Examination of the curve shows that over the period of the fast there was a gradual diminution of the opsonic power till finally at the end of the fast, on the ninth day, it was 0.7.

We do not lay stress upon the small differences shown between some of the successive observations but we consider that the difference between 0.98 and 0.7 is absolutely definite.

We would call attention to the steady rise to and retention at the normal after the fast was broken.

We fully realize that a sweeping statement regarding the variations in the resistance of the body cannot be made from our observations on the opsonic power against staphylococcus aureus; nevertheless, it is of interest that a decided fall in the power did occur against this organism. Moreover, if we take it that the natural opsonins which exist in the body are general and not specific, it would not seem unlikely that the phagocytic index against other organisms could be shown to be diminished correspondingly.

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The automatism of the respiratory center.

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In the course of observations on the resuscitation of the central nervous system we have had the opportunity to determine whether regular, spontaneous respiratory movements can be discharged at a stage in the resuscitation when as yet the respiratory center is unaffected by stimulation of afferent nerves. The respiratory movements, and usually the arterial blood pressure as well, were recorded and the effect of stimulation of the central ends of the vagus, brachial plexus and sometimes the sciatic determined before occlusion of the arteries supplying the brain, the bulb and the upper portion of the cervical spinal cord. These arteries (innominate and left subclavian proximal to the origin of the left vertebral) were then occluded by temporary ligatures. At intervals during the occlusion and again after releasing the vessels the nerves were stimulated, of course with the same strength of stimulus as before. Artificial respiration was kept up from the time when natural res-

piration ceased till it was thoroughly re-established after resuscitation.

Result. — An interval, varying in length with the duration of the occlusion and other circumstances, was found during resuscitation, when spontaneous respiration had returned and was going on with a regular rhythm while totally incapable of being influenced by stimulation of any of the afferent paths investigated. The most probable assumption is that at this stage some portion of these afferent paths to the respiratory center was still unable to conduct impulses to the center, the block being possibly (in terms of the neurone hypothesis) in the synapses in which the afferent fibers terminate in the bulb. Resuscitation of the center and the efferent paths from it had at this stage been carried to the point at which the motor impulses were able to pass down to the anterior horn cells which innervate the muscles of ordinary respiration. If at this point in the resuscitation the afferent paths of the vagus and the brachial plexus are still interrupted, it is reasonable to assume that the same is true of the other afferent fibers connected with the bulbar respiratory center. For certainly of the fibers running headwards to the bulb none can be supposed to be more favorably situated for carrying impressions to the respiratory center than the afferent fibers of the vagus. Nor can it be imagined that at this time impulses can be passing to the center from the higher parts of the brain, since it is a general rule that the nervous structures higher than the bulb require a longer time for resuscitation than the bulb or the spinal cord does.

Conclusion. — The method described seems indeed to afford, what has long been a *desideratum*, a means of temporarily eliminating all the afferent paths connected with the respiratory center. Since under these conditions the center continues to discharge itself in such a way as to maintain a long and unbroken series of regular, efficient respiratory movements, its normal activity is to be considered an example of physiological automatism, not originated, although influenced by afferent nervous impulses.