inoculations. Enormous numbers of spirochetæ, apparently identical with those which occur in the tumors of the mouse, were found in the myocardium and in the lung.

Another mouse, twice inoculated with the Ehrlich "Stamme 11" tumor, died three months after the second inoculation. Neither of the inoculations was followed by any growth of the tumor. There was a long-standing inflammation of one foot and leg. Spirochetæ were found in small numbers about the inflammation in the foot, and in enormous numbers in the mediastinum about the bronchi and large veins. The tubules of the kidney also contain large numbers, but they here appear to be undergoing disintegration and and are not so readily distinguished. The organisms in these two cases are of the form of a relatively thick, broad spiral, and have at one end a flagellum, which is less intensely colored than the body of the organism.

The spirochetæ found in these two cases appear to be identical with those found in the tumors of the mouse.

58 (201)

Concerning the neutrality of protoplasm.

By **LAWRENCE J. HENDERSON** (by invitation).

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It is desirable, both on account of the normal production of acid during metabolism, and because of the production of acid under pathological circumstances, to study the adjustment of equilibrium in protoplasm whereby neutrality is maintained. In undertaking this study the equilibrium in mixtures of sodium hydrate, phosphoric acid and carbonic acid has been studied.

As a result of the investigations it appears that in the presence of both free and combined carbonic acid in measurable amount, such mixtures are precisely neutral to rosolic acid, and that the amount of sodium bicarbonate in such mixtures can vary greatly without great variation in the ratio between mono-sodium phosphate and di-sodium phosphate. These results are in accord with the theory, based upon the ionization constant of carbonic acid

(3×10^{-7}) and of the ion H_2PO_4 (2×10^{-7}). Although the equilibrium in such a system at 40° C. may be somewhat different it is evident that this equilibrium is calculated almost perfectly to protect protoplasm from variation in neutrality. The variation in hydrogen and hydroxyl ionization can hardly be more than 5×10^{-7}.

The theory of the transport of carbonic acid is now being investigated in the light of this great variation of combined carbonic acid, and the variation which has been found in "acidosis."

59 (202)

The influence of adrenalin upon the venous blood flow.

By **RUSSELL BURTON-OPITZ.**

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The blood flow in the femoral, external jugular and azygos veins was measured by means of the stromuhr described by the author. During the experiment, solutions of adrenalin were injected centrally to the stromuhr. The effect of the adrenalin showed itself in a retardation of the venous inflow which appeared in from 14–16 seconds after the injection. Considering the velocity of the venous blood stream, it must be assumed that the adrenalin did not produce its characteristic effect until it had reached the arterial side of the circulatory system. The experiments tend to disprove the existence of vaso-motor nerves in the central veins and the pulmonary circuit.

60 (203)

The viscosity of laked blood.

By **RUSSELL BURTON-OPITZ.**

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It was found that the viscosity of laked blood prepared by the process of freezing, is very much less than the viscosity of defibrinated blood. The specific gravity was only slightly lessened.