

ways include in the outgoing neurone; its peculiar termination usually in a muscle or a gland and known as a nerve-ending, and with the ingoing or afferent neurone, its termination within some peculiar modification of the peripheral epithelium, the whole constituting the so-called end-organ. As the particular result brought about by the efferent or out-going neurone, is due to the stimulus applied to the afferent or in-going neurone through its end-organ, it will be seen that the entire process begins and also ends at the periphery, as distinct from the centre or site of the neurone bodies. We might, therefore, speak of the reflex as a circular reaction.

Considering that it is impossible to conceive of protoplasm except as in some environment, and as it is equally impossible to conceive of this sensitive stuff but as being in some way affected by that environment, we would naturally suppose that in a well ordered state of affairs there would be a differentiation of function advancing towards higher specialization, and that there would be a corresponding anatomical provision to meet this progress. Such we find to be the case and this reflex mechanism is nature's provision for a sure and sufficiently speedy response to the action of the environment; an organism that cannot so answer, must suffer, possibly perish.

The fact that we are here to-day after having been exposed from say twenty-five to seventy years to perils without number, is not due chiefly to our forethought, or the forethought of parents, friends, or even philanthropic railroad, steamboat or street-car companies, but to arrangements—from one point of view very simple, from other points of view very complex; and that, among other things, I shall now endeavor to show in some detail.

All these functions which are concerned with nutrition, in the widest sense of the term are reflex. It is true that you may take a horse to water but cannot make him drink, but when once he has started the process of drinking it is from beginning to end reflex— independent of volition. A pigeon wholly without its cerebrum, which all will agree is essential to volition, will drink when its beak is dipped into water, and as is well known, a man quite unconscious will swallow what is placed on the back of his tongue. The outflow of all the digestive secretions is due to reflex action; the movements of the various digestive organs are not voluntary but in the main at least reflex, the only question being to what extent they are dependent on qualities of the muscle concerned apart from the nervous system.

Even a function of such vital importance as the maintenance of a regular temperature is not, in a warm blooded vertebrate, dependent on the direct influence of the circumambient air, as is largely the