

water, and repeated in the same manner an hour or two afterwards, will often restore surface warmth, and is perfectly safe as an *ad interim* measure. Your next step is to put the foot warmer to the feet, wrapping it up in flannel before doing so. The fire must be made up in lady's bedroom, and the temperature raised to sixty-eight or even seventy degrees. The coverlet or an extra blanket can be laid over the ordinary bed-clothes, but remember you must rely upon internal wraps more than *outside* ones, which are apt to oppress. Under the measures you have taken the rigor passes off, and may be followed by profuse perspiration, which is so far a favourable sequel. (*To be continued.*)

PRACTICAL LESSONS IN ELECTROTHERAPEUTICS.

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(Continued from page 17.)

LESSON X.

*Methods of Application—Medical, General and Local;
Surgical.*

THE methods of application of electricity to the human body are many and various. We will group them under two heads—viz., *A*, Medical; *B*, Surgical.

The former we take to be all those in which covered or padded electrodes are used, or those wherein both electrodes are applied externally; while the latter are those in which uncovered or bare electrodes are used, or wherein one or both electrodes are applied internally.

In all applications it is most necessary to proceed with great care and give minute attention to detail. The patient must be placed in suitable position and rendered as *comfortable* as circumstances will permit. The operator must be gentle, firm, prompt, and essentially "Nurse-like." The apparatus must be conveniently placed so as to be under the complete control of the operator, without disturbing the patient, and also so that the galvanometer or other measuring instrument in circuit may be easily read.

A.—Medical applications may be subdivided as (1) General, and (2) Local.

(1) General applications are made in such a manner that the whole body, or at least the whole nervous centres of the body, are brought in the direct line of electric influence. One of the most valuable forms of this method of application is that recommended by Doctors Beard and Rock-

well, and called Central Galvanisation. They say in their book on "Medical and Surgical Uses of Electricity":—

"The object in central galvanisation is to bring the whole central nervous system—the brain, sympathetic and spinal cord—as well as the pneumogastric and depressor nerves, under the influence of the galvanic current. One pole (usually the negative) is placed at the epigastrium, while the other is placed over the forehead and top of the head, by the inner borders of the sterno-cleido-mastoid muscles, from the mastoid fossa to the sternum, at the nape of the neck, and down the entire length of the spine."

A sponge or other well padded electrode is held by the patient at the epigastrium, and the other electrode (preferably also a sponge, of medium size) is applied by the operator to the patient's forehead (centre), and a current of from $\frac{1}{2}$ to 2 *m.a.* passed for two minutes. Next the electrode is moved to the cranial centre (the hair having been previously wetted), and 2 to 6 *m.a.* passed for another two minutes. In like manner the operator then attacks the neck (front, sides and back), passing from 2 to 10 *m.a.* for about four minutes, and then proceeds to the spine, using a labile or stroking action along its whole length, passing from 5 to 15, or even 20 *m.a.* for another eight to twelve minutes.

The dose ranges from $\frac{1}{2}$ *m.a.* in the most sensitive parts to twenty *m.a.* in the least sensitive. Of course all cases will not be equally benefited by the same current strength, and there are many degrees within the range named which may be advantageously employed, but we do not think that more than 20 *m.a.* should be used unless under very exceptional circumstances. The period of duration of each application may also advantageously vary with individual cases. Messrs. Beard and Rockwell give fifteen minutes as the outside limit, but we find from experience that while a period of even ten minutes is fully enough for some patients, yet one of twenty minutes is distinctly beneficial to others.

General Faradisation is a somewhat similar method involving the use of coil currents. The term Faradisation is a bad one, as mentioned in a prior lesson, because it does not differentiate between the simple interrupted current (interrupted primary) and the alternating secondary current. Still the process employed is the same in either case, and consists in passing by means of a bare or thinly covered foot plate (on which the patient stands or rests his feet), and a padded handle electrode used labile by the operator, coil currents either interrupted or alternating, as the case may require, through the whole of the patient's body. Starting with the head and working downwards

[previous page](#)

[next page](#)