

of antagonizing only that particular poison. It is entirely specific. The diphtheria antitoxine is an antidote to the diphtheria toxine and to nothing else. Any unpleasant effects that result from the introduction of the antitoxine are due, not to the antitoxine, but to the vehicle that contains it, namely, the serum. It is impossible to isolate the antitoxine in pure state. It has never been obtained in a condition distinct from the reaction of proteid substances. Perhaps it is questionable whether the proteid acquired the antitoxine property just as iron acquires magnetism, but this is impossible to demonstrate. We are not then accurately informed as to the chemical nature of the antitoxine. A very important question arises as to the origin of the antitoxine. Buchner thought it was in some way derived from the toxine, and that it was a transformation, while another view supported by Behring is, that it is something produced in the body, presumably by the cells of the body, through a reaction set up by the action of the toxine. These two theories set over against each other without any conclusive evidence in support of either until about a year ago, when Erlich advanced an hypothesis, which can be put to the test of practical experimentation, and which, whether true or not, is an important contribution. The argument is something like this: the susceptibility to the toxine depends upon the presence in the body of cells that have an affinity for the toxine. The toxins are unlike most poisons with which we are familiar, and have a special affinity for the protoplasm of certain cells of the body. This has been demonstrated by the actual study of tetanus, where the nerve cells undergo a specific change. Susceptibility then to this toxine means that the individual has nerve cells, the protoplasm of which has a definite affinity for the tetanus toxine, and that animals which are not susceptible, the hen, for instance, have nerve cells, the protoplasm of which is of a different quality in that respect. Now he supposes, on the basis of studies that antedated altogether the bacteriological studies, that in the protoplasm there are different sets of molecules, sets of side-chains, if you please, and it is among these we are to search for the cells that have the definite affinity for the poison. He calls these groups of cells the toxiphoric group. Now the most remarkable point is that he has come to the conclusion, partly from reasoning, and partly from experiments, that antitoxine is nothing more than this normal constituent of the nerve cells that has the power of binding toxine, and that antitoxine, therefore, is something that exists normally in the cells, and is set free according to this principle. The toxine must first be introduced, and being introduced in a dose less than the fatal dose enters into combination with the protoplasm of the cells, and damages those special cells and no others. It