2. **Chemical.**—To understand the nature of the chemical changes which take place on the passage of a current of electricity through the body, it is necessary to consider in some detail the nature and behaviour of ions.

Certain substances known as electrolytes, if dissolved in water, have the property of becoming dissociated to a greater or lesser extent into ions, the ion being an atom of the substance combined rather loosely with a negative or positive charge of electricity. *E.g.*, sodium chloride will become dissociated into ions of sodium and chlorine, the sodium having a positive charge, the chlorine a negative. In such a solution only a certain percentage of the molecules present will be dissociated into their component ions at any one time, and the more dilute the solution the larger will be the percentage of dissociation. In the case of complex substances the dissociation may not be into its elements, but into less complex substances.

The same ions do not remain in their dissociated state all the time, but are constantly in a state of movement, undergoing recombination to form a molecule of the salt once more. This state of movement is aimless, and does not result in excess of ions of either polarity in any part of the solution. If, now, two electrodes connected to the poles of a battery of cells or other source of constant electrical current be introduced into the solution, a current will pass through the solution, and the following changes will take place: The sodium ions with their positive charge will be attracted to the negative electrode (since like charges dispel, and unlike attract, each other). Any one sodium ion will only travel a very short distance, and will then displace another sodium atom from its association with the chlorine atom, combining temporarily with the