Scoured Bowlders.

1. Pierced (Ring-bowlders).
2. Basined.
3. Niched.
4. Guttered.
5. Facetted.
6. Smoothed.

The table of varieties of form as given above is offered only provisionally. For it is quite probable that a more extended study of the subject would suggest some modifications. In forming the table, however, the writer has had the advantage of discussion and joint observation with Dr. Robert Bell, Assistant Director of the Geological Survey of Canada. Shortly after the beginning of the study of the bowlders at Mattawa, Dr. Bell arrived from James Bay and during three or four days delay from other causes, gave a part of his time to the study of the scoured bowlders. The names of some of the varieties as presented in the table were suggested by him. These names are based mainly on forms of scoured bowlders found on the terraces at Mattawa and in the modern rapids of the Mattawa and Ottawa rivers. The observations of this season, however, are not the only ones that the writer has made. Basined bowlders were observed in 1895 in the rapids of the Ottawa both above and below Mattawa and also in the rapids of the Nipigon. Some of the less pronounced forms were found in 1894 in several of the streams that course down the slopes of the Alps, in the Maggia especially, and to some extent also in the Toce and Ticino. In 1893 a few basined bowlders were seen in the Au Sable and Saranac rivers in the Adirondacks. The first bowlders of this kind noted by the writer were seen in 1888 and 1889 in some of the rapids of Grand river above Hot Sulphur Springs in Middle Park, Colorado, and they were also seen in several other rivers in the same state. Some of those in Grand river show well-developed potholes.

Distribution.

Scoured bowlders of the more pronounced types may be produced in almost any stream of large or moderate size provided certain conditions of stability obtain. The bowlders must be permanent in position for a long period, and the general direction of the current must not change. There must also be a fairly constant supply of sand and gravel, moderate in amount, for the current to roll along as it moves over the bowlders. Streams meandering in alluvial plains are not likely to show effects of this kind. Even streams flowing in drift beds suffer so many alterations of their courses, due to caving banks and