LIMONITE. — A brown, brownish black to ochre-yellow iron ore, consisting of iron in the same state of oxidation as hematite, but combined with water: it is hence equivalent to hematite plus water, $Fe_2O_3 + 1\frac{1}{2}H_2O$ = iron sesquioxide 85·6, water 14·4 = 100. Contains when pure 59·9 per cent of iron. Its powder is brownish yellow — a distinguishing character. The earthy yellow variety is the common paint, *yellow ocher*. In the larger deposits this ore is a *secondary* product; that is, was made from the oxidation of iron-bearing minerals in the rocks about the deposits. So named from the Greek for *marsh*, because a common ore in marshes, marshes being the earth's smaller pockets, catching what iron is decomposed out of the rocks of the surrounding hills and washed in by the waters. The marsh ore is often contaminated with phosphates from organic deposition, and therefore the iron it yields is usually fit only for castings. The larger deposits, not of marsh origin, are commonly pure, or nearly so, from phosphates and sulphur; but they may contain sulphur when the ore has been made from pyrite. When free from sulphur it is a very valuable ore, easily worked. Great beds occur in Salisbury, Conn., Berkshire County., Mass., Amenia and elsewhere in eastern New York, in eastern Pennsylvania, and farther southwest, and in many other states.

MANGANITE, PSILOMELANE, PELAGITE. — Both hydrous and anhydrous oxides of manganese exist. *Manganite* is a hydrous sesquioxide, like limonite (under iron); and *psilomelane* is a massive, impure ore of related character. The color is iron-black and the powder black. Over the sea-bottom concretions of impure hydrous manganese oxide occur, which have been named *pelagite*. An analysis gave 40 per cent of this oxide to 27 of iron sesquioxide, with 13 per cent of water, 14 of silica, and 40 of alumina. The manganese is supposed to come from the pyroxene of volcanic ashes.

WATER. — Water is hydrogen oxide, H_2O = Oxygen 88·89, hydrogen 11·11 = 100. But it is never pure, because of its solvent powers. See beyond, page 118.

ORGANIC CONTRIBUTIONS TO THE MATERIAL OF ROCKS.

The materials of most rocks are of mineral origin. The rocks have been produced by fusion, or out of the gravel, sand, or clay, made through the wear and decay of preëxisting rocks; and as the constituents drawn upon were mineral, the rocks thus derived are of mineral origin. These are the most common of rocks.

But besides the material from a mineral source, large contributions toward rock-making have come from the *organic* kingdoms, especially from those divisions of it that produce hard, stony secretions. Shells and corals are examples of these secretions. Animals secreted them for protection, support, or some other purpose; but they were good material for rock-making, and through the geological ages, when the death of animals has set them free, they have been converted into limestones. Plants are the source of coal-beds. Their stems, leaves, tissues, have become gathered in favorable places into beds, like a peat-bed, and after long burial have been converted into coal. Further, some kinds of animal and vegetable life secrete silica, material for siliceous accumulations.

Organic materials may occur not only in deposits that are purely of organic origin, but also mixed with material of mineral origin, that is, with sand, clay, gravel, and the like, in various proportions; and sometimes a few organic relics are all the materials of an organic source that can be distinguished. The organic relics preserved in any rock are called *fossils* (from