Lectures on Anatomy and Physiology as Applied to Practical Nursing.*

By Bedford Fenwick, M.D.,
Gynæcologist to The Hospital for Women, Soho Square.

LECTURE IV.

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With regard to the Physiology of the nervous system, it will be sufficient for the present to remember that the *sensory* nerves convey sensations, through the Spinal Cord to the Brain, from every part of the body; that the *motor* nerves convey directions, from the Brain through the Spinal Cord, to the various muscles of the body to contract or to relax as the case may be; and that the *sympathetic* nerves in like manner control the secretions of the internal organs, and thus enable them to perform their various functions.

As to the precise manner in which these various impressions are conveyed through the nerves we, at present, know practically nothing; any more than it is possible for the electrician to explain how and why the electrical current acts on the wires which conduct it. The theory that instantaneous waves are caused by the current and thus regulated movements occur along the telegraph wire has also been used in order to explain the analogous action of the human nerves. For the present, at any rate, it is sufficient for us to deal with well established facts, and we must be content to wait until further knowledge has explained their causes.

From what has already been said, it can be readily understood that any injury to, or gross disease of, any part of the nervous system, must result in more or less disturbance of its functions. For example, if an electrical wire is cut across, it will be impossible for it to continue to carry telegraphic or telephonic messages; and, in like manner, if a nerve is torn, it cannot convey sensations or direct movements across the affected part. In the next place, it is important to remember the simple fact that, just as every telegraphic wire goes from one fixed point to another, so every nerve-fibril can be traced from the brain or spinal cord to the actual point at which it ends. In the first instance, it is very easy for the engineer, finding a fault in the transmission of a message, to trace it back to the actual spot where the wire is defective. The anatomist, in similar fashion, finding that the work of a nerve in some part of the body is defectively performed, can locate the spot where the injury or disease is situated which has caused the impairment of the nerve's function. It can be easily understood how important such a knowledge is in both cases. The engineer, however, can remedy the defect perhaps in a few minutes. The anatomist can only point out the exact site of the mischief. In many cases, however, armed with this knowledge, the physician or surgeon can diagnose the cause of the mischief, can predict whether it can be cured or not, and sometimes can take medicinal or surgical measures which will effect a cure.

For the moment, diseases of the Brain and Spinal Cord need not be considered, because they will require special and careful explanation. With regard to the Nerves generally, the two injuries to which they are most exposed are bruising and tearing; both of which naturally occur from accidents, such as fractures or dislocations. If the nerve is only bruised, however badly, by a dislocated bone, sensation of all the parts supplied by the nerve may be diminished or lost for some hours or even days, and the power of movement of all the muscles supplied by the nerve may be similarly impaired or altogether lost. But it is very rare for such injuries to persist, and sooner or later the powers of sensation and movement are completely recovered. In cases however, where a nerve has been torn across by an accident, its loss of function may be permanent, because the two parts of the nerve become separated, and their ends contract and heal separately, and thus, just as in the case of a torn telegraphic wire, messages cannot be conveyed from one torn extremity to the other. In former days, these patients, therefore, suffered from paralysis and gradual wasting of the muscles which the affected nerve controlled, or all sensation in the part which the nerve supplied was permanently lost. At the present day, however, surgery has achieved great successes in repairing these injuries; and when the case is treated before degeneration of the nerve tissue has taken place the injured ends of the nerve have been brought together, have reunited, and it has more or less completely regained its function. Of course, in the great majority of accidents, such as severe fractures, in which a nerve has suffered injury, there is nothing at first, externally, to show what has happened; and it is often some observation reported by the nurse, either that the patient has lost sensation, or that certain movements seem to be affected, that first directs the attention of the

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