

Bunte's Apparatus.

This apparatus, shown in Fig. 122, differs from those previously described, inasmuch as the absorption takes place in the measuring vessel itself, whereas in the other cases the absorption takes place in the pipettes.

The Bunte burette has a capacity of about 110 to 115 c.c. between *a* and *b*; *a* is a three-way cock, while *b* is bored only once.

Manipulation.—The burette is connected with the levelling-bottle *N*, as shown in the illustration, *a* and *b* are opened, and the water is allowed to run up to the mark in the funnel above *a*. The key of the stop-cock *a* is connected with the source of the gas, *N* is lowered, *a* turned to the proper position, and

the gas is sucked into the burette. After about 101 to 103 c.c. of the gas have entered the burette, *a* and *b* are closed, *N* is raised, and by opening *b* the gas in the burette is compressed until the confining liquid has exactly reached the zero mark. The cock, *a* is now cautiously opened, when some of the gas in the burette will escape through the water in the funnel. The gas in the burette is now under a pressure equal to that of the atmosphere plus the pressure from the column of water in the funnel, and all subsequent measurements are taken under the same conditions.

Absorptions.—In order to introduce the different absorbents into the burette, its lower end is connected by means of the rubber tubing *h* with the bottle *F* containing a little water, the water having been blown up into the rubber tubing. The cock *b* is opened, as is the screw-cock at *h*, and the water in the burette is allowed to run out until it exactly reaches the cock *b*, which is then closed. The absorbent is placed in a small dish, the lower tip of the burette is introduced into the liquid, and the cock *b* is opened. Inasmuch as the gas in the burette is under less than atmospheric pressure, the absorbent is sucked up into the burette. The cock *b* is now closed, the burette grasped above *a* and below *b* (in order not to warm the gas), and its contents well shaken, after which the burette is again dipped into the absorbent in the dish and a little more of the latter drawn up into the burette. This process is repeated until no more of the absorbent is sucked up into the burette. It would now be incorrect to read the volume of the unabsorbed gas, for it is under quite a different pressure than at the beginning of the analysis; namely, the atmospheric pressure less the pressure of the column of

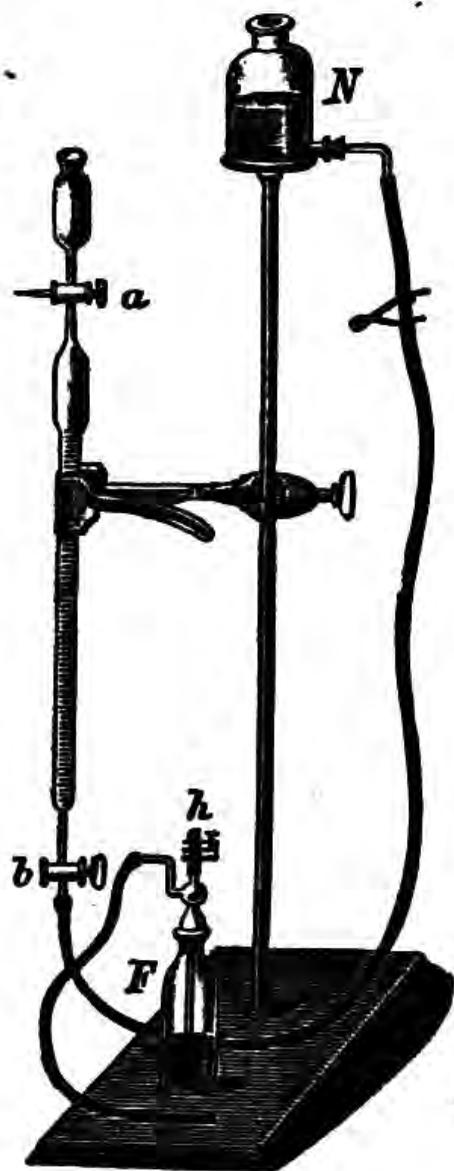


FIG. 122.

liquid remaining in the burette with the cock *b* open. Furthermore the vapor tension of the liquid in the burette is different from that of the water originally present. In order to obtain the original conditions, the burette is connected with the bottle *F*, which now only contains enough water to fill the rubber tubing and the glass tube, and the absorbent is sucked from the burette into the bottle until the upper level of the liquid reaches the cock *b*.* The end of the burette is then dipped into a dish containing water, which rises into the burette on opening *b*. The latter is closed and water is allowed to run into the burette from the funnel until the original pressure is established, when the volume of the gas is once more read. The difference gives at once the per cent. of absorbed gas.

By means of this excellent method the carbon dioxide can be removed by caustic potash, heavy hydrocarbons by bromine water, oxygen by alkaline pyrogallol solution, and carbon monoxide by cuprous chloride.