

in turn apparently dependent first, upon the nerve impulses transmitted to them from the brain and spinal cord, and secondly, upon the action of chemical substances, including the so-called hormones, produced in various organs in the body, and especially in the glands of internal secretion. In the third place, the amounts of certain ions (Ca, Mg, Na, etc.) present in the medium through which the nerve terminals act upon the end-organ (smooth muscle; secreting gland) seem profoundly to influence the activities of the system concerned.

ARCHITECTURE OF THE VISCERAL NERVOUS SYSTEM.

It has been common to designate as the "animal," "somatic" or "cerebrospinal" nervous system the nerve paths related to the sense organs on the one hand and to the voluntary muscles on the other, and as the "sympathetic," "vegetative" or "visceral" nervous system the nerve paths which innervate the more automatic internal organs, especially all those organs containing involuntary muscle or secreting glands, or both. Thus the smooth muscle of the bronchi, of the stomach and intestine, of the blood vessels, of the skin, of the genital apparatus, and of the eye, are all so innervated, as are the secreting glands of the whole body—sweat glands, salivary glands, lacryman glands, mucous glands, gastric and intestinal glands, liver, pancreas, kidneys, and the glands of internal secretion.

The centripetal paths in the domain of the sympathetic nervous system are as yet but poorly understood, but the centrifugal paths, thanks to the researches of the histologists on the one hand, and the studies of physiologists like Gaskell, Langley, and their co-workers on the other, are now fairly well known to us. The centrifugal paths of the sympathetic system differ from those of the cerebrospinal system fundamentally in one point. In the cerebrospinal system the spinal cord is connected with a voluntary muscle fibre by means of a single neurone, the axis cylinder of which goes all the way from the anterior horn to the muscle without interruption. In the sympathetic system at least two neurones make up the path from the cerebrospinal axis to the smooth muscle or the secreting gland. Take, for example, the neurones connecting the spinal cord with a viscus. Of these two neurones, the first has a cell-body in the spinal cord, and its medullated axone (so-called preganglionic fibre) runs through the anterior root of a spinal nerve and through the white ramus communicans into the sympathetic system, there to pursue a course of variable length, sometimes passing through several sympathetic ganglia, in order finally to terminate in an end-