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A GENERAL MEETING was appointed to take place at Swansea, on the 27th Aug., but has been adjourned till November next, in London. We print some of the papers announced for the meeting.

ON THE ESTIMATION OF THE INSOLUBLE FATTY ACIDS IN BUTTER FAT.

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ALTHOUGH much has been written within the last few years on this subject, the estimation of the insoluble fatty acids is still a very tedious process, and liable to serious error, chiefly on account of the difficulty of effectually washing a fatty substance with water, without incurring loss, and of the difficulty of transferring the fatty acids, when washed, to a vessel suitable for drying and weighing them in.

In the modification of the process about to be described, it is hoped that these difficulties have been removed, and the estimation rendered less tedious, more expeditious, and above all more accurate than the usual method of washing either in a flask or on a paper filter.

It is based on the insolubility of the oleate, stearate and palmitate of barium or calcium, and on the ready solubility of the butyrate, &c., of those metals.

Weighing the precipitate obtained by carefully neutralizing the saponified butter fat with acetic acid, and adding solution of barium or calcium chloride, and washing with boiling water, was first tried, but in practice it was so difficult to exactly neutralize the soap solution, and either fatty acids were precipitated or carbonate formed from the slight alkalinity, and the precipitate was with difficulty dried for weighing, and the results were unsatisfactory, probably partly owing to inconstancy in the composition of the precipitate ; and it will also be evident that the weight of the precipitate so obtained would not be directly comparable with the weight of insoluble fatty acids in different fats on account of the different combining proportions of the oleic, stearic and palmatic radicles.

It was therefore found necessary to weigh the fatty acids in a free state. To accomplish this, the acids were liberated, after washing the salt containing them, in contact with ether and a portion of the ethereal solution so obtained, evaporated to dryness.

In practice the process is conducted as follows :—A portion, 1—3 grammes, of clarified butter-fat is saponified by heating on the water-bath with about twice its volume of alcoholic potash, and the occasional addition of a few drops of boiling water, the combination is completed in about twenty minutes ; the solution is then diluted to about 300 c.c.

with cold distilled water, and solution of $BaCl_2$ added until a curdy precipitate separates, and the liquid is no longer rendered milky by a fresh addition, the precipitated salt is collected on a filter and washed with warm water, then transferred to one of the tubes described by Dr. Muter in his paper on the "Estimation of Oleine in Fats" (THE ANALYST, Vol. II., p. 74), which is a long graduated tube of 250 c.c., graduated from the bottom upwards, and furnished with a well ground stopper and a stopcock, which is placed at 50 c.c. from the bottom. As the mouths of these tubes are rather narrow, and consequently inconvenient for the introduction of the precipitate, the author uses one that has been cut off just below the shoulder and having a large stopper ground to fit accurately in the tube itself, which is one inch in diameter. Hydrochloric acid is added to the tube, which already contains the precipitate and the water used in washing it into it, when the fatty acids are liberated ether is added; if the watery liquid reaches above the stopcock, as it probably will if much water was required to transfer the precipitate, about 50 c.c. only of ether should be added at this stage. The tube, well shaken, is allowed to stand until the liquids have separated perfectly; now if the stopper be removed and the tube inclined forward, it is easy to draw off the bottom liquid from the cock until the level of it falls considerably below the cock when the tube is upright, without any loss of ethereal solution The rest of the ether is now added (a total quantity of 100 c.c. is sufficient) and the tube once more shaken and allowed to stand; the volume of the ethereal solution is now read off from the graduations of the tube and noted.

It is only required now to remove an accurately noted quantity of the ethereal solution to a tared flask; distil off the ether and weigh the fatty acids that remain; before measuring the required quantity for evaporation, about 1 c.c. should be drawn off in order that the delivery tube of the stop-cock may be filled and no correction needed for the quantity it would retain if the measurement had been commenced with the tube empty.

This method has been used in the author's laboratory for over six months, and has been found very satisfactory, as the whole operation can be concluded in a very short time, and very concordant results can be obtained in two analyses of the same fat, as the following extracts from the laboratory note-book will show:—

	Quantity taken.	Insoluble fatty acids.	Per cent.
No. 1. Butter fat	3·097 grm.	= 2·728	= 88·08
No. 2. Butter fat	1·180 ,,	= 1·038	= 88·00
(Same as No. 1)			
No. 3. Lard	1·016 ,,	= ·9769	= 96·15
No. 4. Almond Oil	1·179 ,,	= 1·1321	= 96·02
Theory for pure Oleine		=	95·70

Either barium or calcium chloride may be used for the precipitation, but barium is preferred, especially for fats or oils containing much oleine, as the salt produced is less apt to stick to the sides of the beaker, and it is more easily washed with hot water, not being so liable to run into a plastic mass.