Book Notices.

Bulletin U. S. Geological Survey.[1]—In this interesting and valuable bulletin Mr. Russell describes the great deposits of red clays, &c., resulting from the decay of the surface rocks in the Appalachian Region, south of the southern limit of the glaciated area, and then considers their bearing on the much debated question of the origin of the red coloring matter of sandstones and shales.

Over large areas in Virginia and the Carolinas these residual deposits are over 100 feet thick. The clayey material when washed with water, leaves behind a residue composed of more or less angular fragments of quartz and feldspar with scales of mica and fragments of other minerals, each grain being coated with a thin layer having a red or brown color, which is rich in ferric oxide and alumina and may be described as a feruginous clay. This coloring matter adheres firmly and is not removed by prolonged washing, a fact which is illustrated by the red color of the sands deposited by the streams of Virginia and the Carolinas in districts underlain by crystalline rocks. Hot hydrochloric acid, however, removes the coloring matter, leaving the grains with their normal tints. The examination of a number of red sandstones showed that their coloring matter was identical, both chemically and in its mode of occurrence, with that in these residual deposits.

Mr. Russell believes that when crystalline rocks become thoroughly decomposed, especially in hot and moist climates where decomposition takes place not only more rapidly, but more thoroughly than in colder or drier climates, where rocks are often disintegrated without suffering marked decomposition, the residual deposits will be of a red color on account of the oxidation of the iron contained in the original rock, not only in the form of pyrites and magnetite, but also in various silicates such as pyroxene, mica, &c. Such deposits are by no means confined to the Appalachian Region, the terra rossa of Europe, the Laterite of India, and the red earth of Bermuda being similar in character and origin. If these deposits be washed away and redeposited, without prolonged friction such as that produced by ocean waves, the transportation being carried on by water which does not contain organic matter or other agents which would affect the reduction and solution of the iron, red sandstones and shales will be produced.

[1] Subaerial Decay of Rocks and Origin of the Red Color of Certain Formations. Israel Cook Russell, Bulletin of the United States Geological Survey No. 52, Washington, 1889. (pp. 65.)