

VII.—*Compound Testing Jet.*

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The very extensive and daily increasing application of gas as a source of heat in chemical experiments, has suggested to me a small contrivance which is intended to facilitate the operations of the analyst.

The ordinary Argand gas-burner which is almost universally employed for heating small vessels, such as flasks, retorts and test-tubes, is not adapted to the purposes of the blow-pipe. In operations with the latter instrument, a simple jet of gas is required,

issuing from a cylindrical orifice of rather considerable dimensions, the necessary amount of gas being adjusted by the stop-cock. This simplest of all gas-flames serves equally well for oxidation and reduction, and exhibits the phenomena of colour in the most conspicuous manner.

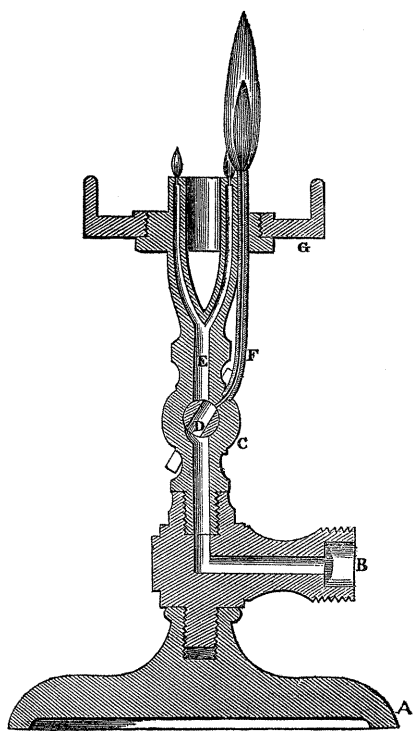
The ordinary method of analysis being a combination of testing in the moist way and by the blow-pipe, it is necessary either to use two gas-lamps—the one with the Argand burner, the other with the single jet—or to have a gas-stand so arranged as to admit of screwing on either the one or the other. But as it is inconvenient to multiply the number of gas-lamps, especially in a laboratory in which several analytical students are working, and as unscrewing hot gas-jets is a most unpleasant operation, I have endeavoured to unite the two jets in one stand, dispensing at the same time with the necessity of taking the apparatus to pieces.

The object in view is accomplished simply by substituting for the ordinary stop-cock a three-way cock.

The whole arrangement becomes at once intelligible by a glance at the wood-cut, which represents the burner half-size.

*A* is the loaded foot, into which the elbow-union-piece *B* is screwed. One end of this union is connected with a flexible pipe, not shown in the drawing; to the other screws the three-way stop-cock *C*. The plug *D* has only one orifice, and when turned in a vertical direction, supplies the Argand-burner through the perforation *E*. Into the side of the stop-cock is soldered a small pipe *F*, having a bore of about  $\frac{1}{8}$  of an inch. This is prolonged to the distance of  $\frac{1}{10}$  of an inch above the top of the Argand burner, where it is brazed to a small support for the blow-pipe, not represented in the drawing.

When the plug *D* is turned



in a horizontal direction, the gas is shut off from both jets, but when turned in an inclined position, may be made to supply both jets at once or either alternately. By this contrivance either of the jets will be lighted before the other is extinguished.

In order that the jet may be likewise used for heating larger apparatus, there is a support *G* on which may be fixed a copper chimney, either plain or provided with the wire-gauze for producing the air-flame.

The above burner has been made under the superintendence of Mr. J. J. Griffin, whose assistance I thankfully acknowledge.

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