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PROCEEDINGS OF THE SOCIETY OF PUBLIC ANALYSTS.

THE usual Monthly Meeting of this Society was held on June 6th at the rooms of the Chemical Society, Burlington House. In the absence of the President, Mr. Otto Hehner took the chair.

The minutes of the last meeting were read and confirmed.

Mr. Allen then read a paper on "The Examination of Urine for Sugar," the publication of which is unavoidably held over.

Mr. Chattaway now read the two following papers :

ON THE COMPOSITION OF CHEESE.

By WM. CHATTAWAY, T. H. PEARMAIN, AND C. G. MOOR.

WE were informed some months ago that a cheese was again being imported into this country in which the butter-fat had been largely replaced by other oils and fats.

We have not until recently succeeded in obtaining a specimen, but a sample of cheese, purchased under the Food and Drugs Act a short time ago, gave such abnormal results when examined by one of us, that we thought it would be of interest to compare in a table the figures representing the proximate constituents of the more commonly-used cheeses, which, so far as we are aware, have not recently been published.

We are unable to judge of the number of cheese samples examined last year under the Food and Drugs Act, but there is little cause for doubt but that the number is even more miserably disproportionate in the case of this commodity than it is in the case of many other articles.

In addition to this, we are aware that a cheese will shortly be placed on the market in this country in which the butter-fat is largely, if not entirely, replaced by other fats; and this cheese will doubtless be palmed off on the public as ordinary cheese, containing the due proportion of genuine butter-fat.

It would be out of place here to discuss the dietetic value of butter-fat over that of all other varieties; but it is insisted on by the best authorities that fat derived from milk is absorbed directly into the system, which is said to be the case of no other fat with which we are acquainted. Besides, it is clearly a fraud on the customer that any of the butter-fat should be abstracted, and an inferior, or, indeed, any other article substituted for it; for if the purchaser does not buy a cheese under a distinct title showing that it is made from skimmed or separated milk, he has a right to expect that the constituents in his cheese should bear the same proportions to one another as they do in ordinary milk.

It would be exceedingly interesting if it were possible to make any tests which would give an indication as to how far the fat and casein are assimilable, and which is most valuable from a food standpoint; but as we fear these have still to be discovered, we have endeavoured to make the chemical examination as complete as possible, and have to that end determined the following constituents, *i.e.*, water, ash, fat, and nitrogen, and have further examined the fat by the Reichert-Wollny and the Valenta test.

CHEESE RESULTS.

No. of Sample.	Name of Sample.	Water.	Ash.	Fat.	Reichert c.c. N ₁₀	Nitrogen.	Casein.	Valenta Test.
1	Cheddar (English)...	33·0	4·3	29·5	24·2	4·31	27·4	39·0° C.
2	Cheddar (English)...	35·5	4·2	25·6	28·8	4·39	27·8	42·0
3	Cheddar (English)...	33·8	4·1	30·5	26·4	4·20	26·7	31·0
4	Cheddar (Canadian)	33·3	3·6	30·6	24·0	4·34	27·6	41·5
5	American ...	29·8	3·7	33·9	26·2	4·76	30·3	47·5
6	American ...	30·6	3·6	27·7	3·0	4·84	30·8	82·0
7	American ...	29·1	3·7	35·3	23·0	4·41	28·1	46·0
8	American ...	24·1	3·9	32·0	25·8	—	—	—
9	American ...	27·0	4·5	30·1	24·8	—	—	—
10	American ...	25·0	7·9	20·1	30·4	—	—	—
11	American ...	27·2	4·4	30·9	25·4	—	—	—
12	American ...	28·1	4·5	33·0	25·6	—	—	—
13	Gorgonzola ...	40·3	5·3	26·1	22·1	4·36	27·7	26·5
14	Gorgonzola ...	33·9	4·6	26·7	23·6	4·06	25·8	45·0
15	Dutch ...	41·8	6·3	10·6	27·0	5·11	32·5	40·0
16	Dutch ...	37·6	6·5	22·5	23·0	4·58	29·1	49·0
17	Gruyère ...	28·2	4·7	28·6	30·0	4·93	31·3	37·5
18	Gruyère ...	35·7	3·7	31·8	31·1	4·49	28·7	41·0
19	Stilton ...	19·4	2·6	42·2	29·0	4·73	21·1	38·5
20	Stilton ...	21·2	2·9	45·8	32·0	4·14	26·3	45·5
21	Cheshire ...	37·8	4·2	31·3	31·6	4·03	25·7	43·0
22	Cheshire ...	31·6	4·4	35·3	31·8	4·16	26·5	47·0
23	Double Gloucester...	33·1	5·0	23·5	31·4	4·99	31·8	38·0
24	Double Gloucester...	37·4	4·6	28·1	32·3	4·45	28·3	41·0
25	Camembert...	47·9	4·7	41·9	31·0	3·43	21·8	32·0
26	Camembert...	43·4	3·8	22·6	35·0	3·83	24·4	33·0
27	Parmesan ...	32·5	6·2	17·1	28·0	6·86	43·6	28·0
28	Roquefort ...	29·6	6·7	30·3	36·8	4·45	28·3	19·0
29	Double Cream ...	57·6	3·4	39·3	31·2	3·14	19·0	40·0
30	Bondon ...	39·5	0·7	24·4	29·4	1·48	9·4	42·0
31	Cream (York) ...	63·1	1·4	6·5	29·0	2·76	17·9	41·0

The following figures call for notice, *viz.*, water in the Camemberts, Nos. 25 and 26, 48 and 43 per cent. respectively; the York cream 63 per cent., and the double cream 57.

Fat is very deficient in the following: York cream, 6·5; Parmesan, 17·1; and Dutch, No. 1, 10·6.

The nitrogen is very low in the Bondon cream, namely, 1·48; in the York cream it is 2·6, and in the Parmesan reaches the highest amount of 6·86 per cent.

From the above figures we should conclude that none of the cheeses (excepting the Dutch and the so-called "cream" cheeses) have been prepared from milk from which fat has been removed. The Parmesan cheese is, however, low in fat.

We wish to call particular attention to the American cheese, No. 6. This is a margarine cheese.

We read in Battershall's "Food Adulteration" that in 1885 a special New York State Brand was adopted for "*pure cream cheese*," which he says had a very good effect, and accomplished much in the restriction of the sale of the spurious article.

In certain previous papers on the subject of cheese, it is stated that various anomalies may be introduced by the production of varying quantities of free fatty acids, ammonia, and lactic acid, as the ripening process goes on, and, with a view of ascertaining what changes take place, we intend to examine from time to time samples, which we are preserving, of the more commonly-used cheeses, particularly from a bacteriological aspect; and we hope to lay the results before the Society at no distant date.

As to the cause of the changes in composition, taste, and smell, we are satisfied that they are almost entirely due, in the first instance, to organized ferments, which may be checked or encouraged at will according to the conditions under which we cause the ripening to take place.

Seeing that digestible nitrogenous matter is thus converted into ammonia compounds, it would appear that, as far as the food value is concerned, the further the ripening or decomposition is carried the greater the loss of flesh-forming constituents.

We have in no case found boric acid present in any of the cheeses.

We have not examined the colouring matter either in the cheeses themselves or in their rind.

In conclusion, we would urge that cheese should not be so neglected by analysts and inspectors, and that attention should be more particularly directed to American cheeses.

Our thanks are due to Mr. Robert Waterhouse and Mr. Martin Priest for their valuable assistance in connection with this paper.