

the posterior lymph hearts through some delicate collateral vessels. He is again emphatic in his denial of the possibility of distribution through a peripheral mechanism.

In the last few months we have made several series of experiments on completely eviscerated frogs from which all the four lymph hearts were positively excluded. Thoroughly eviscerated frogs in which in addition the four lymph hearts are especially destroyed, are exposed to extreme shock, which profoundly affects the nervous system. Nevertheless, we have observed in a goodly number of these animals the definite appearance of characteristic tetanic convulsions or of unmistakable hyperesthesia after injections of strychnin.

In another series of cardiectomized frogs which were left on ice for several days, adrenalin was injected into the thigh in doses from 1 mg. to 0.1 mg. In all of these cases definite dilatation of the pupils was obtained—a well-known characteristic reaction to adrenalin. The time before the first effect was noticed varied from ten to thirty minutes. Since the lymph hearts stop beating in a comparatively brief time after cardiectomy, especially when the animals are kept on ice, the distribution of the adrenalin from the thigh to the orbit several days after cardiectomy could not have taken place by the aid of the lymph hearts.

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The effect of pituitary substance upon the pulse form of febrile patients.

By A. W. HEWLETT.

[From the Department of Internal Medicine, University of Michigan.]

In a recent study of dicrotic and monocrotic pulse forms it was shown that these are always accompanied by a transient backward movement of the blood column in the brachial artery just after the entrance of the primary pulse wave. This backward movement may be due either to local conditions in the arm which permit an unusual reflection of the pulse wave or to conditions elsewhere in the cardiovascular apparatus which permit the reflected wave, itself perhaps normal, to become evident on our

tracings. Further observations indicate that this type of pulse is common in fever patients and that it is rarely marked in normal individuals. It is the type of pulse that has frequently been described as bounding, poorly sustained, pointed, etc.—terms which refer to the sudden fall of pressure immediately after the primary pulse wave.

This type of pulse as it occurs in febrile patients may be converted into a normal form by therapeutic doses of a pituitary preparation.¹ Following such an injection the pulse form usually showed a definite change in from ten to fifteen minutes, the maximum effect was reached in about an hour, and the effect did not pass off for two or three hours. The degree of change varied in different patients. Frequently it was so marked that not a trace of the original backflow remained and the pointed character of the volume pulse from the arm was entirely lost. Thus far we have not been able to determine any fixed relation between the change in pulse form and changes in the systolic blood pressure or changes in the rate of blood flow throughout the arm. The change in form however was regularly accompanied by a diminution in the size of the volume pulse in the arm. These changes may be explained by assuming a constriction of the larger arteries in the arm or a constriction of vascular areas elsewhere in the body, particularly in the head and splanchnic region. The pulse changes produced by therapeutic doses of pituitary substance are precisely opposite to those which usually follow a therapeutic dose of nitroglycerin.

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The effect of carbon dioxide on the eggs of *Ascaris*.

By THEOPHILUS S. PAINTER (by invitation).

[From the Osborn Zoological Laboratory, Yale University.]

The undivided eggs of *Ascaris megaloccephala* (var. *bivalens*) were kept in an atmosphere of carbon dioxide for three months. On the removal of the eggs from the gas, a few smears were allowed to undergo full development. Only about one third of the embryo,

¹ 1½ c.c. of Parke, Davis, and Co.'s pituitrin were injected intramuscularly.