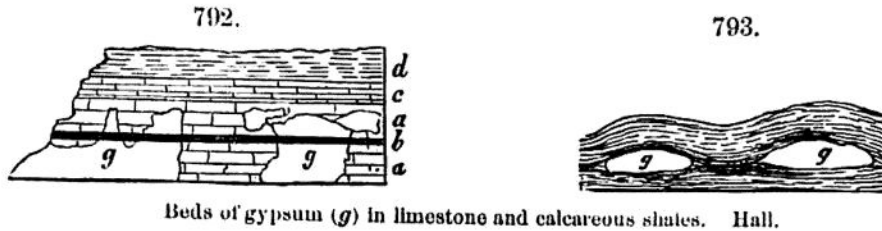


below must be on as large a scale. These sulphur springs often produce sulphuric acid, by the oxidation of the sulphuretted hydrogen. There is a noted acid spring in Byron, Genesee County, N.Y., first noticed by Amos Eaton (*Am. Jour. Sc.*, xv., 1829), whose waters Beck showed to have a specific gravity of 1.113. The laminae which pass through the gypsum unaltered, as in Fig. 792, are those which consist of clay instead of limestone.



The gypsum is usually of an earthy variety, of dull gray, reddish and brownish, sometimes black, colors. That all the gypsum of the formation had this source is reasonably questioned. It may have been in part a deposit from the same sea waters that supplied the salt.

Water-lime Group.

The Water-lime rock, so-called because it is a hydraulic limestone, is an impure, thin-bedded magnesian limestone of usually a drab color. It sometimes contains a little petroleum. It owes its hydraulic character to its impurities, as explained on page 79 (under Rocks). The group has, in general, the distribution above given for the Onondaga series. In the Helderberg Mountains it is about 150 feet thick, and nearly the same in the central part; but farther north, near Oriskany Falls in Oneida County, it runs out. It contains much gypsum, and quarries of it are worked near Syracuse, and also in Cayuga and Genesee counties. In Northern Ohio, where the Onondaga series has a thickness of 600 feet, it contains layers of shale; and gypsum is abundant at Gypsum, 10 miles west of Sandusky. Hydraulic cement is made extensively from it in Ulster County, N.Y., at Rosendale near Rondout, whence the oft-used name "Rosendale cement," but not in Ohio, where the limestone is not suited for it. The presence of chert is one cause of the unfitness of the beds for the purpose.

In the New York report by Vanuxem, the salt group between Oneida Creek and Cayuga Lake is stated to consist of (1) red shales with green spots, 1' to 500' thick; (2) the Lower Gypseous shales, light green and drab, alternating with No. 1 near the plane of junction; (3) beds containing two ranges of gypsum in masses, and often containing hopper-shaped cavities due to crystallized salt, the *Vermicular limerock* of Eaton; and (4) impure limestone containing "Epsomites," or vertically grooved surfaces formerly supposed to have been made by the crystallizing of Epsom salts (the *Stylolites*, mentioned above).

In middle Pennsylvania there are 700' of red shales, overlaid by 700' of variegated shale and 200' of gray shale (Claypole). The thickness of the formations overlying the Salina near the New York and Pennsylvania boundary is so great that no borings have yet penetrated to them. On the salt and gypsum industries of New York, see the Report of F. J. H. Merrill, *Bull. N. Y. State Mus.*, iii., 1893, which contains maps showing the distribution.