

there appears below these, division 2, from the base upward, of the Original Huronian, the greenish chloritic and epidiotic slate group, which has been shown by Irving to be a surface volcanic.* Below this is found formation 1, the gray quartzite which grades down into the conglomerate just described.

This locality then gives decisive evidence of an erosive unconformity between the lowest member of the Original Huronian and the Basement Complex. The intricate history written in the contorted gneisses and schists, in their intrusions by granites, in the subsequent pegmatization of both, is evidence that a great length of time was taken for the genesis of the basement complex. Then a deep truncation must have occurred before these granites could be found as surface rocks. Finally an orographic movement depressed the crystalline complex below the sea and the basal conglomerate and gray quartzite are the opening chapter of the Huronian. It is then manifest that the time gap represented by the unconformity between the Basement Complex and Huronian is of the first magnitude.

General.—As a result of our observations it is evident that at two distant points, one near the west end of the Original Huronian area and the other near the east end, are great physical breaks between members of the lower division of the Huronian and a more ancient crystalline complex which was designated by Logan and Murray as Laurentian. The nature of these breaks is such as to make it impossible that they can have been local, and the conclusion therefore appears warranted that in the typical district mapped in detail by Logan and Murray, between the Huronian and the Basement Complex there was an immense period of time. As further evidence of this break is the very different lithological characters which the Huronian and basal complex have. In the latter are known no rocks which have been demonstrated to be of sedimentary origin or even surface volcanics, while many of them are plainly deep-seated igneous rocks. The major part of the Huronian rocks, on the other hand, are so little altered that their fragmental character is generally seen in the field, and is always evident at a glance when the rocks are examined in thin section. Finally, the igneous rocks associated with these detritals are in large part surface volcanics.

If the foregoing conclusions are correct, it follows that the pre Keweenaw rocks of the north shore of Lake Huron are separable by unconformities into three series; a Basement Complex, a Lower Huronian and an Upper Huronian. These

* Is there a Huronian Group? R. D. Irving. *This Journal*, III, 1887, vol. xxxiv, p. 210.