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MILK ANALYSES.

DR. Fream, in his text-book on Agriculture (one of the latest and most complete works on the subject, and published under the authority of the Royal Agricultural Society of England) gives the following as the percentage composition of whole milk in Great Britain :—

Water	87·0
Albuminoids (Casein albumin) ..	4·0
Milk sugar	4·6
Fat	3·7
Ash	0·7

In June, 1888, Mr. Cochran, the city analyst, communicated to the local press the results of an investigation into the composition of Colombo milk. We quote the following from his report :—

"It was necessary, in the first place, to obtain samples of milk known to be genuine, in order to ascertain between what limits the different constituents might be expected to vary. Analyses Nos. 1 to 5 represent the composition of genuine milk from cows fed upon more than one kind of food.

Besides the chemical analysis, I have given, in tabular form, a few other particulars in connection with these samples of genuine milk.

	No. 1.	No. 2.	No. 3.
Specific gravity ..	1·029	1·030	1·032
Fat	2·97	2·11	5·57
Sugar and Casein ..	7·49	7·73	8·66
Salts	·60	·76	·77
Total solids ..	11·06	10·60	15·00
Water	88·94	89·40	85·00
	100·00	100·00	100·00
Solids-not-fat ..	8·09	8·49	9·43
Age of calf ..	4 mos.	7 mos.	1 mo.
Food of cow ..	grass, cotton seed, poonac,	grass, cotton seed, boiled rice.	grass, poonac.

	No. 4.	No. 5.	No. 6.
Specific gravity	1·033	1·036	1·032
Fat	3·62	1·51	4·55
Sugar and Casein	8·66	8·66	8·95
Salts	·80	·80	·73
Total solids ..	13·08	10·97	14·23
Water	86·92	89·03	85·77
	100·00	100·00	100·00
Solids-not-fat ..	9·46	9·46	9·68
Age of calf ..	4 mos.	2 mos.	4 mos.
Food of cow ..	grass, cot. seed, poonac, rice.	grass, cotton seed, poonac.	grass only.

The following is the average composition of these six samples :—

Specific Gravity	1·032
Fat	3·39
Sugar and Casein	8·34
Salts	·74
Total Solids	12·47
Water	87·53
	100·00
Solids-not-fat	9·08

No. 3 was richest in fat, and was indeed found to be too rich for a young child, with whom No. 2 agreed very well. The milk from the cow reported to be fed exclusively on grass was only second to No. 3 in respect of fat, while it was highest of all in non-fatty-solids. No. 5 was very poor in fat. This was demonstrated both by the chemical determination and microscopical examination; nevertheless, it was a genuine sample of cow's milk, and had a normal amount of solids-not-fat. The amount of fat in cow's milk being subject to wide variation, it is customary to judge of the amount of water that has been added to an otherwise genuine sample of milk, by the amount of solids present minus the fat. In England 9·4 per cent. was for a time regarded as the minimum quantity

of solids-not-fat present in genuine cows' milk. Then, as the processes for extracting the fat were further perfected, 9·2 and 9·0 per cent. were the minima successively adopted. Finally, the Milk Committee of the Society of Public Analysts, after analysing 283 samples of milk, between February 1884 and May 1885, recommended that no sample of milk should be passed as genuine, which contained less than 8·5 per cent. of non-fatty solids. Of the six Colombo samples only No. 1 fell decidedly below this limit; but unless a large number of analyses should prove this to have been a very exceptional case, I fear we cannot fix a minimum for Ceylon above 8 per cent., and it may possibly be even less."

These analyses are valuable to those who have any interest in the production and even the consumption of milk. "The only really safe and satisfactory manner of examining milk," says Dr. Wanclyn, in his treatise on *milk analyses*, "is by means of an analysis of it." This authority referring to the lactometer states:—"I am convinced that one of the most necessary steps to be taken in milk analysis is to abandon the use of the lactometer," and again with regard to another device for testing milk, "The creamometer is at best a treacherous guide." Since these remarks were written many other instruments for testing milk have been patented (*e.g.*, the Babcock milk tester,) but though these are improvements on the appliances which have been superseded, they do not give as accurate results as chemical analyses do. Mr. Cochran's published analyses are thus particularly valuable records.

We are glad to find that dairies under responsible managers are springing up in Colombo. There is no doubt that people (whether private householders or heads of such institutions as hospitals) will pay good prices for pure milk of good quality; and it is because this is so that we find new dairies being established, in which attention is given to good feeding and general management, and that these dairies are found to be remunerative when properly worked. The Colombo Dairy Company of Park Grounds, Bambalapitiya, have lately had their milk analysed by the city analyst, with the following results:—

Fat ..	6·25	per cent.	6·43	per cent.
Sugar and Casein	8·43	"	9·17	"
Salts ..	·82	"	·70	"
Total solids ..	15·50	"	16·30	"
Water ..	84·50	"	83·70	"
	100·00	"	100·00	"
Non-fatty solids	9·25	"	9·87	"

"The above results," says Mr. Cochran, "judged by English standards, indicate not only genuine milk, but milk of excellent quality."

NOTES ON THE CATTLE MURRAIN OF CEYLON.

In transmitting to us a copy of a pamphlet on Rinderpest or Cattle Plague, being one of a series published by the Civil Veterinary Department of India, the assistant to the Inspector-General of that department made a request that we should communicate to him any local experience of the fell disease as it occurred in Ceylon. In a previous number of the Magazine we gave a summary of the exhaustive contents of the pamphlet itself, which we subsequently submitted to Mr. Veterinary Surgeon William Smith, now of Belgravia Estate, as the best qualified person to annotate the pamphlet. Mr. Smith has given almost a lifetime's study to the subject of cattle plague in Ceylon, and having been a large stock-owner, has had abundant opportunity for making himself thoroughly acquainted with it in all its bearings. The notes which follow, though they were written as disconnected remarks on the pamphlet, are still of inestimable value, and will no doubt be much appreciated by the veterinary authorities of India. We owe Mr. Smith our best thanks for permitting us to reprint his notes in the pages of the *Agricultural Magazine*:—

NOTES ON RINDERPEST OR CATTLE PLAGUE BY MR. WILLIAM SMITH, M.R.C.V.S.

Ceylon herds, from the earliest records of the Island as a British Possession, have been ravaged by Rinderpest, of my own personal knowledge for 38 years. This disease was identified, for the first time, by the Ceylon Cattle Commission of 1868, as identical with the Rinderpest of Europe, and so named by them (*vide* Indian Cattle Commission Report). I believe and maintain that the disease is endemic, and liable to outbreaks whenever conditions, favourable to its development, are present. Being highly contagious it often assumes an epidemic form, after having been carried from a common centre and disseminated over large districts. I have been able in several instances to trace its origin, and have even predicted outbreaks which speedily followed when insanitary conditions have presented themselves to me where cattle congregated.

In my opinion the Rinderpest of this country has been a more fruitful cause of the poverty and misery we find prevailing among the agricultural population of Ceylon, than all the other vicissitudes incidental to their mode of life.

Rinderpest in an epidemic form is most highly contagious and infectious, most subtile and insidious in its transmissability by any vehicle coming in contact with disease and brought sufficiently near healthy stock. An instance in my own experience:—I held a postmortem examination on an animal which had died of Rinderpest more than 100 miles from my house, had the clothes I was wearing at the time packed away in my dirty-clothes box, and reached home two weeks after, when my servant unpacked the dirty-clothes box, hanging the contents on a rope stretched between two poles. Some six cattle I had passed under the rope and clothes while going to water; and 12 days after all were dead of true Rinderpest. These cattle were near no other cattle, nor was the disease anywhere in the neighbourhood then or afterwards.

The earliest pathognomonic symptoms of this disease are the peculiar twitchings of muscles, conjointly with the involuntary pharyngeal spasms (similating deglutition) which usher in each muscular tremor; these with the rough staring coat afford sufficient evidence, should desquamations of the epithelium have in the least degree set in. (Discharge of a watery nature