Varieties. — a. *Kaolin;* purest unctuous clay, white, and when impure, of other colors. The white is used for making porcelain by mixing with pulverized feldspar and quartz, also for giving weight and body to writing-paper. b. *Potter's clay;* plastic, free from iron, and therefore good for white pottery; mostly unctuous; usually containing some free silica. c. *Ferruginous, Brick-clay;* containing iron in the state of oxide or carbonate, and consequently burning red, as in making red brick; generally in thin layers, which are alternately good clay and fine sand. d. *Containing iron in the state of a silicate*, and then failing to turn red on being burnt, as the clay of which the Milwaukee brick are made. e. *Alkaline* and *Vitrifiable;* containing 2·5 to 5 per cent of potash or potash and soda, owing to the presence of undecomposed feldspar, and then not refractory enough for *pottery* or *fire-brick*. f. *Marly;* containing some calcium carbonate. g. *Carbonaceous, Black, Ampelite;* from the presence of lignitic or coaly material. h. *Alum-bearing;* containing aluminous sulphates, owing to the decomposition of iron sulphides present.

Rock-flour is rock pulverized to extreme fineness, so as often to resemble clay although containing very little of it. Feldspar in this fine state is present in much clay. Some rock-flour consists mainly of pulverized quartz.

Alluvium, Silt, Loess. — *Alluvium* is the earthy deposit made by running streams or lakes, especially during times of flood. It constitutes the flats adjoining, and is usually in thin layers, varying in fineness or coarseness, being the result of successive depositions. *Silt* is the same material deposited in bays or harbors, where it forms the muddy bottoms and shores. *Loess* is an earthy deposit, coarse or fine, following the courses of valleys, like alluvium, but without division into thin layers; fertile ordinarily from the amount of vegetable matter present, and containing also land or fresh-water shells.

Detritus (from the Latin for *worn*) is a general term applied to earth, sand, alluvium, silt, gravel, because the material is derived, to a great extent, from the *wear* of rocks through decomposing agencies, mutual attrition in running water, and other methods.

Soil is earthy material, mixed with the results of vegetable and animal decomposition, whence it gets its dark color and also a chief part of its fertility.

Till. — Unstratified or imperfectly stratified deposits of bowlders, gravel, and clay, derived from a continental glacier. Also called *bowlder clay*. Usually firmly compacted, owing to the presence of clay or rock-flour when not properly consolidated.

Tripolyte (Infusorial Earth). — Resembles clay or chalk, but is a little harsh between the fingers, and scratches glass when rubbed on it. Consists chiefly of siliceous shells of Diatoms. Forms thick deposits, and is often found in swamps beneath the peat (see page 153). Occurs sometimes *slaty*, as at Bilin, Prussia; and also *hard*, from consolidation through infiltrating waters. Consists of silica in the opal or soluble state.

Crystalline Rocks.

The descriptions of crystalline rocks are arranged under the following heads: —

I. Siliceous rocks, or those consisting mainly of Silica.

II. Rocks having as a chief constituent one or more of the alkali-bearing minerals, Feldspar, Mica, Leucite, Nephelite, Sodalite. — In the first three of the following subdivisions, potash-feldspar is present as a distinctive feature; in 4, leucite also contains a potash-bearing mineral; in 5 and 6 a soda-lime or a lime feldspar is characteristic.

1. Potash-Feldspar and Mica Series.
2. Potash-Feldspar and Hornblende or Pyroxene Series.
3. Potash-Feldspar and Nephelite Rocks, Hornblendic or not.
4. Leucite Rocks, Pyroxenic or not.
5. Soda-lime-Feldspar and Mica Series.