

flint, replacing the carbonate of lime in mollusks, echinoderms, corals, etc. It also occurs in irregular aggregates, in which organisms are sometimes beautifully preserved. It forms a frequent material for the petrification of fossil wood. Silicification, or the replacement of organisms by silica, is the process by which minute organic structures have been most perfectly preserved. In a microscopic section of silicified wood, the organization of the original plant may be as distinct as in the section of any modern tree. Pyrites and marcasite, especially the latter, are common replacing minerals, abundant in argillaceous deposits, as, for example, among the Jurassic and Cretaceous clays. Siderite has played a similar part among the ironstones of the Coal-measures, where shells and plants have been replaced by it. Many other minerals are occasionally found to have been substituted for the original substance of organic remains. Among these may be mentioned glauconite (replacing or filling foraminifera), vivianite (specially frequent as a coating on the weathered surface of scales and bones), barytes, celestine, gypsum, talc, lead-sulphate, carbonate, and sulphide; copper-sulphide and native copper; hæmatite and limonite; zinc-carbonate and sulphide; cinnabar; silver chloride and native silver; sulphur, fluorite, phosphorite.¹⁵

§ *iii.* **Relative Palaeontological value of organic remains.**

—As the conditions for the preservation of organic remains exist more favorably under the sea than on land, relics of marine must be far more abundantly conserved than those of terrestrial organisms. This is true to-day, and has doubtless been true in all past geological time. Hence, for the purposes of the geologist, fossil remains of marine forms of life far surpass all others in value. Among them, there will necessarily be gradations in importance, regulated chiefly by their possession of hard parts, readily susceptible of preservation among marine deposits. Among the Protozoa, foraminifers, radiolarians, and sponges, pos-

¹⁵ Roth, "Chem. Geol." i. p. 605. Jannettaz, Bull. Soc. Geol. France (3), vii. p. 102.