

of pressure at the two ends of a water-pipe necessary to produce a flow of water through the pipe, and is that by reason of which the electric current flows, or is driven through or along a conductor.

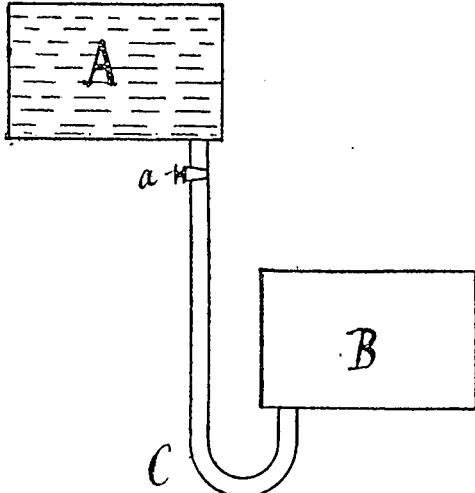


FIG. 14.

If, for instance, we have two vessels A and B at different levels (as shown in Fig. 14), connected together by the pipe C, A being filled with water, B remaining empty, and the stopcock *a* shut off, it is manifest that while the apparatus is thus arranged, the condition is one favourable to the flow of water from A to B through C so soon as the stop-cock *a* is opened. While *a* remains closed, there can be no flow through C, however great the difference of level between A and B. The difference of level exists before communication is made, but it cannot be said to produce pressure until the stopcock is opened.

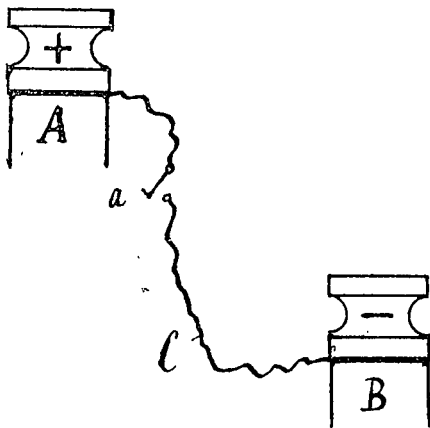


FIG. 15.

Fig. 15 illustrates the analogy applied. A and B represent the poles of a battery, or other

electric generator; A is the positive pole carrying the sign +, B the negative pole carrying the sign —; C represents the connecting wire or other conductor through which direct communication can be made; *a* is a switch or key by means of which the electric connection between A and B is completed. A and B, in electrical phraseology, are said to be at different potentials, corresponding to the difference of level in the water-pipes. Directly the connection is completed by closing the switch *a*, electro-motive force resulting from the difference of potential comes into play and drives the electric current on its way.

#### CURRENT STRENGTH.

The quantity of electricity flowing through or past any point in a conductor during any given time is designated the current strength, or more shortly "the current." As, however, we desire to avoid all risk of confusion regarding the terms involved, we prefer to call this factor in the current flow *current-strength*.

The quantity of water flowing at any time in any part of the pipe C corresponds to the current strength.

As pressure *and* quantity of water are needed to produce a flow of water, so both electro-motive force *and* current strength are necessary to produce a flow of electricity. We must not forget the necessary presence of these two factors in all currents of electricity. They may, and often do, vary enormously relatively to one another. We may have great electro-motive force and small current strength, or *vice versa*. We may have them both great or both small, and so on, but they are both always present.

(To be continued.)

### "ON AN UNPOPULAR BRANCH OF OUR PROFESSION."

By MISS MOLLETT.

Being a Paper read before the British Nurses' Association.

(Continued from page 93.)

PICTURE to yourselves any woman who had the ultimate welfare of the young Nurses entrusted to her care at heart, obliged to see them go out night after night at such most unsuitable hours, and often in most unsuitable localities, without sufficient time to go home to see their friends, unless they live in the immediate vicinity, exposed to all the dangers of the streets or cheap entertainments in the neighbourhood. One of the first efforts of a trained Matron would, and

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