B thoroughly washed out by disconnecting at *M*, and allowing a stream of water to flow through the flask. This can be done without disturbing the acid in *A*. When fresh water is put into *E*, sufficient gas to saturate the water should be passed into it slowly if the machine is to stand for any length of time before being used. This will prevent the water from running back into *B* on standing.

It is probable that the chief advantage in this form of machine is that there are no narrow tubes to become clogged with salts crystallizing from the spent acid. In actual practice it has been found that there is a minimum amount of gas wasted and a maximum amount of time saved in caring for the machine as compared with other machines in common use.

MONMOUTH, ILLINOIS.

THE DETERMINATION OF COPPER BY ALUMINUM FOIL.

BY GEORGE E. PERKINS.

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THE following method is a modification of the process by A. H. Low. The copper is brought into solution as a sulphate by treatment similar to that in Low's modified cyanide process. The solution is evaporated until all nitric acid has been driven off and dense white fumes appear. Water is added until the dilution is about 50 cc. of water to 10 cc. of sulphuric acid. Sheet aluminum of about 25 gauge thickness is cut into pieces about 40 mm. square with one corner of each piece turned up for convenience in handling. Two or three of these pieces are added to the beaker containing the solution of copper. The solution is then boiled. In about five minutes, all of the copper is precipitated upon the aluminum sheets.

Instead of redissolving the deposited copper and titrating with cyanide solution, more satisfactory results are obtained by washing the deposited copper into a tared Gooch crucible, by giving a final wash with alcohol and by burning off the alcohol and drying. Weigh the result as metallic copper.

In forming the filter, care should be taken that only sufficient asbestos fiber is used to produce a good filter. In washing with alcohol and burning, the same care is needed as in the electrolytic method that too much alcohol is not used.

PROVIDENCE, R. I.,
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[1] Read before the January meeting of the Rhode Island Section of the American Chemical Society.