

## BOOK II

## GEOGNOSY

AN INVESTIGATION OF THE MATERIALS OF THE EARTH'S SUBSTANCE

PART I.—A GENERAL DESCRIPTION OF THE PARTS  
OF THE EARTH

A DISCUSSION of the geological changes which our planet has undergone ought to be preceded by a study of the materials of which the planet consists. This latter branch of inquiry is termed Geognosy.

Viewed in a broad way, the earth may be considered as consisting of (1) two envelopes—an outer one of gas (atmosphere), completely surrounding the planet, and an inner one of water (hydrosphere), covering about three-fourths of the globe; and (2) a globe (lithosphere), cool and solid on its surface, but possessing a high internal temperature.

I.—*The Envelopes—Atmosphere and Hydrosphere*

It is certain that the present gaseous and liquid envelopes of the planet form only a portion of the original mass of gas and water with which the globe was invested. Fully a half of the outer shell or crust of the earth consists of oxygen, which, there can be no doubt, once existed in the atmosphere. The extent, likewise, to which water has been abstracted by minerals is almost incredible. It has been estimated that already one-third of the whole mass of the ocean has been thus absorbed. Eventually the condition of the planet will probably resemble that of the moon—a globe without air, or water, or life of any kind.