

and development. Let us see how they affected biology proper—the study of life.

The early propounders of the cellular theory were evidently much influenced by the then existing theories which explained the constitution of inorganic chemical substances by atoms and by the processes of crystallisation. The progress of science, however, was in the direction of showing more and more that these borrowed conceptions are quite inadequate. Reasoning or thinking on organised matter is quite different from that which refers to unorganised substance. Chemists and physicists deal with atoms as imaginary units, which form the ideal groundwork for constant arithmetical proportions or for the action of calculable mechanical forces measured by observable movements. Biologists, whether dealing with plants or animals, approach the cells which they regard as the units of living matter with the microscope—an instrument which, till quite recently, has only been sparingly used in chemical research. The units of the chemist far transcend our powers of vision; the units of the biologist are to some extent accessible to our senses. All organisms have been found to be analysable by the aid of the microscope into similar morphological constituents called cells, which present very similar forms and functions. This has had the advantage of permitting the phenomena of life to be analysed into a few fundamental processes common to all living things; the great diversity of the larger organisms, and the more conspicuous phenomena of life, being conceived as put together in various ways out of these elementary units, which exhibit in varying degrees