NOTES ON THE EFFECT OF LOW TEMPERATURES UPON MILK.

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THIS subject possesses a practical interest, inasmuch as it is not of singular occurrence to find a defence set up, founded upon such effect. The usual theory has been that cold causes all the watery portion of the milk to separate out and rise to the surface, all the solids of milk being left at the bottom, if the milk be exposed for a sufficiently long period.

Of course the whole theory pre-supposes no agitation of the milk by carriage, or stirring up in process of sale.

Assuming these practically impossible conditions, I obtained the following results in experiments with two milks. One milk was exposed to so low a temperature in a cylindrical vessel, about $2\frac{1}{2}$ deep by 3 diameter, that the top, the sides, and a portion of the bottom joining the sides, were solidified to the extent of about one inch in thickness, leaving a portion liquid, which occupied part of the middle and bottom of the vessel:—

	Milk at ordinary temperature.		Solid from top.		Solid from sides half way down.		Fluid from middle and bottom.	
					Per centages.			
Total solids	12.06	...	15.00...	...	7.0	...	...	18.9
Solids not fat	10.04	...	6.50...	...	5.8	...	...	18.3
Fat	...	2.02	...	8.50...	...	1.2	...	0.6

Another milk (which had been watered) was exposed to a temperature of about 38° F with the result that no portion of it solidified in about 12 hours.

	Milk at ordinary temperature.		Liquid from top.		Liquid from middle.		Liquid from bottom.	
					Per centages.			
Total solids	...	11.56	...	14.00	...	10.20	...	9.64
Solids not fat	...	8.83	...	8.74	...	8.74	...	9.03
Fat ...	...	2.73	...	5.26	...	1.46	...	0.61

In the case with which I was concerned, the Inspector, being the first morning purchaser, was served with the top portion of the milk, and it was urged in defence that this sample *appeared* by analysis to have been fraudulently watered, when in fact the effect was produced by the low temperature to which the milk had been exposed.

The results of my experiments, however, disposed of this theory, for I think I may safely say no analyst would suspect watering in a milk represented by "top" in either sample.