

## THE UNITY OF NATURE

pounds of carbon—are the sole and the mechanical causes of the specific phenomena of movement, which distinguish organic from inorganic substances, and which are called life, in the usual sense of the word" (see *The Natural History of Creation*). Although this "carbon-theory" is warmly disputed in some quarters, no better monistic theory has yet appeared to replace it. We have now a much better and more thorough knowledge of the physiological relations of cell-life, and of the chemistry and physics of the living protoplasm, than we had thirty-three years ago, and so it is possible to make a more confident and effective defence of the carbon-theory.

The old idea of spontaneous generation is now taken in many different senses. It is owing to this indistinctness of the idea, and its application to so many different hypotheses, that the problem is one of the most contentious and confused of the science of the day. I restrict the idea of spontaneous generation—also called abiogenesis or archigony—to the first development of living protoplasm out of inorganic carbonates, and distinguish two phases in this "beginning of biogenesis": (1) *autogony*, or the rise of the simplest protoplasmic substances in a formative fluid, and (2) *plasmogony*, the differentiation of individual primitive organisms out of these protoplasmic compounds, in the form of *monera*. I have treated this important, though difficult, problem so exhaustively in the fifteenth chapter of my *Natural History of Creation* that I may content myself here with referring to it. There is also a very searching and severely scientific inquiry into it in my *General Morphology* (1866). Naegeli has also treated the hypothesis in quite the same sense in his mechanico-physiological theory of descent (1884), and