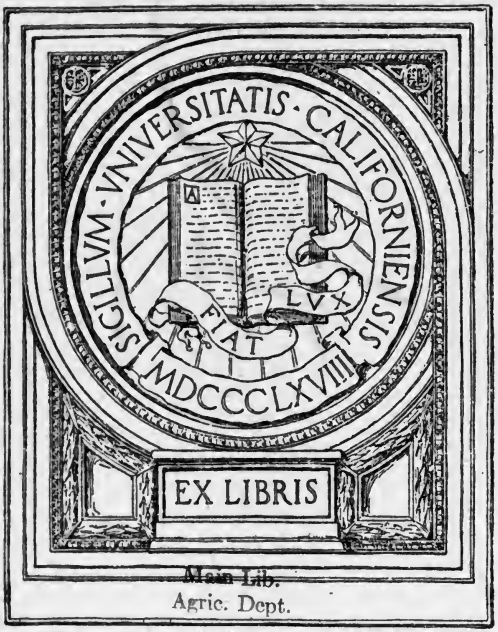

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APPARATUS FOR USE IN THE DETERMINATION OF VOLATILE ACIDS IN WINES AND VINEGARS.

By H. C. Gore,
Assistant Chemist, Division of Foods.

In this modification of the Hortvet-Sellier apparatus [a] a copper flask is substituted for the outer glass flask and a constant feed device for the flask has been added; there are also two changes of a minor nature consisting in a small ridge blown in the inner flask to form a shoulder for the rubber gasket and the elimination, as unnecessary, of the dropping funnel. The constant water feed is operated by running the supply water through tube *a* (fig. 1), which passes through tube *b*. The overflow passes through *b* and rises through tube *c* to the small basin *d*, which is connected with the drain. Tube *a* is placed within tube *b*, because steam is so prevented from passing out through *b*. Distilled water should be used which has been largely freed from carbon dioxid by washing it from twenty to thirty minutes with a rapid stream of air. The water should be admitted somewhat more rapidly than it is used. The rate of flow is conveniently regulated by comparing the rate of drip in the small sight tube *c* with that from the condenser. Experiments with the apparatus showed that when tap water was supplied to the generator there was an error due to the presence of carbon dioxid in the distillate, equal to about 0.3 cc of tenth-normal alkali in 100 cc, phenolphthalein being used as indicator. When ordinary distilled water was used, the error was about 0.15 cc. When distilled water was employed from which the greater portion of carbon dioxid had been removed by aerating, the error was but 0.05 cc. The error is constant and may be subtracted from each determination.

The apparatus is operated as follows:

Place 10 cc of the sample in the inner flask, which should have been removed from the outer flask and be entirely cool. If the sample is noticeably charged with carbon dioxid, pass through it a current of air for a few minutes by attaching to the flask a stopper bearing a glass tube which is connected with suction.

[a] J. Ind. Eng. Chem., 1909, **1**: 31.

The air passes in through the side tube in the flask and washes out practically all of the carbon dioxid in the sample without removing appreciable quantities of volatile acid. Connect the flask with the distilling bulb and place in the outer flask, tube *f* of the outer flask being open. Make all connections tight and close tube *f*. In the case of wines, collect about 100 cc of the distillate. In the case of vinegars, from 200 to 300 cc are required. Titrate distillate with stand-

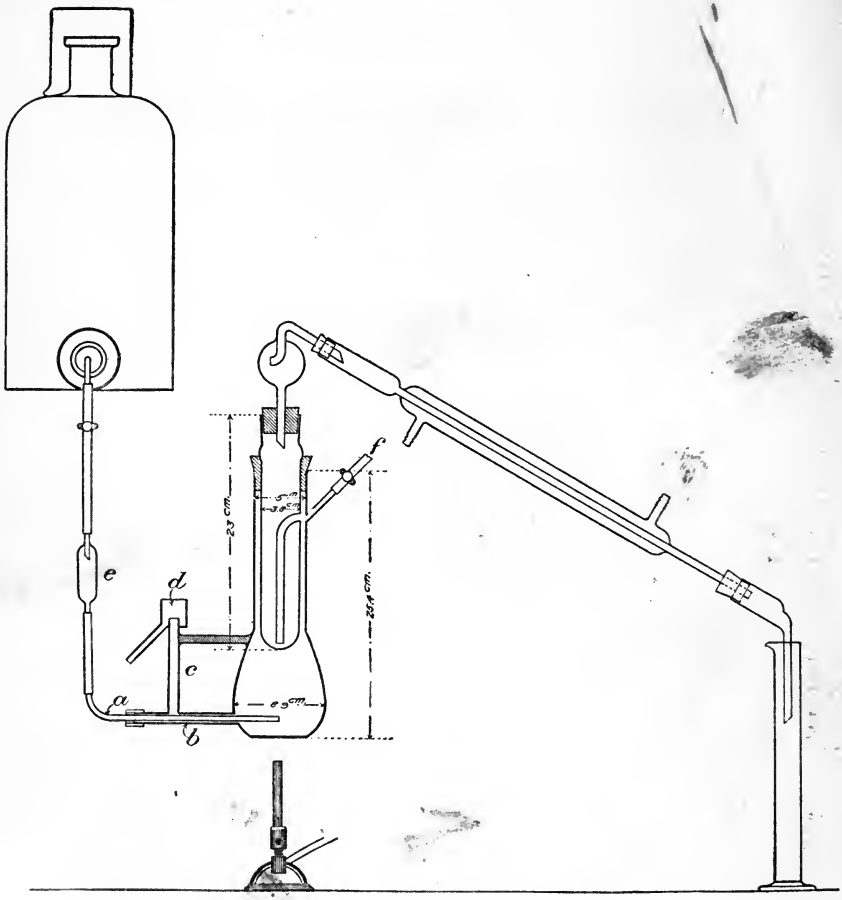

FIG. 1.—Modified Hortvet-Sellier apparatus.

ard alkali free from carbonates using phenolphthalein as indicator and subtract 0.05 cc for each 100 cc of distillate. About fifteen minutes are required for a determination of volatile acid in wine and from thirty to forty-five minutes in the case of vinegar. The volume of liquid in the inner flask increases but very slowly during a determination. The apparatus should find a wide use in the determination of volatile constituents.

[Cir. 44]