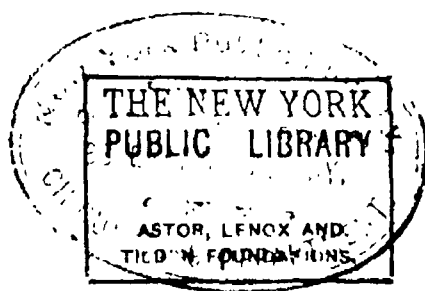


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12.

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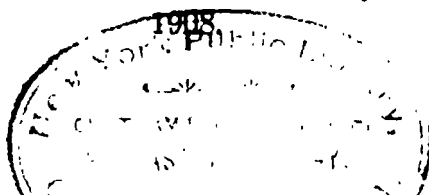
WITH AN EXTENDED TREATISE ON
CRYSTALLOGRAPHY AND PHYSICAL MINERALOGY

BY
EDWARD SALISBURY DANA
*Professor of Physics and Curator of Mineralogy
Yale University*

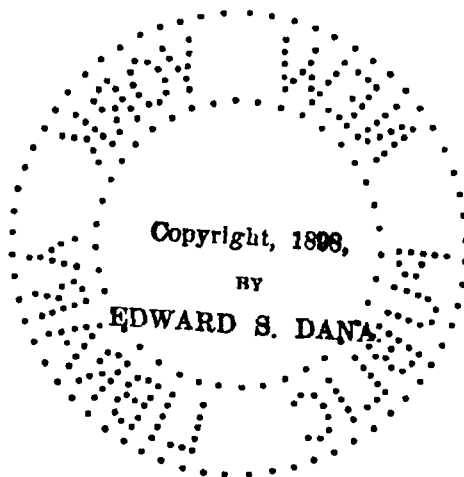
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Deweyllite. A magnesian silicate near serpentine but with more water. Formula perhaps $4\text{MgO} \cdot 8\text{SiO}_2 \cdot 6\text{H}_2\text{O}$. Amorphous, resembling gum arabic, or a resin. $H. = 2-3.5$. $G. = 2.0-2.2$. Color whitish, yellowish, reddish, brownish. Occurs with serpentine in the Fleimsthal, Tyrol; also at Texas, Penn., and the Bare Hills, Md. *Gymnite* of Thomson, named from *γυμνός*, *naked*, in allusion to the locality at Bare Hills, Md., is the same species.

Genthite. Nickel Gymnite. A gymnite with part of the magnesium replaced by nickel. $2\text{NiO} \cdot 2\text{MgO} \cdot 8\text{SiO}_2 \cdot 6\text{H}_2\text{O}$. Amorphous, with a delicate stalactitic surface, incrusting. $H. = 3-4$; sometimes very soft. $G. = 2.409$. Luster resinous. Color pale apple-green, or yellowish. From Texas, Lancaster Co., Pa., in thin crusts on chromite.

Garnierite. Noumeite. An important ore of nickel, consisting essentially of a hydrated silicate of magnesium and nickel, perhaps $\text{H}_2(\text{Ni}, \text{Mg})\text{SiO}_4 + \text{aq.}$ but very variable in composition, particularly as regards the nickel and magnesium; not always homogeneous. Amorphous. Soft and friable. $G. = 2.3-2.8$. Luster dull. Color bright apple-green, pale green to nearly white. In part unctuous; sometimes adheres to the tongue. Occurs in serpentine rock near Noumea, capital of New Caledonia, associated with chromic iron and stentite, where it is extensively mined. A similar ore occurs at Riddle in Douglas County, southern Oregon; also at Webster, Jackson Co., N. C.

TALC.

Orthorhombic or monoclinic. Rarely in tabular crystals, hexagonal or rhombic with prismatic angle of 60° . Usually foliated massive; sometimes in globular and stellated groups; also granular massive, coarse or fine; fibrous (pseudomorphous); also compact or cryptocrystalline.

Cleavage: basal, perfect. Sectile. Flexible in thin laminæ, but not elastic. Percussion-figure a six-rayed star, oriented as with the micas. Feel greasy. $H. = 1-1.5$. $G. = 2.7-2.8$. Luster pearly on cleavage surface. Color apple-green to white, or silvery-white; also greenish gray and dark green; sometimes bright green perpendicular to cleavage surface, and brown and less translucent at right angles to this direction; brownish to blackish green and reddish when impure. Streak usually white; of dark green varieties lighter than the color. Subtransparent to translucent. Optically negative. Ax. pl. $\parallel a$. $Bx \perp c$. Axial angle small. $\gamma - \alpha = 0.035-0.050$.

Var.—Foliated, Talc. Consists of folia, usually easily separated, having a greasy feel, and presenting ordinarily light green, greenish white, and white colors. $G. = 2.55-2.78$.

Massive, Stentite or Soapstone (Speckstein Germ.). *a.* Coarse granular, grayish green, and brownish gray in color; $H. = 1-2.5$. *Pot stone* is ordinary soapstone, more or less impure. *b.* Fine granular or cryptocrystalline, and soft enough to be used as chalk; as the *French chalk*, which is milk-white with a pearly luster. *c. Indurated talc.* An impure slaty talc, harder than ordinary talc.

Pseudomorphous. *a.* Fibrous, fine to coarse, altered from enstatite and tremolite. *b. Rensselaerite*, having the form of pyroxene from northern New York and Canada.

Comp.—An acid metasilicate of magnesium, $\text{H}_2\text{Mg}_2(\text{SiO}_3)_2$ or $\text{H}_2\text{O} \cdot 3\text{MgO} \cdot 4\text{SiO}_2$, = Silica 63.5, magnesia 31.7, water 4.8 = 100. The water goes off only at a red heat. Nickel is sometimes present in small amount.

Pyr., etc.—In the closed tube B B., when intensely ignited, most varieties yield water. In the platinum forceps whitens, exfoliates, and fuses with difficulty on the thin edges to a white enamel. Moistened with cobalt solution, assumes on ignition a pale red color. Not decomposed by acids. Rensselaerite is decomposed by concentrated sulphuric acid.

Diff.—Characterized by extreme softness, soapy feel; common foliated structure; pearly luster; it is flexible but inelastic. Yields water only on intense ignition.

Obs.—Talc or stentite is a very common mineral, and in the latter form constitutes extensive beds in some regions. It is often associated with serpentine, talcose or chloritic schist, and dolomite, and frequently contains crystals of dolomite, breunnerite, also asbestos, actinolite, tourmaline, magnetite.

Stentite is the material of many pseudomorphs, among which the most common are those after pyroxene, hornblende, mica, scapolite, and spinel. The magnesian minerals are

those which commonly afford steatite by alteration; while those like scapolite and nephelite, which contain soda and no magnesia, most frequently yield pinitic-like pseudomorphs. There are also steatitic pseudomorphs after quartz, dolomite, topaz, chialitolite, staurolite, cyanite, garnet, vesuvianite, chrysolite, gehlenite. Talc in the fibrous form is pseudomorph after enstatite and tremolite.

Apple-green talc occurs at Mt. Greiner in the Zillerthal, Tyrol; in the Valais and St. Gothard in Switzerland; in Cornwall, near Lizard Point, with serpentine; the Shetland islands.

In N. America, foliated talc occurs in *Maine*, at Dexter. In *Vermont*, at Bridgewater, handsome green talc, with dolomite; Newfane. In *Mass.*, at Middlefield, Windsor, Blandford, Andover, and Chester. In *R. Island*, at Smithfield, delicate green and white in a crystalline limestone. In *N. York*, at Edwards, St. Lawrence Co., a fine fibrous talc (*agalite*) associated with pink tremolite; on Staten Island. In *N. Jersey*, Sparta. In *Penn.*, at Texas, Nottingham, Unionville; in South Mountain, ten miles south of Carlisle; at Chestnut Hill, on the Schuylkill, talc and also soapstone, the latter quarried extensively. In *Maryland*, at Cooptown, of green, blue, and rose colors. In *N. Car.*, at Webster, Jackson Co. In *Canada*, in the townships Bolton, Sutton, and Potton, Quebec, with steatite in beds of Cambrian age; in the township of Elzevir, Hastings Co., Ontario, an impure grayish var. in Archean rocks.

SEPIOLITE. Meerschäum *Germ.* L'Écume de mer *Fr.*

Compact, with a smooth feel, and fine earthy texture, or clay-like; also rarely fibrous. $H. = 2-2.5$. $G. = 2$. Impressible by the nail. In dry masses floats on water. Color grayish white, white, or with a faint yellowish or reddish tinge, bluish green. Opaque.

Comp.— $H_2Mg_3Si_4O_{14}$, or $2H_2O.2MgO.3SiO_2$, = Silica 60.8, magnesia 27.1, water 12.1 = 100. Some analyses show more water ($2H_2O$), which is probably to be regarded as hygroscopic. Copper and nickel may replace part of the magnesium.

Pyr., etc.—In the closed tube yields first hygroscopic moisture, and at a higher temperature gives much water and a burnt smell. B.B. some varieties blacken, then burn white, and fuse with difficulty on the thin edges. With cobalt solution a pink color on ignition. Decomposed by hydrochloric acid with gelatinization.

Obs.—Occurs in Asia Minor, in masses in stratified earthy or alluvial deposits at the plains of Eskihi sher; at Hrubchitz in Moravia; in Morocco, called in French *Pierre de Savon de Maroc*; at Vallecas in Spain, in extensive beds.

A fibrous mineral, having the composition of sepiolite, occurs in Utah.

The word *meerschäum* is German for *sea-froth*, and alludes to its lightness and color. *Sepiolite* Glocker is from *σινπια*, *cuttle-fish*, the bone of which is light and porous; and being also a production of the sea, "define *spumam marinam* significabat," says Glocker.

Connarite. A hydrous nickel silicate, perhaps $H_2Ni_2Si_2O_8$. In small fragile grains. $G. = 2.459-2.619$. Color yellowish, green. From Röttis, in Saxon Voigtland.

Spadaite. Perhaps $5MgO.6SiO_2.4H_2O$. Massive, amorphous. Color reddish. From Capo di Bove, near Rome.

SAPONITE. Plotine.

Massive. In nodules, or filling cavities. Soft, like butter or cheese, but brittle on drying. $G. = 2.24-2.30$. Luster greasy. Color white, yellowish, grayish green, bluish, reddish. Does not adhere to the tongue.

Comp.—A hydrous silicate of magnesium and aluminium; but the material is amorphous and probably always impure, and hence analyses give no uniform results. Contains SiO_2 40–45 p. c., Al_2O_3 5–10 p. c., MgO 19–26 p. c., H_2O 19–21 p. c.; also Fe_2O_3 , FeO , etc.

Pyr., etc.—B.B. gives out water very readily and blackens; thin splinters fuse with difficulty on the edge. Decomposed by sulphuric acid.

Obs.—Occurs in cavities in basalt, diabase, etc.; also with serpentine. Thus at Lizard Point, Cornwall, in veins in serpentine; at various localities in Scotland, etc.