

surface represents the locus to which rock decay had extended in depth. In this view the ice simply removed the rotten rock, scouring and polishing the fresh surface upon which it rested, and the hummocky character is due rather to the principles which govern the decay of rocks than to ice action, which is only held responsible for laying the surface bare. All students of glacial geology will concede that in both of these opinions there is a certain amount of truth, though much more in the second than in the first.

Some observations, however, which the writer has been enabled to make at odd times during the past few years, indicate that these hypotheses do not afford us the correct explanation of the hummocky aspect of the Archean surface, but that the latter, in its essential and prominent features, long antedates the glacial epoch, and was as characteristic of the surface upon which the earliest Paleozoic sediments were deposited as of that upon which the great Canadian glacier rested in glacial times. These observations have been made along the northern limit of the undisturbed Animikie and Nipigon strata, where they rest directly upon the Archean surface, on the north shore of Lake Superior, between Gunflint lake on the international boundary and the meridian of the Slate islands. The conclusions which they forced upon the writer have been confirmed by an inquiry which he has made into the conditions which prevail along the line of contact of the undisturbed Paleozoic rocks upon the Archean in more eastern portions of Canada.

In a paper of the present compass it will scarcely be possible to do more than indicate the localities where the evidence may be found, and to sketch the latter at each place in scant outlines.

#### THE PHENOMENA OF CENTRAL CANADA.

*Contacts between the Animikie and the Archean.*—On the north side of Gunflint lake the superposition of the northern edge of the Animikie upon the Archean is well seen. To the north of the edge of the Animikie formations the Archean rises in low hummocky hills, the ridges of which, when these are present, coincide with the strike of the rocks. This hummocky surface may be walked over close up to the Animikie, and it may be seen to form an undulating surface upon which the latter rests. At the west end of the lake, on the north side of Black-fly bay, on mining locations R. 315 and R. 317, is an outlier of the basal beds of the Animikie resting on a ridge of Laurentian gneiss, with hollows on either side of it, and the Animikie at the bottom of that on the south, the whole showing very clearly that the present shape of the surface of the Laurentian was practically that upon which the Animikie was laid down. The direct repose of the flat Animikie upon the upturned edges of the Keewatin schists is also observable a mile and three-quarters from the east end of the lake, and here the surface