ment by *Opalina* to the adult stage of the host has not been necessary, infection taking place directly from each generation of tadpoles to the succeeding one. The presence of *Opalina,* however, in toads and in other adult *Anura* which metamorphose in less than one season throws doubt upon this explanation. The occurrence of *Opalina* in an occasional specimen of *R. clamitans,* and the successful propagation of this parasite for 174 days in *R. clamitans* and for 105 days in *R. catesbiana* indicate that *Opalina* may be in the process of adjustment to these two adult hosts. Additional support of this hypothesis is the fact noted by Metcalf that *R. catesbiana* introduced into Hawaii, and from there imported into California, harbored the parasite.

[1] Metcalf, M. M., Bull. 120, U. S. Nat. Mus., 1923, 244.

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Some Effects of Alveolar Carbon Dioxide Tension on the Carotid and Femoral Flow of Blood.

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The importance of volume-flow, as well as composition of the blood, to the transport of oxygen and carbon dioxide and to respiratory control, led to the development of the electrometric method of recording volume-flow of blood, and its use in the study of disturbances in respiratory equilibrium. This report deals briefly with the effects of artificially produced changes in the alveolar concentration of carbon dioxide.

The volume-flow in the carotid and femoral arteries was continuously recorded, along with mean blood pressure and pulmonary ventilation. Room air and carbon dioxide (4 to 12 per cent) in room air were administered with re-breathing tanks. In some experiments the gases were administered by natural respiration, and in others pneumothorax was established, and the gases administered by closed circuit artificial ventilation.

The administration of carbon dioxide by either method elicited, in general, an increased flow of blood through the carotid artery, followed by a decreased flow on re-administration of room air. The same administration elicited a decreased femoral flow of blood, which increased on re-administration of room air.

Changes in artificial pulmonary ventilation with room air were accompanied by corresponding changes in volume-flow of blood. Increasing pulmonary ventilation above normal resulted in decreased carotid flow, and increased femoral flow. Decreasing ventilation produced reverse effects.

Artificial control of blood pressure showed the same directional changes in volume-flow of blood, in the absence of changes in the driving head of pressure.

The results suggest that the circulatory adjustments occurred in favor of the brain. They illustrate the importance of the factor of acidity in the control of circulation, as well as respiration. The fact that the respiratory and circulatory centers are both highly sensitive to changes in acidity agrees with the common and coördinated function of both.

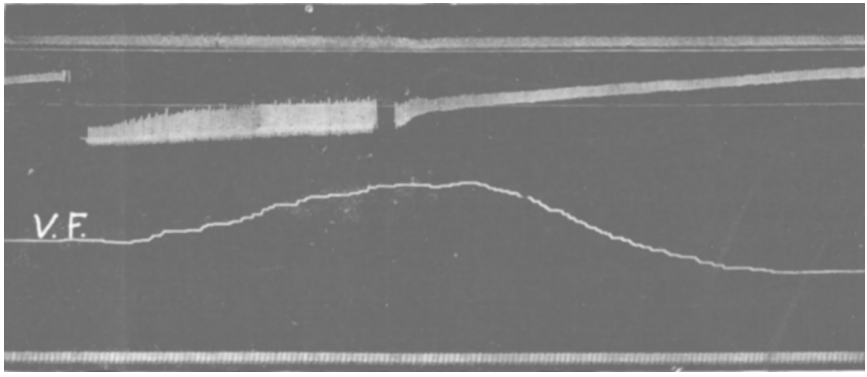

FIG. 1.

Record showing the effects of administration of 12 per cent carbon dioxide on pulmonary ventilation and carotid flow of blood. The flow increased from 47 cc. per minute to 62 and decreased to 41. The mean blood pressure was maintained constant by artificial means.