

shown in Fig. 6, which enables the potash to be eliminated from the apparatus. The position of *a* is then brought back to that of Fig. 7, and the gas remaining in the capillary swept out by mercury and measured as before.

If the oxygen is to be determined by absorption, the manipulations are exactly the same as in the case of carbonic acid, alkaline pyrogallic acid being used instead of caustic potash. If the oxygen is to be determined by eudiometry, then, after the carbonic acid has been absorbed, the gas remains in the eudiometer, the stop-cocks *c* and *b* being closed. The stop-cock *d* is now opened, and *a* turned the reverse way to that shown in Fig. 6—that is to say, with the side communication $\beta \gamma$ communicating with the capillary *above a*. The capillary is thus emptied of mercury, and the hydrogen evolving apparatus is connected with γ by an india-rubber tube, and the hydrogen allowed to stream through *a, d, e* until all the air is swept out; the stop-cock *d* is then closed, and *a* brought back to the position in Fig. 6, when the gas enters *m*. When enough hydrogen has passed in, *a* is brought to its position in Fig. 7, and the hydrogen apparatus is dispensed with. Mercury is now poured into *e*, and *d* opened, and the hydrogen in the capillary driven into *m*, its place being taken by mercury. The hydrogen is now passed over into the measuring-tube and measured, and the explosion is made.

When the analysis is finished, the mercury is emptied out of the tubes; the parts A and B are separated from each other at *f* by relieving the india-rubber connection, and from the box by taking out the screws *x, x, x*. The mercury receptacle D is removed, and A and B deposited, each in its own wing of the box, to which it fits, and is fixed by the bolts *z, z*. The whole gas-analysis apparatus is now contained in a box which measures when closed, over the outside, 19 inches by 9 inches square.

Fig. 8 represents an apparatus for preparing oxygen, hydrogen, or knallgas, for use in gas analysis. It is of the well-