

doubtedly was a period in its history when rock structure, as we now know it, did not exist. This theory, which is commonly styled "the nebular hypothesis," most completely satisfies all the conditions required and may be briefly stated thus. It supposes that in the beginning the universe existed simply in a state of cosmic ether; that this in process of time gave off immense masses to which a rotary motion was imparted through various forces; that from these whirling masses large rings were separated, which by rupture and gradual condensation gradually assumed a spherical shape, as a consequence of the rotary movement, till at length the solar system, with its central sun and accompanying planetary bodies was evolved.

The cosmic matter, in process of time cooled down sufficiently to produce a crust, composed of various mineral constituents; and the cooling and hardening of the earth's mass proceeded either from the centre as a nucleus outward or by a gradual thickening of a first formed crust inward. Several theories have been proposed to explain this stage of the earth's history, but the greater number of physicists and geologists at the present day regard the globe as a more or less solid mass with areas of liquid matter at various points throughout the interior. Be that as it may we can safely say that the first rock material was produced by the gradual decrease in temperature of the original nebular mass, and in this way a foundation was laid down for the subsequent deposition of rock material, for the introduction of living organisms, and finally for the advent of man himself.

From a careful examination of many portions of this crust which have been brought to the surface either by denudation of overlying formations or by the extrusion of liquid matter, as in the case of volcanoes, it has been ascertained to be composed of a number of simple or undecomposable substances or elements of which about seventy have now been recognized. Of these the greater part apparently exist in very limited quantity, while the main mass of the crust is made up of a few easily recognized compounds formed from the union of two or more simple elements. The most abundant of these is silica which is the result of a chemical union of silicon and oxygen, and this constitutes more than half the mass of the earth's