eposited; and which of them are primary and which are secondary. It also shows which of the minerals in an ore were deposited by the agent that introduced the metals, and whether the minerals are still as they were originally deposited or whether they have been redeposited by descending surface waters. It also reveals in replacement ores, by the shadow of the original structure, what material the ore has replaced; it may show, for example, that a phosphate of lime was originally a trachyte (as at Clipperton Island); that a gold-bearing quartzite was originally a dolomite or a fossiliferous limestone; that an ironstone has been formed by the alteration of a shelly limestone into a carbonate or oxide of iron. Many theories have proved untenable when microscopic study has shown that supposed sedimentary rocks were igneous, or that intrusive rocks were volcanic ash, and that a mineral that was thought to have been the first constituent to solidify in a molten magma was introduced long after the solidification of the rock.

Chief Mineral Deposits due to Segregation—Most of the minerals of special use to man consist of material that was widely scattered through the primeval matter of the earth. They have been concentrated by that beneficent process of segregation which draws like to like. The process is sometimes due to chemical affinity, and sometimes to the properties which cause mechanical concentration by wind and water. The primary mineral deposits are mainly due to ascending currents rising from the vast store of metals in the interior of the earth. Some rich secondary deposits are made upon or near the surface by the solution of scattered material by descending rain-water, and its deposition in concentrated form. Some superficial deposits are due to the mechanical separation of ore from dross by Nature's use of the methods adopted in ore-concentrating machinery. Other beds of mineral matter, such as coal and limestone, are due to the gregarious habits of plants and animals; they live in forests or jungles or in colonies, and leave their tissues, shells or skeletons in continuous sheets which are subsequently compressed and cemented. Varied processes of concentration have formed all those mineral segregations by the use of which man has gained his control over nature, and developed modern civilization.