

in the healthy condition of the body the secreting process of every gland is carried on with reference to other parts besides itself, so there seems no means by which the function of a given gland could be so co-ordinated to the condition of other parts of the economy except through the agency of a nervous system distributed to each, and through which a chain of intelligence (if we may use that word) can be maintained. If any nervous system performs the office here indicated it must of necessity be the great sympathetic, for the following reasons: (1) The will has no influence upon the functions of the secreting glands; (2) in cases of general paralysis from disease or injury of the cord the function of the secreting glands is performed almost if not quite as well as when the cerebro-spinal system is intact; (3) the great sympathetic is the only nervous system which is distributed to all the glands, the liver and kidneys receiving nerves from no other. As for the cases of the extraordinary action or want of action of these glands in some emotional states, as for example, the excessive secretion of urine in fear, of tears in grief, of saliva in hunger; and conversely, the arrest of the buccal and salivary secretions in terror, the arrest of the gastric secretions from almost any marked emotional excitement, the well known increase, arrest, and alteration of the mammary secretion from the influence of terror, maternal love, and rage; these cannot be explained without referring them to the influence of some nervous system over the glands in question. I think, for the following reasons, that this nervous system is the sympathetic: (1) In the first place some of these glands, as the kidneys, receive no other than sympathetic nerves; (2) and in the second place the great sympathetic sends a liberal supply of nerves to all of them. It does not send nerves to those glands which are not supplied by the cerebro-spinal system, and very few or none to such glands as are supplied by it. On the contrary, if you will recall an attempted classification in a previous page of this essay you will see that there the kidneys which receive no nerves but from the great sympathetic rank in the seventh order of organs according to the quantity of sympathetic nerves which they receive—the testes, ovaries, the gastric and intestinal glands all come before the kidneys as all receiving more sympathetic nerves than do these—of these organs the ovaries, supra-renal capsules, and liver receive no cerebro-spinal nerves, but the other organs all do, and some of them, as the testes and gastric glands, receive a tolerably large supply of nerves from this system. If then, some secreting organs are certainly influenced by emotional states through the medium of the sympathetic, and if the great sympathetic is supplied just as copiously, or more so to other organs whose functions are also influenced by emotional states, is it not reasonable to conclude that the medium is the same in all cases, and that it is through the great sympathetic that emotional conditions affect the secretions? But this is not all. We have seen above that it is a strict rule that secreting glands are supplied with cerebro-spinal nerves copiously or the reverse according to the degree of their exposure to injury from without, thus the salivary and mammary glands are well supplied, while the kidneys and liver receive no cerebro-spinal fibres at all. So, too, the testes are supplied with cerebro-spinal nerves, while the homologous organs in the female—the ovaries—are not. So that on the one hand supposing that the cerebro-spinal nerves going to these organs have anything to do with their functions, we can understand why they are not needed to explain the functional phenomena of these organs, for these are the same in glands which are and in those which are not supplied with cerebro-spinal fibres. But there is still another word to say in support of this view, and it is this. Cerebro-spinal nerves are either nerves of sensation or nerves of motion. Now in the case, for instance, of the mammary gland which is supplied with cerebro-spinal nerves derived from the anterior and lateral cutaneous nerves of the thorax, those branches which are distributed to the mammary glands are either sensory or motor nerves. Now if we suppose that these nerves control the secreting function of the gland we must either suppose that a motor nerve is