

## ORIGINAL CONTRIBUTIONS

## CARDIAC DYSPNEA.

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AFTER a few introductory remarks upon the subject of disturbances of the respiration and mention of some of the newer methods of approach to the study of its phenomena, the lecturer proceeded to a brief discussion of the use of the term dyspnea. He said that this term was commonly loosely applied to disturbed respiration and was often used to include simple tachypnea or hyperpnea. The derivation of the term indicated its true field of application, namely, to a condition of difficult or labored breathing in which there was an element of discomfort on the part of the sufferer. It was in such a sense that the term would be used.

Before passing on to a discussion of the abnormal condition of dyspnea it was necessary to review some of the factors concerned in the regulation of normal respiration. It was now known that the essential factor for the stimulation of respiration was carbon dioxide, to which the respiratory centre responded with great sensitiveness. A very slight increase of the amount of this substance in the blood was capable of doubling the normal pulmonary ventilation. Other acid bodies present in the circulation exerted a similar effect. The respiratory centre was very delicately attuned to respond to changes in the carbon dioxide content of the blood and always responded under normal conditions in such a way as to maintain this content within normal limits. Since carbon dioxide was one of the products of normal metabolism, this latter became the basic factor in the control of respiration, and the respiratory function was capable in health of responding to the greatest needs of the body.

Thus in the normal person at rest the pulmonary ventilation, expressed as the volume of air respired in a minute, was five litres on the average. Studies on a group of normal persons subjected to prolonged and strenuous exercise to the point where they were compelled to stop on account of severe dyspnea showed that the normal capacity for pulmonary ventilation could be raised to ten or eleven times that found in the resting state. Thus the ventilation rose from an average minute volume of five litres to from forty-eight to eighty litres, depending upon the weight of the individual and upon sex. This capacity to increase the ventilation to meet the demands of the body might be described as the pulmonary reserve. The increased ventilation was brought about