

## VISIBLE VASO-MOTOR EFFECTS IN THE PULMONARY CIRCULATION OF THE FROG

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Vaso-motor nerves to the lung vessels of the frog have been demonstrated by Luckhardt and Carlson<sup>1</sup>. By means of the perfusion and drop method these authors have carefully proven the existence of vaso-motor effects in the pulmonary circulation of the frog both as a result of sympathetic stimulation and by the introduction of adrenalin and of histamine solutions. They also mention observing the effects directly. The writer also has had the opportunity of visually noting changes in the blood flow in the frog lung, particularly in respect to the capillaries.

The common grass frog, *Rana pipiens*, was used. Individuals were narcotized by placing them in a 10 per cent solution of urethane until they were motionless. This ordinarily required from 30 to 40 minutes for frogs of about 30 grams weight. Apparently the drug did not alter the circulatory movements. Both left and right lungs were observed in the following manner. The frogs were opened by a mid-ventral incision through the sternum and the lung to be examined was lifted carefully when inflated by the frog. The frog was placed on its dorsum with its appendages stretched out slightly, in order to pull the cut sternum aside. The lung, while filled with air, was placed between two microscope slides carefully to avoid injury. The slides were held together by gummed paper labels. This preparation was then laid across the stage of a microscope and the flow of blood observed. Adrenalin solutions of 1:1000 and 1:10,000 in frog saline were added to the far edge of the slide in such a way that the mixture was prevented from reaching any other organs than the lungs to which it flowed by capillarity. A strong binocular dissecting microscope was used in two cases and found satisfactory for observing the flow.

**Results.** Almost immediately upon contact with the adrenalin solution the lung vessels underwent constriction. A visible decrease in the rate of flow was apparent, in fact a stasis occurred in many regions. In some cases where the corpuscles were not entirely blocked they could be seen bending in a C-shape as they were forced through the narrowed vessels. A short time after the introduction of the adrenalin the lung tissues became edematous, a condition also reported by Luckhardt and Carlson. However, the constriction occurred before this abnormal condition set in so that there is no question in the writer's mind but that the vaso-motor effects were due to the adrenalin. This paper is given as a corroboration of the results of the above authors and to indicate that the constriction is so complete as to change the shape of the corpuscles or to cause stasis.

<sup>1</sup> Luckhardt, A. B. and Carlson, A. J. 1921. Studies on the visceral sensory nervous system. VIII. On the presence of vaso-motor fibers in the vagus nerve to the pulmonary vessels of the amphibian and reptilian lung. Amer. Jour. Physiol. 56:72-112.

