

stantly recombining to form molecules and the molecules constantly dissociating once more to form ions. At the same time, nothing hinders the union of sodium ions with bromine ions, or of any other pair of positive and negative ions. Accordingly, the solution at once contains not only the three original salts and the six different varieties of ions, but also the following new molecules:—sodium bromide, NaBr, sodium iodide, NaI, potassium chloride, KCl, potassium iodide, KI, lithium chloride, LiCl, and lithium bromide, LiBr. All nine varieties of molecules and all six of ions are concerned in a complicated system of chemical reactions which are now well understood, the state of equilibrium depending upon known conditions. For instance, if the solution be a moderately dilute one and the original substances be present in chemically equivalent quantities, about 90 per cent of the material will be in the ionic state, each variety of ions making up about 15 per cent of the total, and about 10 per cent will be in the form of molecules, each variety constituting about 1.1 per cent.

There can be no doubt that ionization plays a great part in determining the characteristics of solutions of acids, bases, and salts, and in bringing about the reactions which