

THE
MONTREAL MEDICAL JOURNAL.

Vol. XXXIX.

JUNE, 1910.

No. 6.

EXPERIMENTAL INTRATHORACIC SURGERY.

(*Preliminary Report*)

BY

E. M. VON EBERTS, M.D., M. R. C. S. (Eng.).

Surgeon to the Out-patient Department of the Montreal General Hospital,

AND

W. H. P. HILL, M.D., M. R. C. S. (Eng.).

Clinical Assistant in Surgery at the Montreal General Hospital.

Prior to the introduction of difference pressure methods by Sauerbruch, in 1904, the danger of lung collapse in the presence of open thoracotomy proved an effectual bar to the development of intrathoracic surgery. Although an artificial respiratory apparatus for the prevention of lung collapse had for many years been used in physiological experiments, the negative pressure chamber of Sauerbruch was the first apparatus constructed with the view of maintaining normal pressure differential in intrathoracic work upon the human. With the introduction of the now famous Breslau cabinet a certain means was established of preventing pneumothorax. In his publication of 1904, Sauerbruch described in detail his negative differential chamber and recounted his results in a series of animal experiments, pointing out at the same time the possibility of preventing lung collapse by reversing the mechanism of the chamber, that is, by the employment of positive differential pressure. At that time, however, in the light of his experimental experience, Sauerbruch expressed strongly his opinion that the negative differential was the method of choice, believing that it more closely approximated the physiological equivalent. He enumerated the following objections to the use of positive pressure:—

- (1) The change in the respiratory rhythm.
- (2) The danger of producing interstitial emphysema.
- (3) The effects upon the circulation:

- (a) Pressure upon the lung capillaries through increased intra-alveolar tension with resulting embarrassment of the right heart.