

and on the other, that they produce the ferment by which disintegration is determined." Now, in the following lecture, Dr. Sanderson plainly speaks as if the latter proposition were not an assumption, but a truth; whereas the first proposition is a proven fact, and the second merely an assumption. Hence, it may be definitely asserted, that putrefaction precedes the appearance of organisms; while his view, that these, while invisible, may also cause putrefaction, is merely a supposition.

Another argument in favor of the bacterial origin of putrefaction is, that it is always accompanied by organisms; another, that if these be destroyed by chemical or other agents, putrefaction is arrested; and another, that if a solution of animal matter, or of certain salts, be boiled in a flask, and the flask sealed, or its neck stuffed with cotton wool during ebullition, or previously bent, with its orifice looking downwards, or formed into contortions, with its orifice looking upwards, the solution does not putrefy. But should the flask be left unsealed, unstuffed, or should its neck be unbent, or the contorted portion broken off, or, according to Sanderson, should a drop of distilled water, a thread of silk, or a hair, be brought in contact with the fluid, or if it is prepared with ammoniac tartrate, &c., and the flask immediately re-sealed, re-stuffed, or otherwise made as it was, decomposition of the contents soon takes place, because the germs of bacteria have thereby access, or are introduced into the fluid.

The other, or physico-chemical school, holds that bacteria are mere innocent concomitants of putrefaction and its result; that their *role* is the integration of organic particles into their own protoplasm, as these are breaking down into inorganic; hence they are constructive, not destructive. This seems to be obvious, from the fact that a bacterium must be more highly organized than a speck of decaying albumen, or a mixture of potassic and calcic phosphate with magnesian sulphate and ammoniac tartrate.* The disciples of this school concede, in a majority of cases, that the arrestment of putrefaction is coincident with the destruction of bacteria, etc., by chemicals, etc., but they argue, and I think rightly, that the organisms are not solely acted on—that the soil or pabulum on which they are thriving is affected as well—hence its decomposition may be arrested by some *modus operandi* not easily explained; so that the bacteria die, not only from the foreign body acting on them as a poison, but also from starvation. What arrests putrefaction in decaying matter (of course)

* Bacteria flourish exuberantly in a solution of these salts.