

the heightened intrapulmonic pressure; the normal differential may fall to 4 mm. of mercury or less without lung collapse, in spite of the fact that the presence of a wide breach in the thoracic wall deprives the pulmonary viscera of its normal expiratory fulcrum. It is at such a stage of the anæsthetic, also, that one meets with the violent oscillations of the mediastinum noted by many experimenters. With deepened anæsthesia these exaggerated expiratory efforts subside and normal movements are restored, such movements being, however, undoubtedly reduced in amplitude in the presence of positive pressure. In the event of the occurrence of cardiac disturbance, either from the effects of the ether or following partial collapse of the exposed lung, rhythmical inflation promptly restores the circulatory balance. As a matter of fact in our later experiments, especially since the addition of a water-jacket to the ether bottle whereby vapourization of the anæsthetic is rendered more uniform, no symptoms have arisen during the performance of complete pneumonectomies referable either to the circulatory or respiratory organs which called for interruption or attention of any kind.

With regard to the limitations of the positive differential, it would appear that a case had been made out against its use where, subsequent to operation such as pneumonectomy, one has to deal with a large cavity exposed to atmospheric pressure. The experiences in this connexion, referred to in the earlier part of this paper, would seem to establish negative differential as the method of choice. Before the appearance of Sauerbruch and Robinson's paper, in which this subject is fully dealt with, we had employed aspiration in our work upon rabbits as a means of overcoming the generally fatal effects of a total closed pneumothorax, and from the results recently published by Flint, of New Haven, we are encouraged to believe that a similar procedure is capable of averting fatalities in pneumonectomized dogs. By means of a simple device, such as that shown in the photograph submitted, (Fig. V), we hope in the future to obtain results parallel to those reported by Meyer. In illustration of this latter contrivance I might briefly summarize the following experiment:

No. 39. March 25, 1910—Fox terrier dog. Left thoracotomy through the fifth interspace. Rib spreader used. Successful excision of lower and upper lobes by Meyer's method. Closure with pericostal stitch with aspirating cannula in the posterior angle of the wound. Before tying the last suture, the cavity was aspirated until a negative tension of 10 mm. of mercury was registered by the manometer on the aspirating apparatus. The cannula was then withdrawn and the last suture tied.