

The boulders which show these modifications are almost all large, ranging from about two to twenty-five or thirty feet in diameter. Boulders of large size are extremely numerous on the areas where these forms are found, completely covering over the surface of the ground. They are all of very hard crystalline rock; some are red or gray granite, and some are greenstones, but by far the greater number are of the hard foliated gneiss which is so common in the surrounding region. Many of the large boulders of gneiss, even after the long exposure to weather which they have undergone, show no signs of fracture or breaking. So far as observed the bowldery areas of the former rapids of the river appear to be associated with belts of morainic accumulation.

Varieties.

One may best learn the processes by which scoured boulders are made by studying the action of the current in bowldery rapids of the modern river at a time of low water. In passing over and among the boulders the current is very much disturbed. It is turned aside suddenly and thrown this way and that; it strikes against the front or the sides of some boulders and passes through narrow passages between others; it glides smoothly over the tops of some and falls heavily on the tops of others, and in a few cases it is thrown into a vortex whirl in an angle or slight depression on the surface of a bowlder. Just as the billows in a rocky rapid remain constant in position, so these various turns and whirls in the current beneath the surface remain constant in place and action so long as the boulders lie unmoved. Thus the currents that play upon a bowlder are generally constant in the particular manner of their action. Where sand and small pebbles are being borne along in small or moderate quantities, they follow the deviations of the current from bowlder to bowlder, and each sand-grain and pebble does a little work of abrasion as it goes along. Every one that follows the same course among the boulders performs its iota of work upon the same part, so that the wear on each bowlder comes where the current impinges upon it. In the course of time, but very slowly, the boulders are worn into the fantastic shapes which are here called scoured boulders. The forms which the boulders take under the scour of the sand- and pebble-bearing current are quite varied. But after examining several hundreds of specimens it became apparent that all could be classified according to their forms under a few heads, although a few individual cases would have to stand as intermediate forms. Six varieties may be distinguished as follows: