

On its introduction, it was announced that "Chloroform Pictet" had been experimentally proved to possess a capability of resisting the influence of sunlight for four days. Schacht and Biltz² therefore inferred that it contained alcohol, and their prediction that such was the case, without even having seen a sample, ultimately proved to be the case. Moreover, Schacht² found that "Chloroform Pictet" suffers the usual decomposition on washing to remove alcohol; and Biltz³ regarded the decomposition of chloroform under the influence of light and air as a natural characteristic of chloroform and not as a result of impurities.⁴ However, DuBois-Reymond⁵ stated that "Chloroform Pictet" is affected less by sunlight than any other chloroform with even the addition of alcohol.⁶

J. F. MacFarlane & Co.,⁷ separated the following relative quantities of "impurity" from "Chloroform Pictet" and a British product:

	Per cent.
From domestic product.....	0.0000512
From domestic product.....	0.0002050
From "Chloroform Pictet".....	0.0008200
From "Chloroform Pictet".....	0.0004100

Helbing and Passmore⁸ examined a large number of samples of chloroform which had been purified by Pictet's process, none of which, however, was anaesthetic chloroform—that is, all the samples were is to remove the various substances with which chloroform is invariably contaminated, from whatever source it is prepared, and is conducted in three stages: First, the chloroform in the cylinder is cooled down to -80° by allowing ethyl chloride, ethylene, "Pictet's liquid," etc., to evaporate in the jacketed space outside of the cylinder, and filtering the cold liquid mass; foreign bodies crystallizing above this temperature are thus removed, from which the liquid chloroform is filtered off through the above-mentioned grating. The second stage is to solidify the chloroform thus obtained by reducing the temperature of the cylinder to -82° , when about two-thirds of it freezes against the sides of the container; the remaining liquid is drained off and the solid chloroform is melted (according to Berthelot, chloroform melts at -70° ; Haase found the melting point to be -62° ; while Archibald and McIntosh reported -63.2°) and run out of the cylinder for the second time. The product thus obtained is finally subjected to distillation at a very low temperature under reduced pressure, the cylinder used in the previous stages of the purification now serving as the receiver; the first and last portions of the distillate are rejected, while the intermediate product, amounting to about 80 per cent. of the total, is obtained as "chemically pure chloroform."

¹ *J. Soc. Chem. Ind.*, **12**, 543. See also, *Western Drug.*, **1891**, 379.

² *Pharm. J.*, [3] **22**, 691.

³ *Ibid.*

⁴ See also, Biltz, *Ber. Pharm. Ges.*, **2**, 76, 247; Schacht, *Ibid.*, **2**, 69; Thilo, *Pharm. Ztg.*, **39**, 543.

⁵ *Pharm. Centralh.*, **32**, 658.

⁶ It will be shown under decomposition that the changes which occur in chloroform on exposure to air and light are accelerated by the presence of certain impurities. Had DuBois-Reymond made his comparisons of "Chloroform Pictet" with properly purified samples of anaesthetic chloroform, no such differences as he reported could have been observed.

⁷ *Brit. Med. J.*, **1892**, i, 525.

⁸ *Helbing's Pharm. Record*, March, 1892.

apparently alcohol-free. They found an average specific gravity of 1.5002 at $15^{\circ}/4^{\circ}$ in six specimens; a boiling point of $61.0-61.1^{\circ}$ at 756 mm.; and the usual tests with potassium dichromate and sulphuric acid, silver nitrate, and zinc iodide and starch gave negative results. The fractions obtained by distillation were examined and the specific gravity of each determined; in no case was any variation found beyond the limits of experimental error and the temperature rose in no case above 61.1° . In only one case did the residue amount to 0.00005 per cent., or 1 part in 2,000,000, and even then no bad odor was apparent.

The "Chloroform Pictet" examined by the authors possessed a density of 1.491 at $15^{\circ}/15^{\circ}$, and all the tests for the presence of allowable impurities and decomposition products gave negative results. Four other German products and one American anaesthetic chloroform, all of which were purified by chemical treatment, were found to be fully as pure, however, which supports the contention of the authors that purification by cryogenic means is not necessary to secure chloroform of anaesthetic grade.

DuBois-Reymond¹ has studied the physiological action of "Chloroform Pictet" and of the residue of foreign substances obtained in the process of Pictet. He found that the shape of the pulse waves and the frequency of respiration are about equally affected by both substances, the rate of respiration varying freely; that the pulse rate, compared in nineteen cases, is higher at the close of the experiments with the residue than with those with the purified chloroform; that the blood pressure in by far the greater number of experiments at the moment respiration ceases is higher after inhalation of the purified chloroform than after the inhalation of the impure residue; and, finally, that the residue causes stoppage of respiration much more quickly than does purified chloroform. DuBois-Reymond hardly conducted a sufficient number of physiological experiments to enable one to form a definite opinion of the physiological action of the commonly occurring impurities of commercial chloroform which are separated by means of the process of Pictet. In addition, the variable nature of these impurities, owing to the various processes of manufacture and the variability of the crude materials used therein, renders such an investigation of little value unless these facts were considered. This does not appear to have been the case.

(To be continued.)

¹ *Brit. Med. J.*, **1892**, i, 209.

LABORATORY AND PLANT

A MODIFIED WILEY EXTRACTION APPARATUS.

By W. D. RICHARDSON AND E. F. SCHERUBEL.

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Of the making of extraction apparatus there is no end. In almost every laboratory special devices are in use, which have their advantages and dis-

advantages and their special applications, and each year witnesses the production of new forms or combinations. Of all forms of extraction apparatus, the Wiley apparatus¹ is probably the simplest and

¹ *J. Anal. Appl. Chem.*, **7**, 65; *J. Am. Chem. Soc.*, **1893**; Wiley, "Principles and Practice of Agricultural Analysis," Vol. III, pp. 48-52.

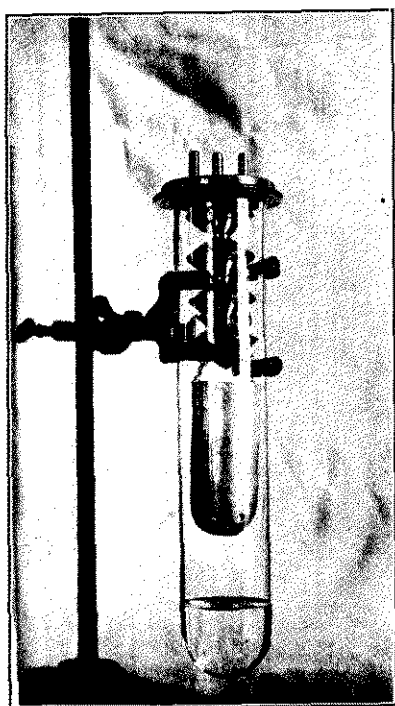


Fig. 1.—Percolating type.

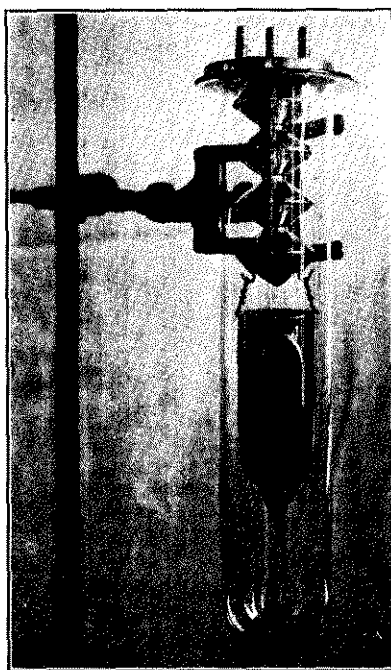


Fig. 2.—Siphon test.

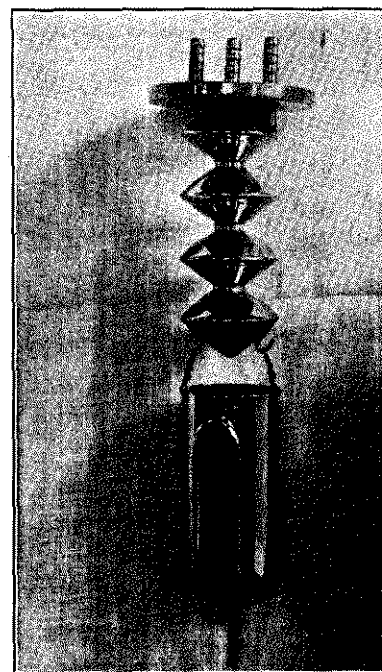


Fig. 3.—Siphon type, inner parts.

most compact. The disadvantages of the original apparatus are the small size of the crucible employed and the difficulty of percolation through an asbestos pad. For many years an apparatus has been in use in this laboratory modeled after the original Wiley apparatus, but modified so as to adapt it to more general use. In Fig. 1 is shown the percolating form of the apparatus. The glass tube is of Jena glass 2 in. inside diameter and 11 in. high; the upper surface of the flange is ground to a plane surface; the cup is of aluminum, 3 1/2 in. high and 1 1/2 in. in diameter; the bottom is perforated with 3/16-in. holes. This cup takes the S. & S. extraction shell 33 X 80 mm. No inner cup is used for weighing purposes, as this would complicate the apparatus. The condenser is 4 in. long. The percolating form of extractor can be used for all extractions to which percolation is ordinarily applied.

Fig. 2 shows the siphon type of extractor, and Fig. 3 shows the inner parts of the siphon type. The siphon cup is 1 1/2 in. in diameter and 3 1/2 in. deep. It is made of nickel-plated brass and has the ordinary siphon tube attached. The inner diameter of the siphon tube is 1/8 in., as larger tubes do not siphon satisfactorily. In using the siphon apparatus it is best to trim off a little of the upper edge of the extraction shell in order to cause it to set deeper into the cup.

This apparatus is, in the writers' opinion, by far the simplest and most adaptable of all forms of extraction apparatus. There are no joints and no opportunities for breakage. The extracted residue is, of course, weighed outside the extraction apparatus in a tared beaker or flask.

One or the other form of this apparatus has been

used for the extraction of tankage, cotton seed meats and meals, meat and sausages, soap, etc., etc., and has been found very satisfactory in all cases.

The apparatus is made by E. H. Sargent and Co., Chicago.

LABORATORY OF SWIFT & COMPANY,
CHICAGO.

A SUBSTITUTE FOR THE BLAST LAMP.

By W. A. ERNST.

Received November 8, 1911.

The chemist is often required to have a flame which is hotter than the flame from an ordinary Bunsen burner. He can, of course, resort to the blast lamp, but blast lamps, where compressed air is available, are not met with, in most laboratories, and the chemist is obliged to make use of the foot bellows, which, it is well-known, is inconvenient and cumbersome.

The writer, on looking around for some method by which a hotter flame could be produced by the ordinary Bunsen burner, discovered that by making a simple little change in the chimney for a Bunsen burner, an intensely hot flame, almost equal to the blast lamp, could be produced. This flame will be found sufficient for all ordinary purposes, such as making fusions, ignitions, etc.

The accompanying diagram is self-explanatory. A small wire nail is inserted about one inch above the bottom of the burner chimney, and a small wire or staple hung over the nail; this is allowed to go part way into the burner. The height which the nail and staple must be from the burner, must be found for each individual lamp, but can be regulated by moving the chimney up or down by the aid of the burner star. When once the proper height is obtained, all that is