

previously published views which have later been exchanged for different ones; or that such later views had been previously announced by other investigators.

The most recent explanation in regard to the action of the vagus may then be put thus: The vagus nerve in many animals, possibly in all vertebrates, is in reality the vago-sympathetic. It contains sympathetic fibres which are motor, or whose action is associated with increased muscular contraction, followed by exhaustion; while the inhibitory fibres bring about an arrest of activity, followed by repair of function. We may express the same idea from another point of view by saying that the sympathetic fibres are functionally linked with katabolic or destructive metabolic processes, while the inhibitory fibres modify anabolic or constructive processes. Such a theory is broad, readily grasped, and from many points of view fascinating; but it is open to some objections.

I have shown that the heart of both the Terrapin and the Sea-turtle may be kept inhibited for hours by continued stimulation of the vagi nerves; in one case recorded, inhibition lasted for *six hours*. Now it is difficult to believe that so unstable a thing, as all our knowledge of protoplasm leads us to consider it, could remain in one phase of the metabolic process for six hours. I feel quite satisfied myself that the explanation of nervous and all other vital action must come largely through chemistry; but it would, perhaps, be premature to assume that the chemistry can be reduced to the simplicity indicated by the above theory. One thing is perfectly clear, the vagus and the general welfare of the heart cannot be disassociated, at least in the more complex forms of this organ.

Eichorst and Zander noted degenerative muscular changes following section of both vagi. Similar changes follow section of the nerve of a skeletal muscle. It is certain, therefore, that, whether the nerves of the heart are immediately concerned in the causation of the beat or not, they are inseparably connected with the general nutritive processes of the organ. That nerves are not directly concerned in the cardiac pulsation is evident from the fact that the heart beats perfectly well when all its nerves are severed. When we have learned exactly how the