

Newfoundland. This subject will be treated in detail after the completion of the study of the Upper Cambrian faunas now in progress.

As previously mentioned, I have heretofore included the Grand Cañon and Llano series as, in part, of Cambrian age, and correlated them with the Keweenaw series (Bull. VI, Phil. Soc. Washington, p. 102, 1882). In adopting the view that all of these may be placed under a system of pre-Cambrian age, I think there is good reason for it in the presence of the great unconformity, by erosion, between the strata of the Keweenaw system* and the known Cambrian formations. An examination of the sections shows that in each of them there is a great series of disturbed and eroded strata overlaid by the horizontal beds of the Upper Cambrian; and in the Keweenaw, and the Grand Cañon sections, this great series of strata is in turn separated from the formation below by an unconformity that, in the Grand Cañon, is very great, and in the Lake Superior area, sufficient to indicate an orographic movement previous to the deposition of the Keweenaw strata. All three of the sections (figs. 4, 5, 6) agree in the evidence of an extended orographic movement and a great period of erosion at the close of deposition of the Keweenaw series; and I am now of the opinion that the Keweenaw system should be considered as pre-Cambrian. The correspondence in the position of the pre-Grand Cañon strata, separated from the Grand Cañon series by a great unconformity, to the Huronian as described by Irving, is so striking that more than calling attention to it is unnecessary.

The presence of organic remains does not necessarily imply that the strata are of Cambrian age except they show a marked Cambrian facies; and unless this is the case I should not contend for a moment against well-proved stratigraphic evidence of greater age and marked structural breaks in the stratigraphic succession. It may be asking too much for the period of erosion, between the Keweenaw system and the Upper Cambrian, to say that 12,000 feet of mechanical sediments and 4,000 feet of limestone accumulated in the Utah-Nevada basin while this erosion was taking place; but, if we look higher up in the Grand Cañon section, and that of Central Nevada, we find that 200 feet of Silurian and Devonian strata in the former is repre-

* The Keweenaw system is here used to include the Keweenaw series of the Lake Superior region, the Llano series of Texas and the Chuar and Grand Cañon series of the Grand Cañon of the Colorado, Arizona, and is considered as of equal value with the Cambrian, Lower Silurian (Ordovician), Upper Silurian and other systems of the Paleozoic Group, and as belonging to the Paleozoic rather than to the Archean. It may be that the Keweenaw and Grand Cañon series belong to distinct systems of strata, but until this is proven I prefer to provisionally refer them to a pre-Cambrian post-Huronian system. I think the Grand Cañon and Llano strata belong to one system.