

twenty minutes, the burette is raised until the water stands at the zero mark *o* in the tube, when the number of cc. of water absorbed by the soil is read on the burette. The whole time for an analysis need not exceed thirty or forty minutes. The pinch-cock on the Y tube is most convenient in bringing the water to the zero marks on the tube and burette before adding the soil. The apparatus may be obtained of Kähler and Martini, Berlin.

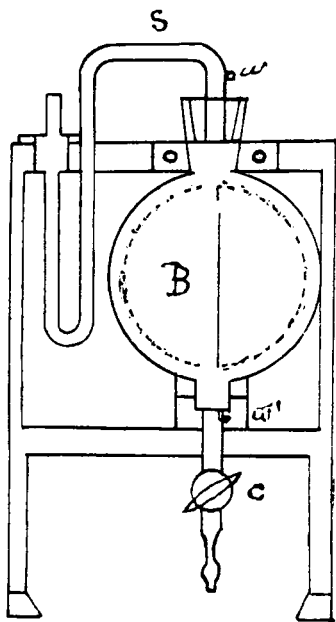
A MODIFICATION OF HINMAN'S EXPLOSION PIPETTE.

BY AUGUSTUS H. GILL.

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THIS pipette was devised to permit the use of all the residue, sixty cc., remaining after an illuminating gas had been analyzed by the Hempel apparatus, in mixing with oxygen for explosion.

It consists of a bulb, *B*, eleven to twelve cm. in diameter, of about 250 cc. capacity, with walls at least twelve mm. thick, provided with two tubulatures; at the bottom a stop-cock, *C*, is ground in for regulating the flow of mercury; to the top one is fitted the capillary stem, *S*, which must be very carefully ground in. These joints are first vaselined, care being taken that none gets inside the apparatus, and cemented in with a sealing wax having nearly the same coefficient of expansion as glass. Metal clamps hold the bulb upon the stand, similar to that for the simple pipette,¹ the weight of the bulb being sufficient to keep it in the lower one; the upper one is provided with screws to hold the neck of the bulb. To render the stem-joint more nearly tight the upper tubulure is made with a mercury seal an inch deep. As thus constructed, the apparatus is



¹ Gill, *Am. Chem. J.*, 14, 231.

absolutely tight at all pressures to which it is likely to be subjected.

Both spark wires were originally fused through the capillary stem, but from the oxides of nitrogen and carbon dioxide formed during the explosions an electrical connection was established sometimes between them and no spark was visible upon turning on the current. To obviate this, one fine spark wire, w , is fused through the capillary and the other, w' , a platinum wire one and a half mm. in diameter passes through a rubber fitting in the tube carrying the stop-cock up through the mercury to within two mm. of the other. A Mariotte bottle conveniently serves as a reservoir for the mercury and is connected with the pipette by quarter inch "pressure tubing."

It sometimes happens that no spark passes upon closing the circuit. This can be remedied by sucking water into the pipette and expelling it. Upon allowing it to stand all the moisture rises to the top and may be driven out.

The apparatus has been in use for four years, scores of explosions having been made with it. It may be obtained from the Ziegeler Electric Co., Franklin St., Boston.

ESTIMATION OF SULPHUR IN PYRITES.

BY G. LUNGE.

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IN this Journal Mr. Gladding replies to my remarks on his previous paper on the estimation of sulphur in pyrites. His comments would certainly not give to any reader, who had not my own paper before his eyes, a fair idea of its purport. He states that I admit "that every modification proposed (by Gladding) is accurate in its nature, with one single exception." This conveniently passes over the fact that my "admission" had been saddled with the following addition, for which I had adduced ample experimental proof, "that not in a single case is Gladding's method more correct than mine, and that his modifications cannot be approved, as they greatly lengthen the time required for the analysis, without any corresponding advantage whatever."