

Educational (1896) Department.

ORDINARY MS.

G.O., No. 471

Dated 7th August 1896.

INDEXED.

[Despatch Abstract.]

GOVERNMENT DAIRY FARM.

Recording proceedings, Revenue department, stating that it is impracticable to attempt to establish a --- at Saidapet.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

No. 312, REVENUE, 4TH JULY 1896.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

Read—again G.O., No. 31, Revenue, dated 21st January 1896.

ABSTRACT.—Passing orders on papers relative to the establishment of a Dairy Farm capable of supplying the troops and hospitals of Madras with milk and butter.

Read—again the following G.O., Mis. No. 816, Revenue, dated 25th February 1896 :—

Read—the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 28th January 1896, No. 15 :—

Read—again Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 23rd November 1895, Mis. No. 6426.

ABSTRACT.—Requesting the Principal of the Agricultural College, Saidapet, to report what arrangements he proposes in order to carry out the instructions of Government regarding the dairying experiments.

Read—again Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 29th November 1895, Mis. No. 6559.

ABSTRACT.—Submitting, for the information of Government, Revenue Department, with remarks, the report of the Principal, College of Agriculture, regarding arrangements for carrying on dairying experiments at Saidapet during the period of Mr. Collins' stay at Madras.

Read—again Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 18th December 1895, Mis. No. 6912.

ABSTRACT.—Submitting to Government, Revenue Department, letter from the Acting Principal, Agricultural College, stating that additional dairy appliances required for carrying on the dairying experiments cannot be specified at present for certain reasons.

Read—also the following letter from the Hon'ble Mr. D. DUNCAN, M.A., D.Sc., Director of Public Instruction, Madras, to the Chief Secretary to Government (through the Director of Agriculture), dated 18th January 1896, No. 445 :—

I have the honour to submit in original, for the information of Government, the report of the Acting Principal, College of Agriculture, Saidapet, on the analytical experiments performed by Mr. Collins, the Assistant Agricultural Chemist to the Government of India, during his recent stay at Saidapet, and to state that in the circumstances reported in paragraph 7 of the letter there seems no objection to the substitution of gingelly cake for ground-nut cake as a ration for cattle.

ENCLOSURE.

From W. KEESS, Esq., M.A., M.R.A.C., Acting Principal, Madras College of Agriculture, to the Director of Public Instruction, dated Saidapet, 8th January 1896, No. 9.

I have the honour to submit the accompanying report on the analytical work performed by Mr. Collins, Assistant Agricultural Chemist to the Government of India, during his recent deputation to Saidapet. As the results obtained by him are of agricultural interest, I request you will be so good as to forward this letter to the Director of Agriculture. I may add that I

write the report at Mr. Collins' request. He seemed to think that my knowledge of the local circumstances, in connection with which he carried out the analyses, would enable me to better exhibit the practical bearing of the results obtained than if he himself essayed the task.

2. Mr. Collins performed the following analyses :—

2 samples, cow's milk.	1 sample, ground-nut cake.
2 " buffalo's milk.	1 " gingelly cake.
2 " cow's separated milk.	1 " jaggery.
2 " buffalo's separated milk.	—
1 sample, buffalo's butter.	13
1 " cow's butter.	—

3. Of the two samples of cow's milk analysed, one represented the morning's yield of the whole College herd and the other the evening's yield. The two samples of "cow's separated milk" represented the abovementioned yields after separation by means of the "Baby" separator.

The results were as follows :—

	Whole milk.	Separated milk.
Morning's yield	4.68	.13
Evening's yield	3.93	.13
	} per cent. of butter fat.	

The above results confirm those obtained by me in 1892 to the effect that the "Baby" separator now on the Farm deals most efficiently with cow's milk, the separation being practically complete. The percentage of butter fat in the milk is distinctly high showing that the Nellores like most Indian breeds can produce rich milk. The results are especially encouraging, as the milk under analysis contained the produce of several cows which had recently calved; besides which two of the best butter-producing cows were dry at the time.

4. During Mr. Collins' deputation the College possessed only two milking buffaloes. They did not receive any special food, but were allowed to graze the whole day, and in addition they were given such fodder as the cows rejected from their daily allowances. The milk analysed was that of both animals milked together—one analysis being made of the morning's yield and another of the evening's yield. The analyses of separated milk refer to the above after separation by the College machine—

	Whole milk.	Separated milk.
Morning's yield	7.34	.12
Evening's yield	4.82	.17
	} per cent. of butter fat.	

The first point to be noticed is the great difference in richness between the morning's and the evening's yield. The most interesting fact which the analyses bring out is that even with buffalo's milk the "Baby" separator acts exceedingly well—the separation, as in the case of cow's milk, being to all intents and purposes complete. This result differs entirely from that obtained by me in 1892 when buffalo's milk containing 6.785 per cent. of butter fat showed, after separation by the "Baby," 2.660 per cent. of butter fat—*vide* paragraph 5 of my letter, No. 439, dated 25th April 1892. The same implement worked by the same cooly was employed on both occasions and I cannot understand how such surprisingly different results have been obtained. Mr. Mollison of Poona in paragraph 2 of his note, which is embodied in Board's Proceedings, No. 521, dated 20th July 1892, made certain remarks which in the light of Mr. Collins' analyses cannot now stand.

5. With respect to the "Baby" separator, which was presented to the College about eight years ago by the London Dairy Supply Company (Limited), I consider that it is an exceedingly efficient machine. It has been in constant use since its arrival at Saidapet being worked by coolies, students, &c., and it is now almost as good as new. The only part which wears is a small rubber ring (cost, one shilling). There can be no two opinions about the durability of the "Baby." Mr. Collins' analyses show that its separating powers for both cow's and buffalo's milk can hardly be improved upon.

6. In the experiments carried out by me in 1892 the butter made from ripened cream by churning with the native implement contained 2.840 per cent. of curd. This of course was excessive. The butter made by identically the same process and analysed by Mr. Collins gave the following results :—

	Buffalo's butter.	Cow's milk.
Moisture	19.66	21.65
Butter fat	80.03	78.01
Curd	.23	.24
Mineral matter	.08	.10
Total	100.00	100.00

It will be observed that curd was practically absent. The only defect from a chemical point of view is the large percentage of water. In Europe 10 per cent. of water is the usual amount in good butter; at Poona 12 per cent. to 14 per cent.; at Saidapet about 15 per cent. I attribute the high percentage of water in the samples analysed by Mr. Collins to the fact that the butter was not sufficiently worked after being churned. The milkman was apparently afraid of spoiling the texture of the butter sent for analysis. Of course a man of his education cannot be expected to know that texture is not investigated by a chemical analysis. However, the chief point to be noted is that the process described by me in paragraph 5 of my letter No. 439, dated 25th April 1892, can produce butter which is practically free from curd.

7. The analyses of ground-nut cake performed by me during several successive years showed that the percentage of oil was gradually decreasing, presumably owing to better pressing. Ground-nut cake was originally introduced on the Farm by Mr. Robertson owing, I imagine, to its then extremely low price. When I took charge of the Farm nearly nine years ago, ground-nut cake was available at Rs. 7 or Rs. 7-8-0 a candy of 500 lb. and it contained about 8 or 9 per cent. of oil. Every year has seen the price rise and during the current financial year the contract price for the Farm is Rs. 12-8-0 a candy of 500 lb. The bazaar rate is of course higher than this and there is good reason to believe that next year the contract price will be something like Rs. 15 a candy. The percentage of oil has been steadily decreasing and the question has now arisen whether ground-nut cake should be continued or not as a special food to the College cows. I accordingly requested Mr. Collins to analyse the College cake and also a sample of gingelly cake. His results are as follows :—

	Ground-nut cake.	Gingelly cake.
Moisture	11.09	12.20
Oil	6.57	12.29
* Albuminoids	46.23	33.81
+ Mineral matter	4.88	12.45
	Ground-nut cake.	Gingelly cake.
* Containing nitrogen	7.40	5.41
+ Containing sand	1.09	3.95

The gingelly cake was purchased in the bazaar and did not represent the best kind (*N.B.*—Amount of sand). The price of good gingelly cake now stands very little higher than that of ground-nut cake. Under these circumstances, I fear ground-nut cake must disappear from the College rations unless in the unlikely contingency of a heavy fall in price.

8. There is nothing special to mention about the jaggery, which was purchased in the bazaar. No jaggery was made on the Farm during Mr. Collins' stay at Madras. That made previous to his arrival was tested in the College laboratory and found to be a very good sample. There was therefore no necessity to trouble Mr. Collins to confirm this result.

Resolution—dated 28th January 1896, No. 15.

The report of the Principal, College of Agriculture, will be submitted for the information of Government with reference to B.P., dated 14th October 1895, No. 326.

2. The analyses now submitted throw considerable doubt on the accuracy of those dealt with in the papers read in B.P., dated 25th May and 20th July 1892, Nos. 387 and 521, respectively, and also confirm experience in other parts of India as to the efficiency of the "Baby" separator in dealing with both cows' and buffaloes' milk. They also show that the butter made at Saidapet is as free from curd as possible. Probably it would be necessary to use ice or the *delaiteuse* to reduce the amount of water in the butter.

The analyses made of ground-nut and gingelly oil cakes are interesting and will assist the Principal in deciding what cattle-food to purchase. It is to be wished that the analyses had been extended to cotton seed, which is so commonly used as a food for milch cattle, and is, the Board understands, found in Bombay to lead to the production of a remarkably firm butter from buffaloes' milk.

(True Copies and Extract.)

(Signed) P. RAJARATNA MUDALIAR,
Secretary.

To the Secretary to Government, Revenue Department.
" Educational Department.
" Director of Public Instruction.
Copy to the Reporter on Economic Products.

Order—Mis. No. 816, dated 25th February 1896.

Recorded pending the receipt of the memorandum called for from Mr. Benson in paragraph 2 of G.O., No. 31, dated 21st January 1896.

(True Extract.)

(Signed) E. GIBSON,
Secretary to Government.

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

READ—also the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 10th March 1896, Mis. No. 1193:—

Read—the following letter from the Deputy Director of Land Records and Agriculture, dated 29th February 1896, No. 16-A:—

With reference to G.O., No. 31, Revenue, dated 21st January last, I have the honour to state that I am not quite clear as to the character of the information regarding the Poona farm that is required by Government. I shall, however, endeavour to furnish such as appears pertinent to the main question.

2. As will be seen from the papers read in G.O., Mis. No. 3953, Revenue, dated 10th July 1891, the dairy operations at Poona were commenced in order to endeavour

- (1) to introduce modern dairying appliances;
- (2) to encourage private enterprise in undertaking dairying on European methods;
- (3) to prepare for a systematic study of dairying methods in India, and for the improvement of dairy breeds of cattle.

3. In order also to improve the quality of the hospital supplies of milk and butter to troops, arrangements were made by the Bombay Agricultural Department to meet the demands of the Commissariat Department in this respect at Poona at rates rather better than those tendered in the outside market. This forms the nucleus of the demand on which the farm works, and the arrangement has now been working for nearly five years. The supply is restricted to the requirements of the military hospitals and prisons, and these are extremely variable from day to day and at different seasons, whilst it is found that the morning indents are always much higher than those of the afternoon which causes considerable inconvenience to the management. The variability in the demand can be got over if a sufficiently wide margin in the supply of milk be preserved; the surplus being used for butter-making, either to be stored for future issue or for sale to the general public; but at Poona it is at times found necessary to purchase milk (for butter-making only) when the whole of the farm supply has to be issued as fresh milk. Cow's milk is in no case used for making butter; that being alone prepared from buffalo milk; the separated milk being either used for compounding, "reduced" * milk for use in the hospitals or sold to a contractor: though separated milk is also taken to some extent by the hospitals. The rates at which supplies to the Commissariat Department are made are as follow:—

* That is a mixture consisting of half whole and half separated buffalo milk.

Cow's milk	...	...	...	...	...	13 lb. per rupee.
Buffalo's milk	...	...	...	...	...	14 lb. "
Reduced "	...	...	...	...	...	20 lb. "
Separated "	...	...	...	...	...	26 lb. "

Many doctors insist upon whole milk only being supplied; others make use of reduced milk; and very little separated milk is taken.

4. I have not been able to obtain the figures as to the total amount supplied from the Poona farm to the Commissariat Department, but that point depends, of course merely on the demand, which is, as noted above, extremely variable. The

herd is maintained in the ratio of 5 cows to 9 buffaloes, and the average daily yield of the Sindhi cows was 13.875 lb. and of the buffaloes 9.125 lb. last year. The buffalo * milk is so rich in butter that

* 11 lb. of milk give 1 lb. of butter.

the butter can be supplied at 14 annas a pound.

5. At the rates mentioned above, the dairying operations are found to be profitable, but it has been found necessary to establish a run for dry cows and young stock at a short distance from Poona, and this would be necessary in any case if any considerable and useful development of operations were attempted at Saidapet. Such a development is certainly desirable and possibly land for such a run might be found at Guindy.

6. At Poona the milk has to be delivered at four military hospitals and two prisons, involving a round of 13 miles twice a day. For this two horses and a cart are maintained. Delivery is made between 7 and 8 A.M. and 3-30 and 4-20 P.M. daily; earlier delivery, though desired by the doctors, being impossible on account of the distances. All supplies are delivered by weight and are taken over by the hospital storekeepers, the milk being sent out in sealed cans, the butter in boxes. On receipt into the hospitals the milk is boiled at once.

Resolution—dated 10th March 1896, Mis. No. 1193.

Submitted for the information of Government with reference to G.O., No. 31, dated 21st January 1896.

(True Copy and Extract.)

(Signed) P. RAJARATNA MUDALIAR,
Secretary.

To the Secretary to Government, Revenue Department.

ORDER—No. 312, Revenue, dated 4th July 1896.

Miscellaneous.

On full consideration of the facts now before it, the Government considers that it is impracticable to attempt to establish a dairy farm on a large scale. Mr. Keess reports that the Saidapet farm, which is the only suitable site, cannot maintain more than some twelve or thirteen cows without interfering with its use as an annexe to the College of Agriculture, and it would thus be necessary to incur a considerable outlay in acquiring land before it would be possible to take steps towards extending dairy operations. Even if this initial difficulty were surmounted, it appears from the papers before Government that it would be impossible to supply milk and butter for the Madras hospitals except at a much higher cost than at present.

2. As regards the introduction of improved methods and appliances for the making of butter, the Government considers that the superiority of machine-made butter has already been sufficiently demonstrated in other provinces and that no steps need be taken towards inducing the public to use cream-separators. The subject, it may be noted, is of little practical interest to the great majority of the population.

(True Extract.)

for Ag. Secretary to Government.

To the Board of Revenue (Revenue Settlement, Land Records and Agriculture).
Copy to the Educational Department.

Exd. C. M. Thumbuswamy.

50 Copies.

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G.O., No. 312, 4th July 1896.

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Order No 471. Q 7 Aug 1896.

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Government Dairy Farm.

Considering that it is impracticable to attempt
to establish a — at Saidapet.

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