woman, in its highest and purest developments—the maternal and conjugal affections—is governed by the sympathetic nervous system in all its marvellous beauty.

We must now proceed to the Nursing duties that lactation demands, and we shall find them quite different from any I have described to you before.

(To be continued.)

PRACTICAL LESSONS IN ELECTRO-THERAPEUTICS.

By Arthur Harries, M.D.,
and
H. Newman Lawrence, Member Institution Electrical Engineers.

(Continued from page 173.)

Electrolysis.

A further illustration of electrolysis, and one which will be of much service when we come to consider the applications of the function of the current to surgical purposes, is exhibited in the arrangement known as the voltameter.

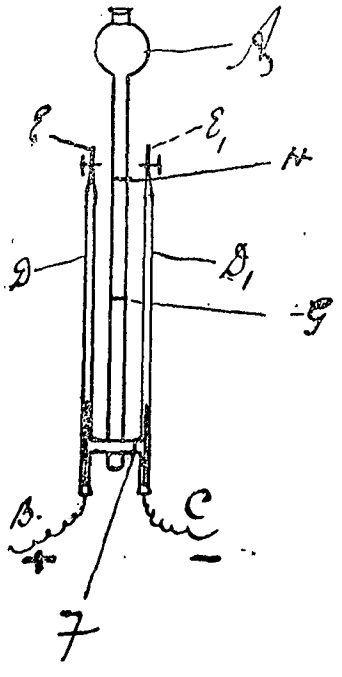

FIG. 23.

Fig. 23 gives a fair idea of this apparatus. A is an upright glass tube dilated into funnel or globular shape at its upper part; at its lower end it communicates by a cross-piece F with two smaller parallel tubes (D. and D_1), each terminating at its upper end by a pointed nozzle (E. and E_1), controlled by a glass stop-cock, and at its lower end by an arrangement which admits a wire (B and C), ending within the tube in a fine platinum electrode.

A contains water slightly acidulated (to make it a better conductor), and the stop-cocks controlling E. and E_1 being opened, the fluid is allowed to run, until it begins to pass out at E. and E_1; the stopcocks are now closed, and D. and D_1 remain full of fluid. The liquid in A F has now run down to G. If, however, a sufficiently strong current from B to C be now switched on, the level of G will rise until it reaches a point H. The side tube (E B) will now be half full of fluid, the upper space being occupied by oxygen gas, while E_1 C will contain only hydrogen gas. The gases, hydrogen and oxygen, constituting the water originally contained in A F have been separated from one another by the current, which has thus again demonstrated its function of electrolytic decomposition.

Catalysis.

We have to take into consideration under this heading a complicated series of phenomena, which can only vaguely be defined, but which are probably dependent upon several functions of the continuous current.

Catalysis may be said to include both cataphoresis and electrolysis, together with certain other functions which go to produce the effects classified by Remak,* and the leading points in which may be selected as follows:—

(*a*) Dilatation of blood-vessels and lymphatics, with impulse to the circulation dependent on passage of an electric current.

(*b*) Increased power of absorption conferred upon the tissues.

(*c*) Promotion of osmosis, and following upon these two processes, increase of tissue bulk—especially in muscles. To these may be added the influence upon molecular exchange and nutrition effected by exciting or soothing the nerves directly, or indirectly through the parts which they supply; changes in the molecular arrangement of vital structures and in their nutritive activity, due to the phenomena of electrolysis; and finally, the consequences of the mechanical transference of fluids from one pole to other.

* Vol. vi., "Von Ziemssen's Electro-Therapeutics," by W. Erb, M.D., translated by Dr. de Watteville, page 129.

previous page next page