PRACTICAL LESSONS IN ELECTRO-THERAPEUTICS.

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Electrolysis (*b*).

THIS process is the reverse of that combination of chemical bodies which is induced by the passage of electricity (spark or otherwise). And in order that it may—from its vast importance in relation to many surgical and other procedures—be completely understood, as far as present knowledge will enable us to understand so marvellous a function, it will be necessary to remind our readers of certain phenomena dependent upon simple chemical action.

Chemical action is essentially a transmutation of energy. Power stored up (latent) in unoxydised bodies becomes active (kinetic) when conditions favourable to oxidation present themselves. During this process, the energy set free may manifest itself in heat, light, or electricity, or in some of other forms of motion (sound, &c.).

A simple example of the development of heat by chemical combination is that afforded by the addition of sulphuric acid (oil of vitriol) to water. A thermometer placed in the mixture gives immediate evidence of rise of temperature. In this case the concentrated acid ($H_2 So_4$) enters into chemical union with certain molecules of water, becoming not merely diluted, but chemically united with it. This change is expressed by the symbols $H_2 So_4 + (H_2 O)_n = H_2 So_4 (H_2 O)_n$.

Again, a mixture of hydrogen and oxygen, in the proportion of two parts of the former gas to one of the latter, placed in a glass vessel, such as that shown in the subjoined figure, may be made

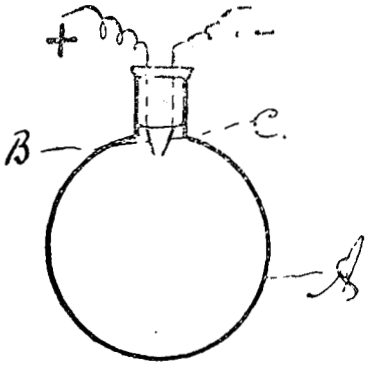

FIG. 20.

to illustrate several facts closely related, though apparently dissimilar, to those discussed in the last paragraph.

A (Fig. 20) is a glass bottle of any convenient form sufficiently strong to withstand the strain of a mild explosion. Its neck is closed by cork, perforated by wires B and C, connected respectively with the positive and negative poles of a battery. On completion of circuit, a spark passes between the points of B and C, and simultaneously there is a loud explosive sound. This is caused by the union of the gases ($H_2 + O = H_2 O$); that is to say, as the result of the passage of a spark through the gases, the mechanical mixture has been changed into a true chemical compound (water), and the main accompaniments of this action are found to be light, sound, heat, and diminution in volume. In this case the current has supplied the factor needed to complete the conditions requisite for the union of gases already mixed, though not united. *(To be continued.)*

PRIZE ESSAY COMPETITION.—XVI.

Describe the best manner in which a Kitchen should be fitted up suitable for the Staff and Patients in a Hospital or Home of Twenty Beds, the Utensils required, the Makers' Names and Approximate Cost of them; and mention every detail considered necessary for the smooth and proper conduct of such Kitchen.

By Helen Foggo-Thomson.

COOKERY in the present day is made comparatively easy, there are so many aids in the form of new appliances of every sort and size, and some of them sufficiently inexpensive as to be within the reach of all. It should, therefore, not be a difficult matter to manage a kitchen, and work it smoothly, in an Institution where there are twenty patients and a staff of, shall I say, sixteen—namely, one Doctor, one Matron, two Head Nurses, three Probationers, one Night Nurse, one Ward Maid, two Housemaids, one Cook, one Kitchen Maid, one Porter, two Laundresses. But the staff necessary will depend a great deal upon how the Institution is built; if the Wards are not scattered, most likely there will be fewer Nurses. I only say *about* sixteen of a staff, and feel that one could manage forty beds just as well as twenty with a staff of this size, although to have fewer servants than those I mention would, in *my opinion*, cause confusion; but I must return to the kitchen.

The secret of managing any kitchen well lies in being *prompt*, *methodical*, and knowing how to make the best of *everything*.

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