DR. THOMAS STERRY HUNT ON THE

an interval concealed by soil, "first, a marly shale, then mixtures with more carbonate of lime, some compact, some crystalline, some confusedly aggregated, presenting cavities lined with crystals of that mineral, and containing also sulphate of strontian in the mass, and in the cavities. With these, and above these, are other aggregates like serpentine, marble, etc., with purplish shale or slate, which are followed by a green and blackish traplike rock, as to appearance, but too soft for that rock." After this, that is, above it, is a mass which resembles the material overlying the lower beds of gypsum, and this last is covered by the upper porous dolomite.

§ 31. In a supplement to the report of 1839, above quoted, it is added, "the green and trap-like rocks observed near the top of the hill to the east of Syracuse, have been examined, so far as time would admit. They are all serpentines, twore or less impure, and of various shades of bottle-green, black, gray, etc. They all produce sulphate of magnesia with oil of vitriol. . . . Some have a peculiar appearance, like bronze, owing to small gold-like particles, with a lamellar structure, resembling bronzite or metalloidal diallage; also other particles highly translucent, like precious serpentine, with frequently small nuclei resembling devirifications or porcellanites, colored white, yellow, blood-red, variegated, etc. The grain of this is like common serpentine. In other kinds, the mass seems to be made of small globuliforn concretions, varying in size, being centres of aggregation. Some are of dark vitreous serpentine, others of the compact kind, the enveloping part of a light color."

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Vanuxem's farther notes, in his final report, add some important details to the above. He says: "The great mass of entirely altered rock is a well-characterized serpentine, especially when examined by the microscope." He mentions, moreover, the occurrence of mica, both white or light-colored and black, besides accretions which he compares to granite, and others in which a hornblende takes the place of mica, forming aggregates resembling syenite. He also describes granular carbonate of lime, like marble in texture, which "existed as accretions or nodules, enveloped in the serpentine."

§ 32. I endeavored many years since to obtain specimens of these rocks, and through the kindness of Prof. James Hall secured a single mass of the serpentine, which contained small plates of a copper-colored bastite or bronzite. Neither mica, hornblende, nor any other crystalline silicate was however present in the mass, which was a well-defined serpentine, with some admixture of carbonates. It agrees closely with the description given by Vanuxem, being an aggregate of grains and rounded masses of serpentine, with others of a fine-grained carbonate of lime, imbedded in a greenish-gray calcareous base. The colors of the serpentine vary from blackish-green to greenish-white; it is often translucent, and takes a high polish. An average portion of this rock gave to acetic acid, 34.43 parts of carbonate of lime, and 2.73 of carbonate of magnesia, with 0.34 of iron-oxyd and alumina, leaving a residue of 62.50 of insoluble silicate. This was a nearly pure serpentine, as shown by its analysis. It was completely decomposed by sulphuric acid, and gave silica, 40.67; magnesia, 32.61; ferrous oxyd, 8.12; alumina, 5.13; water, 12.77=99.30. No traces of either chrome or nickel could be detected. One of the small imbedded calcareous masses or concretions found in this serpentine was finely granular, greenish in color, and was nearly pure carbonate of lime. *

176

^{*} For details of this serpentine and its analysis, see Amer. Jour. Science, (2) xxvi., 263, and Goology of Canada, 1863, p. 635.