O_2 and CO_2 between the alveolar air and the blood sufficiently to cause real distress. Relief followed the discontinuance of digitalis and the administration of belladonna.

Conclusion.—In this case of auricular fibrillation digitalis did not improve the circulation because it inrceased vagus affects which diminished the O_2 and CO_2 interchange between alveolar air and blood.

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The action of camphor on the central nervous system of the squid.

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Newly hatched squid (*Loligo pealii*) if put into a solution of camphor gum in sea water, 1/10 saturation, show characteristic mantle spasms, involving play of the chromatophores, after a latent period which is about 40 seconds at 24° C. This effect, it has been shown, is due to the action of camphor on the stellar ganglia.[1] In appearance, camphor spasms are indistinguishable from those caused by nicotine.[2] The difference does not lie in the character of the response of the end organs, muscles and chromatophores, but in the locus and the nature of neuronic excitation.

The value of the temperature coefficient Q_{10} for the action of camphor, based on the lengths of the latent periods, is 2.4. The function connecting the velocity of the reaction with the concentration of the drug is, for camphor, expressed by $v = kC^{\frac{1}{4}}$ in which $v = \frac{1}{\text{latent period}}$, C = concentration, and k is a constant whose value is approximately .75.

The camphor spasms soon pass off and the animals lie inert with chromatophores relaxed. This is not due to paralysis of the end organs for the reason that they may again be thrown into activity by treatment with strychnine or nicotine. The absence of any interference between the action of nicotine and that of camphor may be demonstrated by the following experiment. Let

[1] Moore, A. R., *Proc. Nat. Acad. Sc.*, 1917, III, 598.

[2] Moore, A. R., *J. Gen. Physiol.*, 1919, I, 505.

the specimens of squid be immersed in nicotine solution for 1 minute. They are then put into the solution of camphor. Camphor spasms take place, after which the animals lie quiet for several minutes. At the end of the required latent period[1] nicotine spasms occur just as typically as in animals treated with nicotine alone.

22 (1482)

A method of standardizing bacterial suspensions.

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If a wire loop is thrust down into a suspension of bacteria in a test tube, and viewed by looking down into the mouth of the tube, the depth at which the loop disappears will be determined by the opacity of the supervening suspension. If, however, a second suspension of the same organism containing half as many bacteria per cubic centimeter is similarly examined, or if an equal amount of the diluent is added to the original suspension, and the "depth of disappearance" again measured it will be found to be less than twice as great as in the original suspension. In other words, the observed depths of disappearance are not in proportion to the bacterial concentrations or the corresponding volumes.

This discrepancy is due to the presence in each reading of a constant which is apparently related to the size and opacity of the individual organisms. It is found that this constant may be eliminated, thus bringing the opacity observations into inverse ratio with the corresponding bacterial concentrations, and a *corrected* reading (the observed reading minus the constant) for any suspension may be obtained by making two readings at different dilutions of the suspension, and substituting the observed values in the following equation:

$$A = \frac{\text{vol } a\ (b - a)}{\text{vol } b - \text{vol } a},$$

[1]Moore, A. R., *J. Gen. Physiol.*, 1919, I, 505.