by operation) who underwent a spinal tap before the diagnosis of brain tumor was made. The spinal fluid lactic acid was 24 mg. per cent, well within the normal limits, but the blood lactic acid was only 10 mg. per cent, giving a percentage ratio of spinal fluid lactic acid to blood lactic acid of 240. We also studied another patient who undoubtedly has a brain tumor, though none was found on exploratory craniotomy. The ventricular fluid of this patient contained 41 mg. per cent of lactic acid, and the blood lactic acid just before operation (which was done under local anesthesia) was 20 mg. per cent, giving a percentage ratio of 205. The increased lactic acid in the fluid of these cases may perhaps be explained by the observations of Warburg and Minami[3] on the large amounts of lactic acid produced by tumor cells. A number of additional cases of brain tumor were studied in which the lactic acid content of the ventricular fluid was normal. In these cases, however, as demonstrated by operation, no surface of the tumor was in contact with the fluid from which a specimen for analysis was obtained.

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Effect of Drugs Upon Tonus Waves in Excised Auricle and Coronary Vessels of Terrapin.

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Excised terrapin auricles show continuous tonus waves 20 to 42 hours after excision, when kept in oxygenated Ringer's solution pH 7.8 to 8.0, at room temperature 20.5 to 27° C. Immediately after excision, decreasing the pH from 7.4 to 7.0 causes a disappearance of the tonus waves.[1] These waves reappear when the auricles are replaced in a solution of pH 7.4. Eighteen to 42 hours after excision these same auricles fail to respond by disappearance of tonus waves until a pH of about 6.2 to 6.0 is

reached. In one case the tonus waves disappeared only after the pH was reduced to 5.8 and showed optimum tonus waves at pH 6.8. Phosphate buffered solutions tend to stimulate tonus waves. In some auricles, in which carbonate-HCl buffered Ringer's solution pH 6.6 caused the tonus waves to disappear, phosphate buffered Ringer's solution 6.2 caused an increase in tonus waves, and when this solution was replaced by Ringer's pH 7.4 temporary disappearance of the tonus waves occurred.

Small doses of adrenalin (alkaloid) 1:1,000,000,000 solution cause increased tonus in the fresh preparation[2] (stimulation of the positive tono-trophic fibres) but not in the 24-hour strip. The addition of adrenalin to the bath does not initiate these tonus waves in auricles in which they are not present. Larger doses of adrenalin (alkaloid) 1:100,000,000, cause a disappearance of the tonus waves (stimulation of the negative tono-trophic fibres).[2, 3] This decrease in tonus is independent of changes in pH of the bath. Tyramine acid phosphate influences tonus waves in the same manner as does adrenalin, but a higher concentration is required to stimulate the negative tono-trophic fibres.

Pure pituitary extract,[4] histamine phosphate (British Drug Houses), ergamine acid phosphate (B. W. & Co.), and neutral infundin (B. W. & Co.) increase the tonus. Adrenalin will counteract this effect in each case. Neutral "pituitrin" (P. D. & Co.) in a few cases increased the tonus, in others it had no effect, and in many it caused a decrease in the tonus. The decreased tonus is due to the preservative chlorbutanol, 5 mgm. per cc., which is sufficient to cause a loss of tonus. Histamine, and pituitary extracts induce tonus waves even in auricles in which they are not already present.

Terrapin hearts perfused with Ringer's solution pH 7.6, through a cannula placed in the coronary artery, respond to "infundin", 0.1 to 0.2 cc. doses, by increased coronary flow.[5] A similar reponse is obtained upon the injection of 0.1 to 0.2 cc. of N/10 HCl, which is less acid than "infundin." The same heart responds by increased force of contraction, slowed rate of beat, and decreased coronary flow when the pH of the infundin is increased to the same amount as that of the perfusate. A similar response is obtained when pure pituitary extract,[4] dissolved in Ringer's solution and filtered, is injected into the perfusate. Histamine phosphate and argamine acid phosphate (B. W. & Co.),

adrenalin (alkaloid), and tyramine acid phosphate cause vasoconstriction of the coronary vessels of the terrapin. Increased tonus, with tonus waves, is observed in the terrapin ventricles in some cases after the injection of pituitary extract and histamine.

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Reduction Potentials of Organic Substances by the Lead Peroxide Electrode.

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It has been pointed out frequently that the potentials measured in a solution of pure oxidant or pure reductant have a questionable meaning. Moreover such potentials are difficult to measure because they fall in a region of a curve approaching the potential axis asymptotically, and thus a slight change of conditions in the solution causes a wide fluctuation of potential. In such a solution an "inert" electrode, being unpoised, is subject to further fluctuation due to its own surface activity.

The same considerations obviously apply to solutions of those reductants which tend to transform irreversibly into products not active at an electrode, such as most organic compounds. Various schemes have been proposed for the measurement of such potentials, which depend in general upon the addition of some other component which poises the system.

It occurred to us that an oxidizing electrode might in itself have a poising action on an otherwise irreversible system. We have tried manganese dioxide and lead peroxide electrodes. In the following, we report preliminary determinations with lead peroxide electrode on solutions of certain organic reductants. The electrodes were prepared by plating out lead peroxide on