

Recent investigations as to the physical conditions present within the nerve fibre, in the axis-cylinder, have pointed out the existence of a remarkable condition of protid material, in a state of colloidal solution, in some way a possible store of potential energy. In this direction the potassium ring of McCallum, surrounding granules within the nerve fibre, is most interesting and important, in relationship with solid colloid masses, in aqueous solutions of salts. Such electrolytes, even by a limited degree of motion, tend to diminish the usefulness of an electrical current, transmitted through the colloid solution. A single fact which dominates all, is that, nerve is a material adapted for the transmission of energy, from point to point, throughout the entire system, resting upon the undoubted presence of inorganic salts, as permanent constituents of the axis-cylinder.

In no part of the human system are the irregularities of life more marked, than in the alimentary canal, where the defences of the organism, permit the ingress of bacterial toxins. In this tract, the blood making process becomes interrupted, through the non-elimination of normal nerve power. Under such circumstances the perfectly stable nervous system is a rarity.

Here particularly electrolysis becomes an important factor, giving new life and activity, by establishing, beyond doubt, an average neuro-psychic equilibrium.

The daily, in fact the hourly changes in the component parts of the human body, are mysterious and difficult to define, and no where more so, than in the nervous system, the centre of thought, intellectual power, and locomotion. My object in producing this paper is to sift a portion of the wheat from the chaff, and define a few of the limitations and possibilities of electricity. One point is certain; where damage to neurons or their nuclei, have cut muscle fibres off, from the normal source of stimulating energy, electricity is of little account, as far as maintaining muscular contractility is concerned. The reaction of degeneration, is characterised by loss of excitability in the nerves, and of the excitability to rapidly interrupted currents, in the muscles. The reaction of degeneration is of great moment, and when present, a lesion in some part of the nervous tract, is readily diagnosed. In such conditions, electrolysis is useless. In nerve degeneration, when the induced current fails to meet with any response, it is called, the reaction of degeneration. Weakened muscle cannot be strengthened by too strong a current, which must be avoided. So, also with weakened nerve tissue. The power of the current must be graduated in proportion to the strength of either muscle or nerve.