by Patterson,[1] Herz and Knoch,[2] and Voerman[3] was unfortunately overlooked. Patterson's results, with one exception, and Herz and Knoch's single determination cannot be compared with ours, since they are referred to unit volume of the saturated solution, while ours are referred to unit weight of solution. Patterson's value at 15° falls exactly on our curve. Voerman's results, which were obtained by titration of the saturated solutions with oxalic acid, include the eutectic point and ice line. At temperatures where comparisons may be made, his values are in all but one case lower than our averages by amounts appreciably larger than the difference between our extremes, and in every case are lower than our lowest result. Since we employed three different methods of analysis, one of which was identical with his, and since in our experiments saturation was approached both from above and below, it is probable that Voerman's values are slightly too low.

GREGORY P. BAXTER.

A Device for Filling Bottles from Carboys.—We have found it such a nuisance to fill acid bottles from carboys that until recently we have purchased all our acids and ammonia in bottles. Last year, however, we succeeded in devising a form of stopper which enables one to fill acid and ammonia bottles readily from carboys by the use of a simple glass suction pump. This has been improved in form until now it is indispensable in this laboratory and other chemists may be interested in it.

The device consists of a rubber stopper with a soft concave lower surface, a central hole through which a large glass delivery tube may pass, and a small lateral hole passing out from the junction of the large hole and the concave surface. In this latter hole a glass tube is fitted and it is connected with the suction pump. A large glass tube 12 to 15 mm. in diameter is so bent that one arm reaches to the bottom of a carboy and the other arm, about 15 cm. long, is vertical. This short arm is passed through the large hole in the bottle filling device, so that it projects through about 5 cm., or enough to extend through the neck of an ordinary acid bottle. On turning on the suction pump, and placing the device firmly on top of a bottle, a partial vacuum is at once formed and the acid flows over to fill the bottle. When the bottle is filled, a slight pressure

[1] Thesis, Johns Hopkins University, 1900, p. 20. "The reduction of Permanganic Acid by Hydrogen and Ethylene and a Study of some of its Salts." Since the publication of our paper, these results have been reprinted in This Journal, 28, 1734(1906),

[2] Z. anorg. Chem., 41, 317 (1904). "Über Löslichkeiten in Lësungsmittelgemengen."

[3] Chem. Weekblad., 2, 766 (1905). Also, Chem. Centralb., 1906, I., 124, and Phys. Chem. Tabellen, Landolt-Börnstein-Meyerhoffer, Nachtrag, 857.

loosens the rubber and the vacuum is broken. The acid remaining in the tube siphons back to the carboy at once and the delivery tube can be shifted to a second bottle. The bottles can be filled in this way very rapidly. We fill from 15 to 25 five-pint bottles in half an hour. As soon as

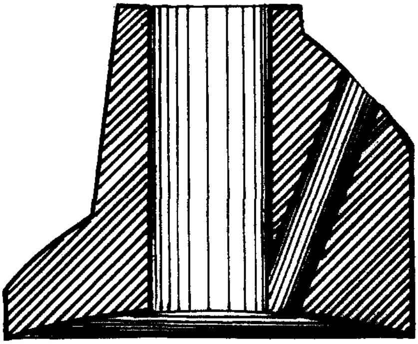

FIG. 1

the flow of acid is started, the air pressure holds the rubber in place, and while the bottle is filling there is no need of holding the rubber against the bottle with the hand. By throwing a wet cloth over the mouth of the carboy, around the delivery tube, practically all fumes are prevented

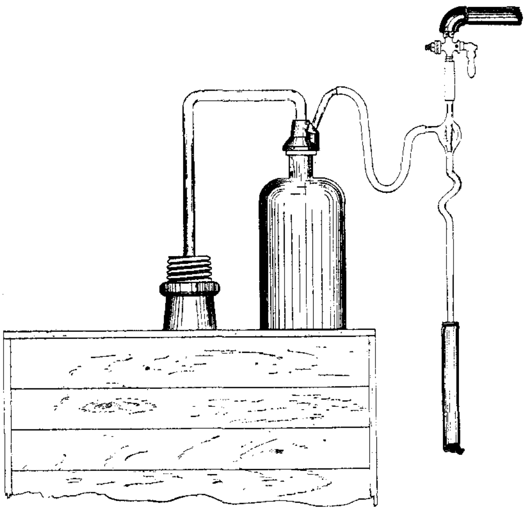

FIG. 2

from escaping, as the bottles are closed during filling, and the gas from the bottle is absorbed by the water in the suction pump. The form of the device affords good contact with a bottle neck of any size within wide limits, and allows the use of a large delivery tube, which enables one to fill the bottles very rapidly.

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