

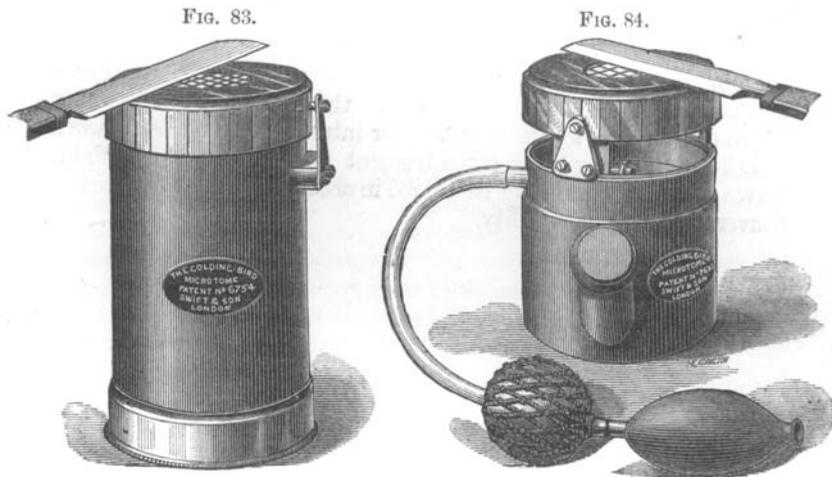
XII.—*On a New Microtome.*

By C. HILTON GOLDING-BIRD.

*(Read 14th May, 1884.)*

THE necessity for providing some instrument which offered the advantages of modern microtomes and yet was within the reach of those whose work being of intermittent character did not warrant their employing the somewhat elaborate instruments that are found in laboratories, made me originate the instrument shown in figs. 83 and 84.

The microtome is intended to be held in the hand during use, and is of two forms—one for ice and salt, the other for ether. The former (fig. 83) consists of a cylindrical vulcanite chamber closed at the bottom by a brass screw-lid, and at the top by a



disk of vulcanite, having in the centre a plate of brass (freezing plate)  $\frac{7}{8}$  in. in diameter, and terminating in the chamber by a rod of brass. A metal cap surmounted by a glass plate and pierced in the centre to allow the freezing plate to project, screws over the upper end of the cylinder, the outer surface of which bears a male screw of hard metal on which the cap turns. As the cap is turned round a spring catch clicks at given intervals; these are so arranged that as the cap rotates from left to right each click shows that it has sunk on to the cylinder  $\frac{1}{1000}$  in.; hence any tissue fixed on the freezing plate projects, at each click,  $\frac{1}{1000}$  in. through the hole in the glass plate of the cap, and a

razor now passed over the latter cuts off a section of the same thickness. By turning the cap through half an interval, sections of half that thickness may be obtained. To fix the specimen it is only necessary to fill the cylinder with ice and salt, the specimen being previously prepared in gum, according to the general rule when freezing is employed as the means of imbedding.

The form in which ether is the freezing agent employed (fig. 84) differs mainly in the fact, that the lower half of the cylinder is a chamber for holding the ether, with the two nozzles that give the necessary jet. The freezing plate, cap, and regulating apparatus are the same as in the ice and salt machine. Mr. Swift (to whose skill and ingenuity the details of manufacture are due) has introduced a very ingenious but yet simple means whereby some of the ether can be saved from the spray; much must of course escape, but much also falls back on to the jets again (since the spray is a vertical one); this portion impinges on to a funnel-shaped diaphragm, which acts as a lid to the ether chamber, and through which, by means of a minute opening, it again finds its way back to the ether chamber.

For those who, like myself, have to work for a large histological class, there is nothing equal to the Groves-Williams ether microtome in the laboratory: but for intermittent and home work I believe that the form of instrument that I present to-night, leaves scarcely anything to be desired in accuracy of work, simplicity, convenience, and portability.

---