

The last subdivision—according to the tabular summary given above—treats of local immunity. In the various diseases it is often noticed that some parts or organs become invaded with the infection, whilst others are quite undisturbed. Thus, to give one illustration, at least, the mucous membrane lining the mouth and pharynx is quite competent to destroy any bacteria that find their way there. On the other hand, the endothelial lining of the alveolar air-sacs of the lungs is often quite susceptible to the attacks of invading bacteria. And, again, if the pharyngeal mucous membrane have its continuity dissolved—either through excessive bacterial activity or through traumatism—the bacteria are thus given free ingress into the deeper tissues where they can grow and produce their toxins; the latter enter the circulation and bring about the specific toxæmia, as in diphtheria. If the bacteria themselves enter the blood, as in pneumonia, it is termed a *bacteriemia*, or a *septicæmia*.

Having presented (very concisely) the various facts and explanations connected with immunity as it is found existing naturally—i.e., congenitally—we will now explore, just as briefly, the second part of this essay. The question now presents itself, How can a disease—whether it be of microbic or of non-microbic origin—be prevented? This question will be answered in a practical manner in this (the second) and in the next (the third) parts of this paper. In this part, there will be explained summarily the more important methods of inducing an artificial immunity by *technical* means (requiring the skill of a physician only.) This system shall *not* necessitate the physician's skill directly; the means are non-technical, i.e., so far as the medical man's services are required.

Artificial, or Acquired Immunity is, therefore an immunity induced into a susceptible individual. And in inducing such an immunity it is always borne in mind that the susceptible individual himself, already possesses the potential but not the kinetic properties of being immunised. All the doctor has to do is to supply the agents by means of which the body-cells are stimulated to act more forcibly in the direction of immunity than they have done until now. Artificial Immunity is subdivided into two classes, active and passive.

Active Immunity is induced by the inoculation of bacteria or of their toxins. This incites the cells of the animal to reaction and counter-action. This reaction means the production of anti-bacterial or of anti-toxic substances, respectively. In such a form of immunity it is the cells of the individual, himself, that manufacture the defensive products; and, once the immunising power of the cells has been stimulated, their activity is often quite vigorous. The methods of "active" immunisation are—