arranged either in distinct masses which are called "nerve centres," or in the form of cords called "nerves." The latter are composed practically of fibres alone; the former contains both fibres and cells. The nerves only convey nervous impulses, but the nerve centres form and transmit those impulses.

As, in these Lectures, simplicity of explanation is always more aimed at, than preciseness of scientific description, it will be well to describe the nerves and the nerve centres and their action by an everyday example. The nerves then may be said to be analogous, in many ways, to the telegraph wires which span our streets; the nerve centres corresponding to the post offices from, and to which they pass. It will be more easy for you to understand the subject if we imagine that the General Post Office in any town represents the Brain; that the District offices represent the parts of the spinal cord from which particular nerves pass off, and that the nerve endings may be represented by the shops which serve as local post offices; the nerves being the telegraphic wires connecting the offices together. Now, in sending a telegraphic message, we will imagine that it is handed in, say, at a local office, and is transmitted by a clerk over the wire to the central office, at which we will suppose a reply is handed in, and sent back to the local office in question. It is sufficient, here, to say that the precise theory of the impulse conveyed through the electric telegraph wire is immaterial, but that it may be regarded as analogous to the impulse conveyed along the nerve from one extremity of it to the other. But here comes in an important difference which it is necessary to clearly understand and remember, that to send a telegraphic message and receive a reply takes, of course, an appreciable length of time; whereas nerve messages are sent to the brain and replied to, in a time so rapid that it cannot be measured.

For example, in dressing a patient a Nurse pricks the end of her finger with a pin in the bandage; and instantaneously she withdraws her hand from the spot. We say her action is instinctive, but what has happened in that moment of time? The sensation of the prick has been telegraphed from the end of her finger along the nerves of the forearm and the arm, the shoulder, neck, and spinal column into the brain; from the brain, messages have come back to the muscles of the shoulder to those of the forearm and to those of the hand ordering them, one after the other, and in perfect co-ordination, to contract, so as to withdraw the injured finger from further injury. Simple, therefore, as the action seems to be, it is the result of one message to the brain, and of many messages from the brain to different muscles, each of which is transmitted along its particular nerve, and the instantaneous character of which furnishes an excellent example of the marvellous mechanism of the healthy nervous system. The example also illustrates the actions of the two different kinds of nerves from which they derive their names of Motor and Sensory. The former convey messages from the brain to the muscles, whereby the latter are made to contract and thus to move the parts to which they are attached—in other words, producing *motion*. The latter convey messages to the brain of impressions produced on the ends of the nerves, whether these terminate upon the surface of the body, or in the deeper structures; these, then, being conductors of *sensation*. In their structure, both motor and sensory nerves are alike, just as the wires along which telegraphic messages are sent from one office to another are of the same material as those upon which a reply message is conveyed. There is a third set of nerves which is grouped together under the name of the Sympathetic System, and which has important and special duties to perform in connection with the working of the internal organs, and which will therefore require separate consideration, hereafter.

If there be any break in a telegraph wire, it can be readily understood that it is impossible to send messages throughout its length; and so we shall find that in diseases or accidents which cause temporary or permament injury to a nerve, temporary or permanent interruption is caused to the transmission of messages through that nerve; or, in other words, it ceases to transmit motor or sensory impulses from or to the brain, as the case may be. For example, in a case of injury to the forearm, in which the chief nerves are cut across, the accident is followed both by a loss of sensation in the hand and fingers, and by a loss of power in the muscles supplied by the injured nerves.

*(To be continued.)*

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