*

STATEMENT E.—Ragi experiments in No. 7
(required by the Superintending Engineer for Irrigation).

Number of plot.	Area.	Date of sowing in the nursery.	Date of transplanting in the field.	Date of harvest.	Manure used.	Yield. Grain. Measures.	Yield. Grain. Pounds.	Yield. Straw.	Water received. By lift. Date.	Water received. By lift. Quantity of water applied on each day after transplanting.	Water received. By rain. Date.	Water received. By rain. Rainfall collected after transplanting.
1	0·25	17th May 1904.	27th June 1904.	8th Sept. 1904.	1½ tons F. yd.	145	363	1 ton.	5th July	94 buckets of 30 gallons each = 2,820 gallons. Do.	29th June	·10
									17th Aug.	188 buckets = 5,640 gallons.	1st July	·06
											3rd ,,	·06
											6th ,,	·08
											10th ,,	·07
											15th ,,	·48
											16th ,,	1·29
											17th ,,	·03
2	0·25	17th May 1904.	28th June 1904.	8th Sept. 1904.	1½ tons F. yd.	114	285	⅘ ton.	6th July	376 buckets of 30 gallons each = 11,280 gallons. Do.	19th ,,	·12
											20th ,,	·05
									18th Aug.		21st ,,	·03
											22nd ,,	·05
											23rd ,,	·76
											24th ,,	·68
											25th ,,	1·63
3	0·25	17th May 1904.	29th June 1904.	9th Sept. 1904.	1½ tons F. yd.	113	283	2/20 ton.	7th July	188 buckets of 30 gallons each = 5,640 gallons. Do.	31st ,,	·12
											1st Aug.	·20
											4th ,,	2·40
									20th Aug.		5th ,,	·01
											6th ,,	·20
											7th ,,	·01
											8th ,,	·03
4	0·25	17th May 1904.	30th June 1904.	9th Sept. 1904.	1½ tons ..	81	203	2/20 ton.	8th July	188 buckets of 30 gallons each = 5,640 gallons. Do.	11th ,,	·41
											12th ,,	·01
											13th ,,	·31
											15th ,,	·05
											16th ,,	·19
											30th ,,	·14
									20th July	11,280 gallons.	2nd Sept.	·35
											3rd ,,	·25
											4th ,,	·14
											5th ,,	·01
											6th ,,	10·22

APPENDIX 2—*cont.*

STATEMENT F—Showing results of ragi experiments tried at Saidapet farm in bed and ridge systems in 1904–1905.

System of cultivation.	Area tried.	Charges before planting. General operations before planting including manuring.	Charges before planting. Special operations such as forming beds and ridges.	Charges incurred in planting.	Charges after planting. Hoeing. No.	Charges after planting. Hoeing. Cost.	Charges after planting. Irrigating. No.	Charges after planting. Irrigating. Cost.
1	2	3	4	5	6	7	8	9
		RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.		RS. A. P.
Bed system	·3	5 10 0	0 9 0	2 3 0	1	0 7 0	7	3 13 4
Ridge system	·3	5 11 0	0 3 0	1 8 0	1	0 5 0	7	2 4 9

System of cultivation.	Charges after planting—*cont.* Harvesting cost.	Total cost.	Yield. Grain. Amount.	Yield. Grain. Per acre.	Yield. Straw. Amount.	Yield. Straw. Per acre.	Total cost per acre.
	10	11	12	13	14	15	16
	RS. A. P.	RS. A. P.	LBS.		LBS.		RS. A. P.
Bed system	0 15 6	13 9 10	361	1,203·3	1,456	4,853·3	45 6 1
Ridge system	0 12 0	10 11 9	347	1,156·6	1,400	4,666·6	35 12 6

APPENDIX 3.

STATEMENT showing the number of stock at the commencement and at the end of the year 1904–1905.

Description.	Comencement.	Disposed of during the year. By death.	Disposed of during the year. By sale.	End.	Remarks.
	No.	No.	No.	No.	
Cows	19	..	1	22	
Heifers	6	..	1	9	
Heifer calves	18	..	..	22	
Bulls	21	2	..	18	
Bullocks	6	2	..	12	
Bull calves	10	2	..	4	
Total ..	80	6	2	87	
Sheep.					
Rams	2	..	3	9	
Ewes	38	3	..	41	
Gimmers	19	..	..	24	
Lambs	41	10	10	36	
Total ..	100	13	13	110	

APPENDIX 4.

Statement showing the yield of milk by the College Farm herd during the year 1904–1905.

Number.	Names of cows.	Age.	Yield in 1904–1905 in		Number of days cows yielded.	Average per day in	
			Madras measures of 100 cubic inches.	Pounds.		Madras measures of 100 cubic inches.	Pounds.
1	Alamelu	10	824·50	3,091·88	258	3·19	11·97
2	Bhaghyam I	14	125·12	469·20	139	0·90	3·37
3	Bhaghyam II	7	706·00	2,647·50	279	2·53	9·49
4	Draupadi	8	346·12	1,297·95	174	1·99	7·46
5	Kuttikunju	10	480·87	1,803·27	160	3·00	11·27
6	Padmavati	8	648·62	2,432·33	217	2·99	11·21
7	Kapila	7	102·25	383·44	127	0·81	3·02
8	Mandothary	9	728·87	2,733·26	303	2·41	9·02
9	Kamadhenu	8	215·50	808·12	178	1·21	4·54
10	Tara II	11	654·25	2,453·44	365	1·79	6·72
11	Kamala	8	564·87	2,118·27	218	2·59	9·72
12	Govindu	6	487·62	1,828·58	347	1·41	5·29
13	Kaustubham	8	841·50	3,155·62	279	3·01	11·31
14	Seetha II	9	669·87	2,512·03	188	3·56	13·36
15	Sybil Elenor	7	442·62	1,659·84	252	1·76	6·59
16	Meenakshi IV	6	406·87	1,525·77	183	2·22	8·33
17	Meenakshi III	11	696·25	2,610·94	266	2·62	9·82
18	Ramabhai	8	342·37	1,283·89	172	1·99	7·46
19	Lakshmibhai	8	658·75	2,470·31	241	2·74	10·25
	Total ..	..	9,942·87	37,285·77	..	..	..

APPENDIX 5.

Number.	Name of cow.	Interval between the last and the previous calving.	No. of days in the interval during which milk was yielded.	Quantity of milk yielded during the interval between the calving in		Average quantity per day during the whole interval.	
				Measures.	Pounds.	Measures.	Pounds.
		DAYS.	DAYS.				
1	Alamelu	440	299	757·37	2,840·13	1·72	6·45
2	Draupadi	528	332	740·25	2,775·94	1·40	5·26
3	Kuttikunju	525	148	467·37	1,752·64	0·89	3·34
4	Padmavati	413	264	795·75	2,984·06	1·93	7·23
5	Ramabhai	526	328	717·87	2,692·01	1·36	5·12
6	Lakshmibhai	373	249	617·62	2,316·08	1·66	6·21
7	Mandodari	397	335	775·87	2,909·51	1·95	7·33

APPENDIX 6.

Financial statement of the College Farm for 1904–1905.

Receipts.	Amount.	Amount.	Charges.	Amount.	Amount.
	Rs. A. P.	Rs. A. P.	*Cattle food.*	Rs. A. P.	Rs. A. P.
Field produce	..	1,068 13 11	Ground-nut cake	636 12 6	
Live stock.			Gingelly-oil cake	488 14 4	
Sale of cows, calves, etc.	157 2 0		Safflower cake	71 14 8	
Sale of milk, butter, etc.	2,019 5 9	2,257 15 9	Cotton-seed cake	146 9 0	
Covering fees	81 8 0		Dholl-husk	432 4 7	
Wood and miscellaneous.	..	688 8 11	Wheat-bran	120 6 0	
			Rice-bran	108 13 1	2,865 0 5
			Horse-gram	4 0 0	
			Cumboo	6 0 0	
			Salt	34 2 11	
			Paddy straw	803 2 7	
			Sundries	12 0 9	
			Manure	..	154 6 1
			Seeds and plants	..	355 10 6
			Labour	..	3,015 14 7
			Machines and implements ..	..	193 11 11
			Do. do. (weaving apparatus).	..	70 2 11
			Workshop	..	198 6 6
			Estate improvements ..	..	627 7 8
			Livestock	..	170 9 8
			Oil-engine	..	493 3 6
			Contingencies	..	355 6 8
Total ..	..	4,015 6 7	Total ..	..	8,500 0 5

33

APPENDIX 7.

	Rs. A. P.
Value of services rendered by the Livestock for the Botanical Garden during 1904–1905 (one pair continuously working throughout the year)	257 4 0
Value of labour to be charged against Livestock	462 0 0
Value of labour to be charged against the farm	828 5 0
Value of manure obtained 166 tons at Rs. 3 per ton	498 0 0
Value of farm-grown fodder consumed by stock	754 3 11
*Fees realised by bull-service (for 163 outside and 19 farm cows)	81 8 0

* Owing to prevalence of foot and mouth disease in the vicinity of Saidapet bull-service for outside cows was stopped after 9th February 1905.

APPENDIX 8.

Oil Engine.

	Month.	Liquid fuel.		Shafting oil.	Lubricating oil.	Kerosine oil.		Kerosine oil for lamp.	
		Quantity in gallons.	Value.			Quantity in gallons.	Value.	Quantity in gallons.	Value.
	1	2	3	4	5	6	7	8	9
			Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.		Rs. A. P.
A	June 1904 ..	..	* ..	..	..	..	..	4	1 13 0
A	July ,, ..	..	† ..	..	0 8 3	..	..	12	5 4 0
A	August ,, ..	..	27 3 0	..	1 4 3	..	..	12	5 4 0
A	September ,, ..	..	23 12 0	8 12 0	1 12 3	..	..	16	7 0 0
A	October ,, ..	..	..	..	..	..	..	12	3 8 0
A	Total ..	..	50 15 0	8 12 0	3 8 9	..	..	..	22 13 0
B	November 1904 ..	40	7 8 0	..	4 ‡2 0	..	14 0 0	..	8 12 0
B	December ,, ..	50	9 6 0	..	0 11 0	..	3 8 0	..	..
B	January 1905 ..	..	..	3 9 9	0 8 2	..	26 4 0	..	7 0 0
B	February ,, ..	..	..	0 15 6	0 11 0	..	19 8 0	..	3 4 0
B	March ,, ..	..	..	5 6 3	3 5 6	..	70 8 3	..	4 6 0
B	Total ..	90	16 14 0	9 15 6	9 5 8	288	133 12 3	56	23 6 0

	Month.	Asbestos.	Wages.	Repairs.	Contingencies.	Soap.	Emery.	Sundry articles.	Total.
		10	11	12	13	14	15	16	17
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
A	June 1904 ..	..	† ..	..	0 2 0	..	..	..	1 15 0
A	July ,, ..	..	..	..	1 4 9	..	..	..	7 1 0
A	August ,, ..	..	‡30 0 0	..	14 4 0	..	..	..	77 15 3
A	September ,, ..	42 4 0	‡24 8 0	..	4 4 0	..	..	..	112 4 3
A	October ,, ..	..	§13 0 0	..	..	..	0 12 0	..	17 4 0
A	Total ..	42 4 0	67 8 0	..	19 14 9	..	0 12 0	..	216 7 6
B	November 1904 ..	..	15 4 0	..	0 15 6	..	0 10 0	..	51 3 6
B	December ,, ..	..	14 8 0	..	2 8 0	..	..	..	30 9 0
B	January 1905 ..	..	13 0 0	5 6 9	0 5 6	..	..	..	56 2 2
B	February ,, ..	..	13 0 0	..	0 3 0	..	..	0 5 10	37 15 4
B	March ,, ..	..	13 0 0	2 13 0	0 5 0	..	..	1 2 0	100 14 0
B	Total ..	..	‖68 12 0	8 3 9	4 5 0	..	0 10 0	1 7 10	276 12 0

* Supplied by Messrs. Massey & Co.
† Paid by Messrs. Massey & Co.
‡ An additional man on Rs. 6 was employed to learn work also beside this.
§ Includes wages of two men.
‖ This includes wages of two men attending on engine work.

N.B.—All big repairs are not included in this as they were paid for by the Supervisor, pumping stations.

As the quantity of water and the expenses incurred are available from 1st November 1905, expenses for working the engine and quantity of water raised can be judged more accurately. Hence calculation has been done only for five months commencing from 1st November 1904 to 31st March 1905.

* 1. Data connected with pump from 1st September to 27th October—

Number of days pump worked		21
„ of hours „		126 50′
Average height the water was lifted	Feet	21

* 2. From 28th October to 31st October when cistern was available for measurement, but expenses cannot be accurately calculated.

Number of days pump worked		3
„ of hours „		16
Average height water was lifted	Feet	21
Total quantity of water raised	Galls.	165,800

Data connected with engine and pump from 1st November 1904 to 31st March 1905—

Number of days pump worked		85
„ of hours „		711¾
Average time each day pump worked	Hours	8·4
Total number of gallons of oil including liquid fuel consumed during the period		434
Consumption of oil per working hour	Galls.	·61
Total cost of oil and liquid fuel during the period ...	Rs.	174 0 3
Cost of oil per working hour	„	0 3 11
Average height of lift of water by pump in the period ...	Feet	23·32
Height of water lifted when pump began work for first time	„	21
Total quantity of water lifted during the period ...	Galls.	10,107,416⅔
Average number of gallons lifted per day	„	118,910·8
„ „ per hour	„	14,060·3
Total cost of working engine and pump including driver's wages and all sundry repairs and oil consumed but excluding big repairs paid by supervisor, pumping stations, and excluding depreciation and interest ...	Rs.	276 12 0
Cost of working engine and pumps including driver's wages and all sundry repairs and oil consumed but excluding big repairs paid by supervisor, pumping stations, and excluding depreciation and interest per hour	„	0 6 2½

Actual cost.

Value of 6½ horse-power engine and pump	Rs.	2,500 0 0
Wear and tear per year at 10 per cent.	„	250 0 0
Interest at 6 per cent. per year	„	150 0 0
Total ...	„	400 0 0
Interest on Rs. 2,500 from 1st November 1904 to 31st March 1905 at 6 per cent. (five months)	Rs.	62 8 0
Wear and tear for five months at 10 per cent.	„	104 2 8
Total ...	„	166 10 8
Number of days engine worked during five months ...		85
Interest and wear and tear per day	Rs.	1 15 4
Number of hours engine worked during five months ...		711¾
Interest and wear and tear per hour	Rs.	0 3 9
Total cost (small repairs, oil, interest and wear and tear per hour)	„	0 9 11½ or say 10 annas.
For 10 annas engine lifts	Galls.	14,060·3 per hour.
For 1 anna „ „	„	1,406 „

* For expenses refer to statement A.

Single mhote.

From an average depth of 25 feet 50 buckets of 30 gallons each can be raised in one hour	Galls.	1,500
Value spent on single mhote and cattle including wear and tear, interest, etc., for a day of eight working hours.	Rs.	0 12 0
Value spent on single mhote and cattle including wear and tear, interest, etc., for one hour	„	0 1 6
For 1½ annas single mhote lifts	Galls.	1,500
For 1 anna „ „	„	1,000

Letter—from M.R.Ry. T. V. Narayana Rao Avargal, Acting Fifth Assistant and Officer in charge, Botanical Garden, Saidapet.
To—the Principal, College of Agriculture.
Dated—26th April 1905.
No.—D. 13.

I beg to submit the annual report on the Botanical Garden for the year 1904–1905.

2. Till the 13th of August the direct working of the garden was in the hands of Mr. Y. Srinivasa Rao; from the 14th idem I held charge.

3. The garden sufferred very much from the failure of both the south-west and the north-east monsoons. Owing, however, to water being supplied from the river Adyar by the oil-engine working on the farm and whenever the oil-engine was out of order by a single mhote, the garden was fully cropped.

4. A mixture of red earth and horse dung was applied to almost every garden crop, while farm yard manure, sheep's dung, castor cake, tannery refuse and pig's dung were applied to certain crops.

5. In the upper terrace and in some other portions of the garden the following specimen crops were grown for the benefit of students :—

(*a*) *Cereals.*	(*b*) *Pulses.*	(*c*) *Oil crops.*	(*d*) *Fibre crops.*	(*e*).
1. Broom corn 2. Sorghum amber 3. Early amber sugarcane. 4. Maize (5 varieties) 5. Cholam (38 varieties) 6. Wheat (failed) 7. (*a*) Cumbu (ordinary) (*b*) Cumbu (awned) 8. Ragi 9. Shamai 10. Tinai 11. Kudiraivali (2 varieties). 12. Varagu 13. Pani varagu 14. Oats 15. Barley (failed)	1. Field bean (red and white). 2. Cowgram 3. Blackgram 4. Greengram 5. Bengalgram 6. Dewgram 7. Horsegram 8. Dholl (9 varieties). 9. Kabuligram from Poona farm (failed).	1. Soy beans 2. Sunflower (*a*) Coimbatore Jail. (*b*) Ordinary 3. Ground-nut 4. Safflower 5. Linseed 6. Gingelly 7. Niger 8. Castor (major) 9. Castor (minor)	1. Cotton 2. Jute 3. Sunhemp 4. Roselle (3 varieties). 5. Rhea 6. Sisal hemp	1. Sugarcane. 2. Arrowroot. 3. Tapioca. 4. Tobacco.

6. (*a*) The seeds of the first two cereals broom corn and sorghum amber were obtained from the Poona farm and those of early amber sugarcane from the Manjri farm. Seeds of four * varieties of maize were supplied by the farm. Seeds of red maize (local) were obtained from the Conjeeveram exhibition. As the latter were badly weevilled very few plants came up and these did not give good cobs.

* Yellow dent from Manjri farm. Golden beauty from Manjri farm. Early mastadon from Manjri farm. Janupore maize from United Provinces.

Thirty-four varieties of cholam were received from the Deputy Director of Agriculture, Madras. One of these (No. 32-S.) was lost, and the remaining 33 varieties together with 5 varieties received from the Conjeeveram exhibition were grown. Of the first named 33 varieties i-B Belai Jola and ii-B Nalla Pusi Jonna were in flower 2½ months after sowing and the earheads were gathered on 25th January, *i.e.*, about four months after sowing the seed. The earheads were not very big but the grain was well formed. The stalks were between 8 and 9 feet high with a circumference of 2 to 2¼ inches. All the other varieties were in flower about two months after sowing and the earheads were gathered on 28th December, *i.e.*, about 3 months and 1 week from the date of sowing. The earheads of some of these varieties might have been cut

perhaps earlier. The height of the stalks of most of the varieties was from 7 to 9 feet though that of a few was only 6 feet. The stalks of the following varieties were very thin and poor :—

3. M-777. White Irungu.
4. M-812. Reddish white Irungu.
5. M-916. do. do.
11. M-786. Black Irungu.
12. M-788 (*b*). Black Irungu.

In almost all the other varieties the circumference of the stalks was from $1\frac{1}{4}$ to 2 inches except No. 28-S. Dawr of Nagpur Farm which had a circumference of $2\frac{1}{4}$ inches. No. 8-M. (787) Purple Irungu, 19-M. (869) yellow sort probably mediocris, 31-S. Lagwar Red of Cawnpore Farm, 34-S. Gari of Surat Farm, were among the good yielders and they were specially selected by Mr. K. Rangachariyar Avergal, M.A., L. T., of the Central Museum, Madras, for photographing and mounting. Mounted specimens and photographs have been kindly promised by him for the College Museum. The earheads of—

23 M. (805), red sort, probably mediocris.
25 S. Bani of Nagpur farm.
26 S. Bagle of Nagpur farm.
27 S. Baidwa of ,,
28 S. Dawr of ,,
29 S. Deolari of ,,
30 S. Deola of ,,
31 S. Lagwa red of Cawnpore Farm.
33 S. Dugadia zard of ,,
34 S. Gari of Surat farm

bent down while the grain was maturing.

Cumbu (awned) was received from the Manjri farm. Although the crop grew well, it failed to develop proper grain.

Three varieties of barley and two varieties of oats were received from a planter in Ootacamund. They were sown in October and January. The seeds sown in October did not germinate, but there was a fair crop from the seeds sown in January. Only one variety of oats, however, developed grain.

(*b*) For the first time bengalgram developed grain in the garden. This was perhaps due to the crop not having been affected by untimely and heavy rain and to the crop having been watered artificially in time.

Four ounces of each of the following nine varieties of dholl were obtained from the Manjri farm and sown in the garden :—

(i) *Bilaspur.*—Sown 19th September. Germination 23rd September. In flower 15th December. Pods gathered 31st January. Flowers yellow. Plants unbranched. Stems with reddish tinge. Height of plants $5\frac{1}{2}$ ft. Pods few, of fair size.

(ii) *Bilaspur.*—Sown 15th September. Germination 20th September. In flower 8th December. Pods gathered 31st January. Flowers red. Stem reddish green. Height of plants 4 ft. Pods fairly good and fairly in clusters.

(iii) *Bilaspur.*—Sown 15th September. Germination 20th September. In flower 8th December. Pods gathered 31st January. Flowers yellow. Stem reddish green. Height of plants $3\frac{3}{4}$ ft. Pods poor.

(xiii) *Bangalore.*—Sown 19th September. Germination 22nd September. In flower 8th December. Pods gathered 31st January. Flowers yellow. Stem normal green. Height 3 ft. Pods single and poorest of the lot.

(xviii) *Bangalore.*—Sown 15th September. Germination. 20th September. In flower 15th December. Pods gathered 20th January. Flowers yellow. Stem green. Height 4 ft. Pods normal.

(xx) *Variegated Bangalore.*—Sown 15th September. Germination 20th September. In flower 8th December. Pods gathered 31st January. Flowers red. Stems slightly branched and green. Height $3\frac{1}{2}$ ft. Pods good and fairly in clusters.

(xxi) *Variegated Bangalore.*—Sown 15th September. Germination 20th September. In flower 8th December. Pods gathered 24th January. Flowers red. Stems green. Height $4\frac{1}{4}$ ft. Pods good and in clusters.

(xxii) *Variegated Bangalore.*—Sown 19th September. Germination 22nd September. In flower 3rd December. Pods gathered 31st January. Flowers red. Stems normal green. Height 4 ft. Pods good and in fair clusters.

Arhar.—Sown 19th September. Germination 23rd September. *In flower 7th January. Pods gathered 2nd March.* Flowers yellow. Stems normal green. Height $4\frac{1}{2}$ ft. Pods fairly good.

According to their growth the nine varieties may be ranked as follow :—

(i) Variegated Bangalore No. XXI.
(ii) Do. do. No. XXII.
(iii) Do. do. No. XX.
(iv) Bilaspur No. II.
(v) Do. No. I.
(vi) Bangalore No. XVIII.
(vii) Arhar .....
(viii) Bilaspur No. III.
(ix) Bangalore No. XIII.

The roots of some of the plants were affected by the larvæ of a borer.

(*c*) Seeds of 16 varieties of Soy beans numbered 2 and 3 and 6 to 19 were received from the Manjri farm. One half of the seeds of all the varieties was sown on 14th September and the remaining half on 29th November. The second crop utterly failed. Most of the varieties of the first crop grew fairly well, but were attacked when the crop was developing its pods with *Surul puchi*, about a month and ten days from the date of sowing. The crop was sprayed with kerosine emulsion but with very little effect. Seeds of varieties Nos. 3, 6, 7, 8, 9, 10, 12 and 18 have been collected. No. 12 was a good variety ; No. 9 a very early variety ; Nos. 7, 8 and 10 fairly so, and No. 6 a very late variety. A mixture of 56 lb. of castor cake and some cattle dung was applied to the crop.

One pound of sunflower seed was obtained from the Superintendent, Coimbatore Jail. The plants grew fairly well and produced fair sized flowers with fully developed seeds. The seeds produced were given to the Principal of the Teachers' College for being sown in the College garden and it is gratifying to note that the seeds produced excellent plants according to his information.

The same remarks as for bengalgram apply to linseed.

Twelve varieties of castor (major) were received from Messrs. Rengasami & Co., Oil Merchants, Wall Tax Road, Madras, but from the plants only five seemed to be distinct varieties as shown below :—

(i) Spineless fruits on plants with red bloom.
(ii) Do. do. white bloom.
(iii) Spinous fruits on plants (bushy) with white bloom.
(iv) Spinous fruits with spines further apart on plants with white bloom.
(v) Ordinary spinous fruits on plants with red bloom.

These and other varieties deserve to be grown again in the garden.

(*d*) Under instructions from the Government Botanist, Madras, the seeds of 35 varieties of tree cottons of the Presidency, sent by him, were sown in the garden. The seeds of the fourth variety Jadapathi Palkonda (C.A.B., No. 2439) did not germinate at all ; while those of Jadapathi Madakasira, Ladam (Nadam) paruthi Sankaranayinárkóyil, Pagadipathi Sirvel, Parangipathi Atmakur, Jadapathi Atmakur, Jadapathi Vinukonda, Pamidiprathi Palnad, Seemapathi, Palnad, germinated rather poorly, leaving in some cases only one plant. Twenty-three of the surviving 34 varieties seem to be Americans. Herbarium specimens of all the 34 varieties were taken for the Government Botanist's office by his establishment. Cotton in seed of all the varieties is being collected and the seeds of a few of the varieties will be sown this year in a new plot. The plants now growing may be allowed to stand for a few years more. In addition to the above, the following varieties of cotton were grown from seeds collected on the farm :—

1. Sea Island cotton.
2. Nankin cotton.
3. Semparuthi.
4. Uppam.
5. Kuppam.
6. Karunganni.
7. Nadam.
8. Javari Hathi (black seeded).

From varieties 1, 2 and 3 and from typical plants of Nos. 4 to 8 kindly pointed out by Mr. C. Benson, M.R.A.C., cotton in seed is being collected and the seeds will be sown this year.

(*e*) The following 14 varieties of Samalkot sugarcanes referred to in paragraph 16 of the Vice-Principal's report of last year were grown on 9 cents of land and local striped (namam) and Rastali from Cumbum on 7 and 3 cents respectively.

1. Vansia.
2. Yerracheruku.
3. White Mauritias.
4. Bontha.
5. Sanna bile.
6. The Hospet cane.
7. The Gódáveri striped cane.
8. Red Mauritius.
9. Válu.
10. Poondia.
11. The Cumbum striped cane.
12. Kéli.
13. Mogali.
14. Seema.

These were visited on two or three occasions by the Government Botanist and notes taken. Vansia, Yerracheruku, Bontha, Sanna Bile, Red Mauritius, Mogali and Seema came up very well and some like Red Mauritius to a good height of 20 feet with a circumference of 5 inches average. The Cumbum striped cane did not develop any stripes at all and Keli developed stripes, probably due to difference of soil and climate. Pig's dung, farm-yard manure, castor cake and ashes were applied as manure on different occasions to the canes. Fifty canes of each of Vansia, Red Mauritius, Sanna Bile, Bontha and Seema were cut and sent by the Government Botanist's establishment to the Cuddalore farm on 18th February. Twelve canes of each of the sixteen varieties mentioned in the first portion and of the Trichinopoly reed cane grown on the farm, were exhibited at the last Flower Show, Madras, held on 25th February. The canes exhibited at the Flower Show and a few more of some of the varieties mentioned above were given to the farm for sets. A few were cut and sold and a few are standing still. From some of the Samalkot varieties, juice was extracted and good jaggery was made as an experiment. Three canes of each of the following varieties were kindly sent by the Government Botanist for growing in the garden on the 25th and 27th February. Some of the canes were attacked with red fungus. The sets were planted on 28th February and the number of shoots in each of the varieties is mentioned below. Some of the sets had only two nodes.

Variety.	Number of sets.	Number of shoots.
1. Mogali	34	12
2. White Mauritius	30	14
3. Ivory ,, ...	33	18
4. Striped ,, ...	37	7
5. Red ,, ...	34	15
6. Yerra Samalkot	34	12
7. Seema	37	26
8. Striped Mauritius	38	24
9. Sanna Bile	33	27
10. Purple Mauritius	38	28
11. Ashy Mauritius	30	27
12. Green Sports Mauritius	29	18
13. Poovan	33	9
14. Red Sports Mauritius	36	25

There are now growing in the garden thirty-one varieties of sugarcane in one block thus—

Fourteen Samalkot varieties received on 10th March 1904.
One Striped cane, local namam.
One Rasthali Cumbum.
One Trichinopoly reed cane.
Fourteen Samalkot varieties received in February 1905.

Some of these are very likely duplicates. In addition, the following varieties of Barbados sugarcane, which were growing in the farm, were transplanted in the garden on the 18th February and are doing well :—

(1) B. 376, C.A.B. 2363—Two shoots ; one in bad condition.
(2) B. 208, C.A.B. 2362—Three shoots.

Sets of black, white and red Mauritius sugarcane, as named by the Pallávaram ryots, were planted on 28th December and the shoots are growing vigorously.

Arrow root was grown on about 4 cents of land ; tapioca on 1½ cents.

Tobacco seeds were collected from some of the plants mentioned in paragraph 16 of the Vice-Principal's report of last year and sown in a very small portion. The seedlings were transplanted on 2 cents of land and seeds are now being collected under the varieties of Yerumaikappal and Voosikappal.

7. Turmeric was grown on 43 cents of land. About 470 lb. of seed rhizomes were planted. The yield was 3,190 lb. or about 3⅓ tons of rhizomes per acre. 956 lb. of rhizomes were cured and 204 lb. of dried turmeric were obtained.

8. *Plantains.*—A crop consisting of the varieties Nendram, Pachainadam, Pachai Valai, Bonthan, Bangala or Poovan, Payan and Kottaivashai were planted on 34 cents of land in about the first week of November. Applications of tannery refuse and castor cake were given. The crop is doing well.

9. Lucerne was grown on 17 cents of land, the seeds having been obtained from Messrs. Pestonjee Poochaji Poocha, seeds-men, Poona, at about Rs. 1-8-0 a lb. 2½ lb. seeds were sown on 13th December on the ridge and furrow system.

On 15th February, 714 lb. lucerne were cut and converted into hay, the yield being 175 lb. 42 lb. green lucerne were sold as fodder before 15th February.

On 20th March, 850 lb. lucerne were cut and converted into hay, the yield being 218 lb. 6 lb. green lucerne were sold as fodder from 15th February to 20th March.

Thus, 1,612 lb. of green lucerne were obtained in two cuttings and 1,564 lb. green lucerne yielded 455 lb. hay. The crop suffered from the attack of dodder and is still on the field.

10. The 14 Liberian coffee trees and 6 trees of Arabian coffee referred to in the last report are yielding small quantities of berries. It is impossible to stop theft from these trees. The Batavian orange trees are not yet in bearing.

11. The following English and country vegetables, etc., were grown :—

(*A*) *English.*	(*B*) *Country.*
1. Goa beans.	1. Brinjals.
2. Kidney beans.	2. Ginger and mango-ginger.
3. Celery.	3. Snake-gourds.
4. Tomatoes of sorts.	4. Sword beans.
5. Cabbages of sorts.	5. Cow beans.
6. Cauliflower (did not yield flower).	6. Ribbed gourd.
7. Knol khol.	7. Chillies from Tanjore and Poona.
8. Carrot.	8. Chillies, ordinary.
9. Beet root of sorts.	9. Dioscorea.
10. Radish of sorts.	10. Telingana potato.
11. Turnips of sorts.	11. Peas (ordinary).
12. French beans of sorts.	12. Cucumbers.
13. Peas, English.	Some minor ones as coriander, fenugreek, etc.
14. Lettuce cabbage.	
15. Vegetable marrow of sorts.	

12. (*A*) Except cabbage, cauliflower and peas, all the others grew well and in some cases very well. Goa beans, tomatoes, knol khol and French beans find a ready sale. Tomatoes and knol khol were grown on fairly large areas, 43 cents and 23½ cents, respectively, but as portions of the crop are still in the field, the exact sum of money realized by their sale cannot now be given. A crop of French beans on 2 cents of land yielded 9,700 beans sold at 1 anna per 100 ; yield in money Rs. 6-1-0.

(*B*) Brinjals were grown on 66 cents. The crop on 11 cents is still standing. The varieties grown in the remaining 55 cents were Berhampur and Tirupasore (near Tiruvallúr) ones. The area was divided into three portions—

(i) 13 cents. A mixture of 616 lb. tannery refuse and one cartload of ashes was applied. Yield 105 visses of brinjals. Value Rs. 9-13-6.
(ii) 11 cents. A mixture of 140 lb. castor cake and half cartload of ashes was applied. Yield 121 visses. Value Rs. 11-5-6.
(iii) 31 cents. Ten cartloads of farm-yard manure applied. Yield 76 visses. Value Rs. 7-2-0.

Thus, from 55 cents, 302 visses of brinjals valued at Rs. 28-5-0 were obtained. The crop must be described as poor, which can be attributed to the failure of the monsoons. The third block was a piece of extremely retentive clay. The first block was the first to yield.

Mango-ginger.—12 visses were obtained from ½ cent.

Snake-gourds.—These were grown on 11 cents of land which were divided into four plots—

			Yield.
Plot No. I, 15 pits.	616 lb. tannery refuse and 100 lb. ashes applied.	First to yield and second to stop yielding.	$71\frac{7}{8}$ visses. (say) 72 ,,
Plot No. II, 15 pits.	84 lb. castor cake and 100 lb. ashes applied.	Second to yield and last to stop yielding.	$74\frac{1}{2}$,,
Plot No. III, 15 pits.	303 lb. pig's dung and 100 lb. ashes applied.	Third to yield and first to stop yielding.	$55\frac{3}{4}$,,
Plot No. IV, 19 pits.	840 lb. farm-yard manure applied.	Fourth to yield and third to stop yielding.	$41\frac{3}{4}$,,
Add weight of gourds left for seed, about			12 ,,
		Total ...	256 ,,

Yield in money Rs. 16 or about Rs. 145 an acre.

Yams (Vethilaivalli Kishangu).—130 visses of yams (Dioscorea) were planted on 8 cents of land and the yield was 812 lb. or about 4½ tons per acre.

Telinganapotato (Karanai Kishangu).—135 visses of the corm were planted on 13 cents of land and the yield was 347 lb. or about 1¼ tons per acre.

13. The following quantities of fodder were supplied to the farm :—

	LB.
Cholam straw	3,276
Lucerne hay	455
Field bean (green fodder)	1,344

14. The botanical specimens require to be rearranged and the work will be taken on hand during the north-east monsoon when I hope to find time for the work. The labelling of the specimens will be attended to as soon as the services of a man who can print labels are secured as a permanent cooly of the garden. Arrangements will be made to secure for the garden plants of economic value in December next, after the heavy rains.

15. The following prizes were awarded to the garden at the late Flower Show held in the Agri-Horticultural Gardens, Teynampet, in February last :—

(i) A silver medal for the best collection of sugarcanes.

(ii) Rs. 10 for the best collection of sorghums in ear.

(iii) Rs. 5 and a certificate in lieu of a bronze medal for collection of fibres.

(iv) A certificate for collection of English vegetables mentioned in paragraph 11A *supra*.

N.R.O.C. No. 4072 *of* 1905.

Forwarded to the Secretary to the Board of Revenue (Revenue Settlement, Land Records and Agriculture), for favour of remarks and return.

T. R Scott,
for *Director of Public Instruction.*

18*th May* 1905.

Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), Mis. No. 3563, *dated* 1*st July* 1905.

The Hon'ble Mr. A. E. Castlestuart Stuart, I.C.S.

Read—the following paper :—

Endorsement by the Director of Public Instruction, Madras, dated 18*th May* 1905, *N.R.O.C. No.* 4072.

Abstract.—Forwarding the report on the College of Agriculture for 1904–1905, submitted by the Principal, College of Agriculture.

Resolution—Mis. No. 3563, *dated* 1*st July* 1905.

The reports received with the endorsement of the Director of Public Instruction read above will be returned to him with the following remarks.

2. The Board notes the losses to the College staff, caused by the transfer of Rao Bahadur M.R.Ry. C. K. Subba Rao to the Agricultural Department, where his services were more urgently required, and by the death of M.R.Ry. G. Krishna Prabhu. It is also noted that the College had to work for almost the whole of the year without a Professor of Agriculture.

3. It is noteworthy that the number of students rose from 46 in the previous year to 58 in the year under review; but it is to be regretted that the additional number was made up almost wholly of students of inferior general education. The increase, however, indicates the greater interest that has been aroused in Agriculture in this Presidency.

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4. The remarks in paragraph 4 of the Principal's report show that he has more clearly grasped the recommendations of the Committee, which revised the College course three years ago, as he has endeavoured to get the subsidiary subjects finished as early as possible. The results of the labours of the College staff, so far as they can be judged by the examinations of the students, are given in paragraph 8 of the report, and they appear to be more satisfactory than in 1903–1904.

5. The work of the Veterinary hospital attached to the College continued to progress satisfactorily.

6. The season at the College farm from September 1904 onwards was very unfavourable, and as this is the active cultivation season in the locality, the cropping results were poor. The provision on the farm, for the first time, of mechanical power for raising water from the Adyar was of great value during a period of deficient rainfall, but the working of the oil-engine was apparently owing to want of experience, not altogether satisfactory. A noteworthy feature in the working of the farm was the utilization of a few showers of rain for producing fodder in a season of drought. The experiments carried on were in almost all cases made on too small a scale to be of much value, and the Board considers it unnecessary to comment on them in detail.

(True Extract.)

L. D. Swamikannu,
Ag. Secretary.

To the Director of Public Instruction,
with one proof and reports in original returned.

Proceedings, Dis. No. 5866 of 1905.

Recorded.

2. The Acting Vice-Principal, M.R.Ry. C. K. Subba Rao, reverted to his permanent appointment in July 1904, and the post has been vacant ever since. The Director heard with regret of the death of M.R.Ry. G. Krishna Prabhu, who had rendered efficient service as first assistant of the College for twenty-two years.

3. The strength of the college rose from 46 to 58. This is satisfactory in so far as it indicates a growing interest in agriculture in the Presidency; but as observed by the Board of Revenue it is to be regretted that a large number of the students were men of inferior attainments. Compared with the figures for the previous year, the results of the Government Technical examinations held during the year under review showed a decided improvement. It is observed that the majority of the students who entered for the examinations appeared for the first time. This was not the case last year.

4. There was a slight increase in the total number of animals treated at the Veterinary Hospital, but the officer in charge of the hospital considers that the number of cases has well nigh reached the maximum.

5. Owing to the unfavourable character of the season during the greater portion of the year, the cropping results were not satisfactory. The results of the working of the oil-engine newly introduced into the farm were much below expectation, and, as surmised by the Board, this was probably due to want of experience on the part of those entrusted with the working of it.

6. Excluding the amount spent on scholarships, the total expenditure fell from Rs. 50,674 to Rs. 43,627 and the receipts from Rs. 6,396 to Rs. 6,323. The net cost to Government and the cost per student also decreased from Rs. 44,278 and Rs. 1,230 to Rs. 37,304 and Rs. 982, respectively.

7. The reorganization of the College with reference to Mr. Mollison's report is still under consideration.

A. G. Bourne,
Director of Public Instruction.

To the Principal, College of Agriculture,
with 20 spare copies, and 100 copies of the reports on the farm and botanical garden.
,, Principals of other professional colleges.
,, Principals of Government first-grade colleges.
Copy to the Board of Revenue (Revenue Settlement, Land Records and Agriculture).
,, Superintendent, Civil Veterinary Department.
,, Government, with covering letter.
,, Director-General of Education.

Order—No. 648, Educational, dated 29th September 1905.

Recorded.

(True Extract.)

H. D. Taylor,
Ag. Secretary to Government.

To the Director of Public Instruction.
,, the Revenue Department.
,, all Collectors.
,, the Director-General of Statistics (with C.L.).

E. 2. 1,500—3-12-04

Educational Department.

[Note connected with G.O. No. 648 dtd 29-9-05]

C. No. 1665 From the D.P.I. No. 8080, dated 20-9-1905.

SUBJECT.

Report on the working of the College of Agriculture during 1904-05.

As the College on its present basis is soon to be abolished, the report may be simply recorded. Please see the draft placed below.

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T1,000—24-9-14.

EDUCATIONAL DEPARTMENT.

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READ ALSO G.O., No. . dated 190 .

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READ ALSO:—

C. No. 1665, From the DPI, No 8060, dated 20-9- 1905.

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" " " " " " 190 .

dept - urgently

27/9/05

ORDER No. 648 . dated 29-9- 1905.

DPI

Recorded.

DPI
23/9/05

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" Revenue departt ✓
All Collectors ✓
The D.G. of Statistics (with C.Z.) ✓

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