

I mean infection. At present the living nature of the contagious matter is beyond any doubt.

Ever since man has had the notion of contagion, all sorts of conjectures have been formed concerning its nature. But of all hypotheses, no one could be verified until the day it was demonstrated that, in the body of an individual afflicted with a contagious disease, there exists inferior organisms capable of fixing themselves and multiplying in the tissues of another individual and liable to determine in the latter a disease similar to the first.

In general, great discoveries are not the deeds of a single man; they appear as the realization of an ideal aspiration which, during a more or less extensive preliminary period, is marked by isolated endeavors, the importance and signification of which we generally fail to recognize.

It is true that, in the seventeenth century, Robert Boyle, and later on, Tyndall, Haneau and Villemin have had as a glimpse of what was going to be later the resounding discovery of bacteriology; but it is not less true that to Pasteur is due the origin of the new doctrine and it is a duty for whomever speaks of bacteriology, to mention at first the name of the illustrious scientist whom France, nay, the whole humanity, is so rightly proud to possess.

It is to Pasteur that we owe this wonderful discovery of the rôle played, on our planet, by a whole world of infinitely small beings which, everywhere, invisible and present, constitute, by the manifestation of their incessant activity, one of the greatest forces which govern matter and determine its transformations.

In applying all the faculties of his deeply investigating mind to the study of these infinitely small beings, much more powerful than the antediluvian monsters, and often much more dangerous, M. Pasteur has succeeded in watching them at work, in catching the play of their functions and in establishing their relations with the phenomena of fermentation of which they are necessary agents.

All fermentable substance can be preserved indefinitely in a vessel, if we take care to keep it constantly impervious to the air, which is the vehicle of microbes. It will remain in that unchanged state for months, years and even centuries. But let us allow the atmosphere, full of its microbes, to come into contact with these substances, the molecules of which had so long remained intimately

connected with each other, and a few hours will not elapse ere we see them being agitated; heat is developed, gas produced by new combinations is set free and a change of state takes place.

The great discovery of the rôle played in fermentations by these minute beings of the invisible world, naturally led M. Pasteur to wonder whether it could not furnish some explanation to certain pathological phenomena characterized also by a great development of heat and during which takes formation a humor different by its characters and properties from physiological humors. He accordingly went to work and very soon light was thrown on the domain of pathology upon phenomena quite as mysterious, as obscure and until then as impenetrable as had been fermentations.

He then clearly demonstrated that the contagion of a certain number of diseases at least, is but the function of the infinitely small beings of the invisible world, each special malady depending on a special kind of microbe which is particular to it and of which it expresses the active manifestations.

The agent of transmission of each of these maladies, is the microbe itself, which, after infinitely multiplying in the organism it has infected, is being carried to a sound organism and again multiplies in the latter, giving rise to the same trouble, the same disorders and the same fatal accidents.

Here is then, at last, the virus: That mysterious agent of ancient pathology and the unauspicious action of which they formerly tried to explain by catalysis; here it is! It has assumed a material body that we can see when we proportionate through an instrument the power of sight to its infinite smallness. We can cultivate it, outside of the organism, in liquids appropriate to the exigencies of its nutrition; we can even master it, tame it, as it were, in attenuating its energy until it has been transformed in its own vaccine, that is to say, until it has kept up but the power of conferring by inoculation the singular privilege of immunity owing to which the strong virus shall hereafter be altogether or for a long time, without any powerfulness on the organism.

Carbuncle or anthrax was the medium which connected the study of fermentation and that of diseases. After having demonstrated the existence of