

therefore, agrees in essential features with that brought about by Babcock and Russell's galactase, although in view of the work of Van Slyke and Hart, Freudenreich, and Jensen, it appears probable that in both cases bacterial enzymes may also have taken part in the digestion.

Sample No. 8 preserved by the addition of 0.1 per cent. formaldehyde developed an acidity corresponding to 0.84 per cent. lactic acid in twenty-eight months, and during this time lost only 0.18 per cent. of milk-sugar, or less than 4 per cent. of the original amount, while 95 per cent. of the original casein had undergone digestion. In experiments made by A. W. Hahn and A. J. Mettler in this laboratory upon samples of milk preserved by the addition of 0.1 per cent. sodium fluoride, sodium salicylate, or hydrogen peroxide, the total acidity calculated as lactic acid has never equaled the amount of lactose destroyed, while up to the point at which 25 to 30 per cent. of the original lactose has disappeared, no marked digestion of casein has ever been noticed.

These analyses, therefore, in addition to showing the general nature of the very extensive proteolysis which had taken place, afford a striking illustration of the effect of an added antiseptic in determining the character of the fermentation which subsequently occurs in the milk.

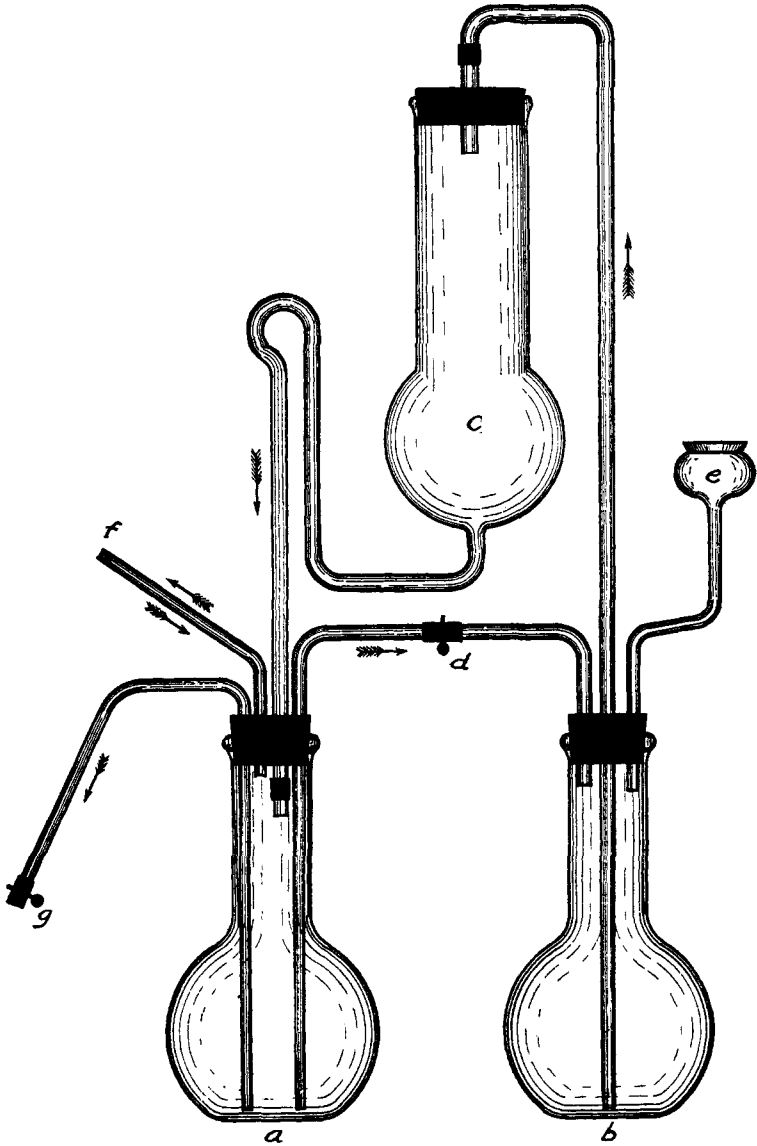
EXTRACTION APPARATUS.

BY ALLEN ROGERS.

Received December 11, 1905.

THE author has obtained very excellent results by use of the herein-described apparatus in the analysis of such substances as tea, coffee, tannin and so on, where an aqueous infusion is necessary.

Two flasks *a* and *b* are employed and may be of any size desired. From the bottom of *b* a glass tube connects with *c* which contains the material to be extracted; at the end of *c* is a Bunsen valve. To charge the apparatus the clamp *d* is opened and water introduced through *e*; the clamp *d* is then closed, and suction applied at *f*, thus causing the liquid to pass over the material in *c*. The solution having passed from *b* to *a* the clamp *d* is again opened, and by blowing at *f* it is forced back into *b*. When a concentrated solution has been obtained in *a* it may be removed



by opening *g* and blowing in at *j*. A fresh supply of water is then added, and the process continued until the extraction is completed.

The flasks are heated on a water-bath, thus having the advantage of reproducing the conditions as they exist in commercial processes.

The suction is secured by means of a filter-pump, and can be regulated so that the solvent passes over the material drop-wise. The time required for the liquid to pass from *b* to *a* in this manner is about fifteen minutes, thus necessitating a minimum amount of attention. The period of extraction is much less than by means of the Soxhlet or other methods in common use, and obviates the danger of decomposition in the tannic acid. It will be seen also that the apparatus is applicable to any form of extraction, and the temperature may be regulated to suit the various conditions.

A REAGENT IN THE CHEMISTRY OF FATS.¹

BY E. TWITCHELL.

Received December 20, 1905.

(FIRST PAPER.)

IN A previous paper² I described a new series of sulphonic acids of the stearic radical combined with various aromatic radicals. These compounds are stable at 100° C. and act as catalytic agents in causing the hydrolysis of fats. At 100° C. less than 1 per cent. of naphthalenestearosulphonic acid added to a mixture of a fat with an excess of water will cause an almost complete separation of the glycerol in eight to ten hours. Of course a continual mixing of the fat and water, as by boiling, is necessary.

Other sulphonic acids containing a higher fatty radical (acid or hydrocarbon) have the power of decomposing fat and water into fatty acid and glycerol at moderate temperatures, but the fatty-aromatic sulphonic acids above referred to are prepared more easily and with better yields. They are therefore used exclusively in my process of separating glycerol from fats on a large scale.

Stearosulphuric acid, prepared by treating oleic acid with a moderate excess of sulphonic acid, has most of the properties

¹ Read before the Cincinnati Section of the American Chemical Society, December 13, 1905.

² This Journal, 22, 22.