CHAP. II.

GENERAL REASONINGS CONCERNING THE SUBSTANCE OF THE GLOBE.

Chemical Data as to the Exterior Parts of the Earth.

WHAT is the nature of the mass of the globe is a question to which chemistry and natural philosophy furnish the only answers which our faculties can comprehend. The nature of matter, in the abstract sense, it is not given to man to know; but instead of this perhaps useless, and certainly unattainable, knowledge, we are able to discover differences among the sorts of matter when subjected to the same conditions — differences of weight, of hardness, of fusibility, solubility, crystalline arrangement, and many other important circumstances. These properties define the sort of matter to our senses; and thus it appears that many different compounds of matter exist in the earth. These compounds, resolved into their elements by the processes of chemistry, yield a certain number (fifty-four) of substances which, under the conditions yet applied to them, are found to be incapable of further analysis, and are therefore called simple or elementary substances. They are singularly diversified in weight, mode of existence when separate, and relation to temperature and electricity.

In a free state under ordinary pressure and temperature, some (five) exist as gas; viz., hydrogen, oxygen, chlorine, fluorine, azote. Seven are non-metallic solids and liquids; viz., sulphur, phosphorus, selenium, iodine, bromine, boron, carbon.

The remainder are metallic or metalloid, and, with the