WEST BROMWICH MILK CASES.

By E. W. T. JONES, F.C.S.

Read before the Society of Public Analysts, June 14th, 1876.

ON the 10th February last, amongst other samples were submitted to me, two of milk marked respectively 40 C, and 43 C, which I analysed with the following results:—

	40 C.	43 C.
Solids not Fat	7.96	8.15 per cent.
Fat	2.57	3.50 "
Total Solids	10.53	11.65 "
Ash	0.62	0.64 "

The analysis being repeated, gave corroborative figures, so I certified that 40 C contained 14 per cent., and 43 C, 12 per cent. of added water. Summonses were taken out, and on the cases coming on for hearing, numerous arguments were advanced to show that the proceedings were irregular. These failing, however, the only chance of getting the cases dismissed was to prove that the milks were genuine by analysis.

Now it subsequently came to light, that the portions left with the vendors had been analysed with results confirmatory of mine, but the defendant elected to have the inspector's portions submitted to the Somerset House chemists, they were received by them on the 9th May, and as a result of their examinations, the following certificates, came to hand:—

INLAND REVENUE LABORATORY.

SOMERSET HOUSE, LONDON,
18th May, 1876.

[Report on Sample of Milk marked No. 40 C.]

THE sample was received here by post on the 9th inst., in a bottle securely sealed. The milk was in an advanced state of decomposition, the gas evolved having evidently burst the bottle, and a portion of the milk was lost. From the position of the bottle, the milk lost would probably contain more fat than the portion remaining, but the amount of solids not fat would not be materially affected thereby.

As we have stated in our certificate relating to sample 43 C, the decomposition has the effect of reducing the proportion of solids not fat, and this circumstance has to be taken into account when considering the results yielded by the residue in the bottle. The results are as follow:—

Solids not fat	8.14 per cent.
Fat	2.43 "
Water	89.43 "
	<u>100.00</u>
Ash	0.66
Free Acid estimated as Lactic Acid	0.68

After having made the necessary addition to the amount of "solids not fat," to compensate for the loss by decomposition, the total is low for a genuine milk, but not lower than has been frequently found in genuine samples.

The amount of "fat" contained in the residue is lower than is usually found in genuine milk, but as the sample in this case was only a partial one, we cannot draw any conclusion from this fact.

The "ash" is not lower than is found in many genuine milks.

We very much regret that we are unable throughout the accidental loss of a portion of the milk, to form a definite opinion upon the character of the sample, and to render the magistrates greater assistance in coming to their decision in the case.

(Signed) J. BELL,
R. BANNISTER,
G. LEWIN.

INLAND REVENUE LABORATORY.

SOMERSET HOUSE, LONDON,
18th May, 1876.

[Report on Sample of Milk marked No. 43 C.]

THE sample was received by post on the 9th inst. The bottle was securely sealed. The milk was in an advanced state of decomposition, having gone beyond the lactic fermentation. This decomposition would naturally affect the proportion of solids not fat as compared with the quantity present in the milk when fresh, and an allowance must be made for the loss in question in determining whether water has been added or not. The results of our analysis are as follows:—

Solids not fat	...	...	...	8.14	per cent.
Fat	...	...	...	3.50	"
Water	...	...	...	88.36	"
				100.00	
Ash	...	...	...	0.78	
Free Acid estimated as Lactic Acid				0.92	

When the necessary allowance for "solids not fat," lost by the decomposition of the milk has been made, the amount is lower than is present in milk of first quality, but not less than is frequently found in genuine milk of low quality.

The quantity of "fat" represents a milk of fair quality, and exceeds the proportion found in many genuine milks.

It will be observed that the percentate of ash is .78, and there are very few milks found to contain a larger proportion of ash than this amount, whilst the great bulk of genuine milks contains a smaller proportion. This in our opinion is an important fact in judging as to the character of the sample.

Under these circumstances we do not feel justified in pronouncing the milk to be adulterated with water.

(Signed) J. BELL,
R. BANNISTER,
G. LEWIN.

I would draw attention to the agreement between our respective analyses, which is the more remarkable, considering the age of the samples when last analysed, and the decomposition alleged to have taken place. I cannot quite satisfy myself whether an allowance *has* been made for the decomposition, and the lactic acid found included in the figure of "solids not fat," but it will be noticed that the 100 is made up with three terms, viz.: "solids not fat," fat and water, and so the tabulation strictly considered, appears to show that such an allowance has been made, in which case the composition of the original milk has been arrived at with wonderful correctness, but I am rather inclined to think that the percentages given are the results of the usual analytical method of procedure, without any correction for lactic acid, &c., and that a speculation has been made as to what the composition was originally. Under either circumstances, I submit it would only have been fair of the Somerset House chemists to have added to "we do not feel justified in pronouncing the milk to be adulterated with water," but owing to the decomposition, there is some uncertainty about the matter. I shall be glad to hear comments upon these cases, because I hold they have an important bearing with all Public Analysts, since if prosecutions cannot be sustained against vendors of such milks as these, the quality of our milk must go back to the old state, and milk examination be practically useless.

I give a tabulation of the first 20 milks examined under my appointment for South Staffordshire, and of the next 20 after some heavy fines had been imposed, showing a marked difference. I also show the composition of 20 submitted from December 6th, 1875, to January 6th, 1876, and also of 4 submitted the same day as these in question, and of 5 received two days after. All these figures refer to milks purchased by the inspectors for analysis and taken seriatim, they therefore, show the character of the milk retailed in the district—

MILKS.

1873. Dec. 15. 1st 20 under S.S. appt.				1874. January 19. 2nd 20 after some heavy fines.			
S. n. F.		Fat.	Ash.	S. n. F.		Fat.	Ash.
8·94	...	3·34	·75	8·19	...	2·35	·64
8·22	...	1·95	·51	9·93	...	·62	·71
10·60	...	3·12	·68	8·97	...	2·81	·56
9·95	...	2·35	·65	9·50	...	2·26	·61
10·66	...	2·29	·80	9·12	...	3·16	·67
4·81	...	1·67	·41	9·18	...	3·77	·64
6·83	...	1·66	·50	9·89	...	2·50	·68
10·18	...	2·38	·67	9·03	...	1·07	·62
10·41	...	·69	·76	9·28	...	2·06	·63
7·67	...	2·84	·49	7·99	...	·37	·67
6·87	...	2·00	·57	10·37	...	1·92	·70
8·95	...	2·30	·67	9·22	...	2·22	·71
9·22	...	2·98	·61	10·42	...	2·58	·82
5·43	...	2·48	·45	10·15	...	1·53	·68
9·21	...	2·07	·59	10·35	...	2·62	·76
6·34	...	2·30	·44	9·64	...	2·77	·77
7·96	...	2·91	·53	8·96	...	2·79	·71
8·48	...	1·70	·65	10·63	...	2·04	·70
9·17	...	3·36	·63	9·49	...	2·62	·66
9·18	...	4·78	·67	9·86	...	3·05	·73
169·08	...	49·17		190·17	...	45·11	
Average 8·45	...	2·45		Average 9·50	...	2·25	

20 Samples of Milk submitted from
Dec. 6, 1875, to Jan. 6, 1876.

S. n. F.	Fat.
9·43	3·19
10·29	3·80
9·61	4·20
9·36	3·54
9·09	1·33
9·66	2·56
9·56	3·49
9·61	3·21
9·19	2·80
8·92	1·95
8·86	3·13
9·63	2·78
7·86	3·27
9·60	4·29
9·09	3·31
8·47	3·27
9·33	5·02
9·26	3·68
9·27	3·31
9·08	5·72
185·17	67·85
Average 9·25	3·39

6 Milks submitted on the
10th February, 1876.

S. n. F.	Fat.
9·60	2·99
9·72	2·99
*7·96	2·57
9·00	3·58
9·37	2·77
*8·15	3·50

5 Milks submitted
12th February, 1876.

S. n. F.	Fat.
9·41	3·24
9·55	2·35
9·35	2·88
9·85	3·14
9·29	2·98

*The Two Samples in question.

Mr. Wanklyn (who had just taken the Chair) said that the Society had most strenuously opposed the clause of the Food and Drugs Act, which sanctioned permissive reference of disputed cases to Somerset House, and its forecast had been fully realized in this case. Permissive reference had become in practice the administration of the Act by the Somerset House officials, who were now unwittingly encouraging milk dealers to water milk to the extent of 10 or 20 per cent. Under these circumstances it became the duty of the Society to act with decision, and he proposed the following resolution:—

“That in the opinion of this meeting of the Society of Public Analysts, Mr. E. W. T. Jones F.C.S., was, by the figures of his analyses of the two samples of milk marked respectively 40 C, and 43 C, justified in certifying that those samples contained an admixture of added water. Further this meeting is of opinion that the results of the chemical analyses of the before mentioned samples (40 C and 43 C), made by the chemists employed by the Inland Revenue department, justify the conclusion arrived at by Mr. Jones.”

This resolution was carried unanimously.

CRYSTALLIZED SULPHIDE OF MERCURY.

M. MEHU, communicates to the *Journal de Pharmacie et de Chimie*, some properties of sulphide of mercury, which will no doubt be of interest to practical chemists, from these experiments it appears that sulphide of mercury is insoluble, both in sodic hydrate and in mono-sulphide of sodium, but soluble in a mixture of the two, from this solution it is precipitated by acids, and by large dilution with water, and even sulphide of hydrogen, by saturating the free alkali, has a like effect. The following are the best preparations to get a clear solution: 1 eq. mono-sulphide of sodium, 1 eq. sodic hydrate $1\frac{1}{2}$ eq. sulphide of mercury, or the following: crystallized mono-sulphide of sodium 1 pt. solution of sodic hydrate 1.33 sp. gr., 2 pts., sulphide of mercury, 1 pt.; care must be taken not to have any poly-sulphides present, which would cause sulphur to crystallize out; the above solution when exposed to the air in a basin covered only with blotting paper, absorbs carbonic anhydride from the air, and deposits colourless crystals of carbonate of soda containing some sulphide of sodium, and 5 per cent. of sulphide of mercury, when exposed to the air for weeks the crystals get very dark in colour, and then contain hexagonal crystals of sulphide of mercury, the slower the process the finer and more regular are the crystals, they resemble quartz, and are of the colour of cinnabar. The author further states, that he has never succeeded in obtaining crystals of the much spoken of double salts of sulphide of mercury and soda, however, he does not deny their existence. The greenish substance which frequently forms on the surface of the fluid, is chiefly composed of finely divided sulphide of iron.

L. d K.

THE DETECTION OF COLOURING MATTER IN WINE.

VAN GELDER, in a notice to the *Pharmaceut* No. 36, states, that having tried Lammatine's process for the detection of foreign colouring matter in wine, he found it answer very well in the case of logwood and cochineil, but not for aniline. This process which was originally described in the May number of the *Journal de Pharmacie et Chimie*, simply consists in shaking 100 parts of the wine with 100 parts of coarsely powdered peroxide of manganese, for a quarter of an hour, and then filtering through a double filter, if the wine is pure a colourless filtrate will result.

L. d. K.

ON THE HYPOPHOSPHITES.

Le Journal de Pharmacie et Chimie, for June, contains a paper of some length, on the character and impurities of the hypo-phosphites, by M. Patromillard, in which the author points out that owing to carelessness in their manufacture, the two most important hypophosphites, namely, those of lime and soda, are frequently contaminated to a considerable extent, the former with phosphates, phosphides, and barium, the latter with phosphates, sulphates, and barium, the phosphates which are produced by oxidation of the hypophosphites during evaporation, are rarely absent from the lime salt, and are the cause of the turbidity usually produced on dissolving it in water. It is obvious that some of the above impurities, especially the phosphides and barium, may considerably modify the action of these important medicines, and should the amount of impurity be excessive, their poisonous properties might render them extremely dangerous.

H. D A. P.

MODIFICATION OF DUFLOS' METHOD FOR THE SEPARATION OF IODINE.

By C. RICE.

New Remedies for April.

DUFLOS' process depends upon the fact that ferric chloride in contact with metallic iodides or hydriodic acid liberates iodine, thus: $\text{Fe}_2\text{Cl}_6 + 2 \text{HI} = 2 \text{Fe Cl}_2 + 2 \text{H Cl} + 2 \text{I}$. The iodide is usually put into a distillatory apparatus, and the iodine passing over is received into a solution of iodide of potassium. The author's modification is to assist the evolution of the iodine vapours by a current of carbonic anhydride.

A. W. B.