XXIV.—*Note on Dumas's Method of Determining Nitrogen.*

By J. L. W. THUDICHUM and J. ALFRED WANKLYN.

HAVING recently had considerable experience in determinations of nitrogen, we think it may possibly be of service to place on record the following laboratory-notes.

(1.) The employment of the air-pump, as Maxwell Simpson has shown long ago, may be entirely dispensed with. There is no difficulty in driving out the air so perfectly by means of the stream of carbonic acid gas alone, that 50 cub. cents. of the escaping carbonic acid shall not contain more than $\frac{1}{100}$ c.c. of air.

(2.) A good mixture for generating carbonic acid consists of bichromate of potash and carbonate of soda. The salts (separately) should be dried strongly (fused, if convenient), powdered, and then mixed. The proportions do not matter much. A very small bulk of the mixture goes a great way, giving off much gas. The advantage of being in this way able to have the carbonic acid dry is obvious.

(3.) As a practical fact, there is always, or nearly always, a little binoxide of nitrogen formed in these nitrogen determinations, and, where it is least expected, often a great deal. The plan recommended by Frankland for dealing with this gas has answered admirably in our hands. It consists, as is well known, in reading the volume of the original gas, then passing up a slight excess of oxygen (which combines with the nitric oxide) and finally absorbing the excess of oxygen by means of pyrogallate of potash, and reading again. The mean is the true volume of nitrogen. We may just warn experimenters against measuring nitrogen gas (from a Dumas's determination) over water. The trace of oxygen dissolved in water is a source of inaccuracy, and becomes appreciable in operations involving large volumes of water. Measurement over mercury should always be resorted to in these cases.