

theory of the solar system. Finally, ever more accurate observations and the marvelous fertility of spectroscopical investigations have brought the stars within our reach.

The whole universe now appears to be not unlike our part of it, both chemically and physically. The same forms of matter, the same material aggregates, the same manifestations of energy, and similar movements are everywhere present. The stars are no longer changeless, but violently active bodies; they are no longer permanent, but evolving systems; they are born, they grow, age, and die; and throughout their evolution they obey laws, which, though as yet imperfectly known, appear to be common to all. Meantime the study of *nebulæ*, comets, and meteorites has kept pace with other departments of the science, and our interpretation of the results of stellar astronomy¹ constantly gains from ever increasing knowledge of the physical and chemical processes in the sun.

The universe which thus gradually has been revealed to the astronomer is made up of a relatively small number of types of material

¹ A description of such facts from the physico-chemical point of view may be found in Arrhenius's "*Lehrbuch der kosmischen Physik.*" Leipzig, 1903. A brief popular account of some of the facts in the same author's "*Worlds in the Making,*" translated by Borns. New York and London, 1908.