

- (b) Direct atmospheric pressure upon the great veins leading to a diminution in the diastolic suction, a slowing of the venous current, and a measurable increase in the intravenous pressure.
- (4) The difficulty of narcosis.
- (5) The loss of heat.
- (6) The danger of pleural infection owing to the large exchange of air.
- (7) The persistence of a tension pneumothorax.

Unconvinced by Sauerbruch's contentions with regard to the effects of positive pressure, and impressed with the limitations of the negative chamber owing to its cost, lack of portability, etc., Brauer, with Petersen, experimented at Heidelberg with a positive pressure apparatus, and was able to disprove Sauerbruch's main contention with regard to the circulatory disturbances said to be associated with the use of this method.

Although many modifications in the construction of apparatus, negative and positive, have been described, both principles remain,—the latest development tending toward a combination of the two. Even at this short distance of time it is interesting to note that the primary objections to the use of positive pressure, urged especially by Sauerbruch, have largely disappeared owing to the extensive experimental work which has been done both in Europe and on this continent with the use of the positive pressure mask.

Seidel, in an exhaustive study upon animals, has furnished decided proof of the physiological equality of the two methods. He concludes:

(1) "That it is impossible to speak of injurious effects following the plus pressure method in open pneumothorax, as it stands only a trifle behind, if at all, the minus pressure method in physiological exactness.

(2) That plus pressure consists in the respiration of compressed air with a pressure simply sufficient to prevent lung collapse. It is not true that the air is blown into the lungs, except during the first one or two respirations, after which the respiratory act takes place normally.

(3) That the relative pressure on the veins of the thorax and trunk is equal in both methods.

(4) That with plus pressure there is a slightly increased pressure in the body veins, but it is not due to pressure on the alveolar capillaries. It appears to result rather from the effect of the pressure on the whole contents of the thorax, and expresses itself in a diminished capacity of the circulation and not in any stasis between the two sides of the heart." (Quoted from Flint.)

When the discussion on the comparative physiological merits of the