CHAPTER XI.

TABULAR ARRANGEMENT OF SECONDARY STRATA.—RED SANDSTONE. MAGNESIAN LIMESTONE.—ROCK SALT AND GYPSUM.

Relative Geological Position of the Secondary Class of Rocks.—Their Mineral and Zoological Characters.—Tabular Arrangement.—New Red Sandstone and Red Marl.—Upper, Middle, and Lower Beds, formed chiefly of the Fragments of more ancient Rocks, broken by some great Convulsion.—Lowest Red Sandstone, or Rothe-todte-Liegende of the German Geologists.—Separated from the Middle Beds, by Beds of Magnesian Limestone.—Middle and Upper Beds of Red Sandstone and Marl; their Accordance with those of France and Germany.—Muschel-Kalk wanting in England, but probably exists in Ireland, as the Lily Encrinite has recently been discovered there.—Magnesian Limestone of the Northern Counties.—English Red Marl and Sandstone formed of more ancient Rocks, particularly of Porphyry and Trap.—Gypsum accompanying Rock Salt originally Anhydrous.—Rock Salt Deposits, in different Formations.

SECONDARY rock formations, comprise all the regular strata that cover the transition rocks and coal measures, and terminate with chalk. Their mineral characters may be briefly described, as they occur in England, France, and part of Germany, They consist of vast depositions of sandstone and conglomerate beds, and of numerous calcareous beds, separated by beds of clay and sand. The limestones are less crystalline, and more soft and earthy, than transition or mountain limestone. They abound in remains of testaceous animals, which are chiefly marine shells; but remains of fresh-water animals occur in some of the secondary beds; and parts of fossil terrestrial vegetables are also sometimes found, proving the existence of dry land, at the period when the strata were deposited. Secondary strata cover a large portion of the habitable globe, and are the immediate sub-soil of the most fertile districts in England, and of various parts of Europe. No beds of good mineral coal are found in any part of the secondary series of strata, above the regular coal measures in England; but some beds of imperfect coal, and wood coal, occur in the secondary formations: and this is also the case in similar formations on the Continent. Neither metallic veins nor metallic beds deserving notice (except of iron ores) occur in this class of rocks; nor do they afford any of the rare species of crystallized minerals. Rock-salt and gypsum are the most valuable minerals found in the secondary strata; and it is from them that all the important salt springs issue. Some of the rocks in this class yield useful materials for architecture; but the stone is, generally, soft and perishable. To the rocks of this class, Werner gave the name of flœtz or flat rocks, because, in the northern parts of Europe, they are generally arranged in nearly horizontal strata; but, this character is altogether inapplicable to the upper secondary strata in the outer ranges of the Alps, and in the Jura chain, where they may be observed, bent in every possible direction, and sometimes nearly vertical. In these