

Murray refers to the Huronian also diorites, slates, quartzites, and conglomerates, that occur in the peninsula of Avalon, southeastern Newfoundland, and describes, from the upper division, a fossil of uncertain relations which he names *Aspidella Terra-novica*, and also a worm burrow referred to the genus *Arenicolites*. The gneisses of the region he calls Laurentian.

The structure and relations of the Huronian along the iron-bearing belt from Marquette to Penokee in Wisconsin (including the Penokee-Gogebic range, and the Menominee iron region) have been studied with care by Irving and Van Hise. Van Hise and Pumpelly have recognized a subdivision of the Huronian north and south of the lakes, on the ground of a stratigraphical break, into Upper and Lower Huronian.

In most cases, kinds of rock have had chief importance in the subdivision of the Archæan. T. S. Hunt proposed the division of the Archæan (commencing below) into Laurentian, Norian, Arvonian (of Hicks), Huronian, Montalban, Taconian. The Montalban includes the White Mountain micaceous gneiss; and the Taconian, the rocks of the Taconic series now known to be of Paleozoic age. C. H. Hitchcock in his Report on the geology of New Hampshire, adopts the subdivisions, beginning below: Laurentian, Montalban (or Atlantic, including granites, gneisses, etc.), Labradorian, and Huronian. A. C. Lawson, from his Canada studies about the Lake of the Woods, Rainy Lake, and elsewhere, has divided the terranes above the Laurentian into the Couthiching (mica schists and gneisses) and Keewatin (thinner schists with conglomerates and some iron ore), and to the two united he has given the name Ontarian; the term Huronian is not used. A. Winchell arranges the Marquette iron region below the true Huronian in a group called the Marquettian. The Laurentian Gneissic group underneath is made 88,000 feet thick. N. H. Winchell refers the original Huronian beds on the north shore of Lake Superior to the Lower Cambrian; and makes the Archæan of Minnesota to include three divisions: (1) the Laurentian gneiss and related rocks; (2) the Vermilion schists, partly hornblende schists (equivalent to the Couthiching of Lawson); (3) the Keewatin schists, which are iron-bearing. The Animikie beds, consisting of chlorite schist, slates, sandstones, and small beds of iron ore, having in general small dip, have been referred to the Huronian by Logan, Irving, and Van Hise, but to the Cambrian by Selwyn, Winchell, and others; and Selwyn has announced the discovery in it of markings which, according to G. F. Matthew, are tracks much like the tracks of an animal found in the Middle Cambrian of St. John, New Brunswick. The Mesabi Range with its large beds of iron ore is made Cambrian by Winchell. The Archæan rocks of central Texas are divided by T. B. Comstock (1890) into the Burnetan and Fernandian, corresponding apparently to the Laurentian and Huronian. The latter section is described as containing large beds of magnetite. Overlying beds in which no fossils have been found he calls Eparchæan. M. E. Wadsworth has announced (1892) the following subdivisions of the Archæan in northern Michigan: (1) Cascade, (2) Republic, (3) Mesnard, (4) Holyoke, and (5) Negaunee formations; 2 and 3 corresponding to the Lower Marquette, and 4 and 5 to the Upper.

Van Hise, in 1893, proposed to restrict the term Laurentian to granite-gneisses—a petrological distinction; and gave to a supposed second division of the Archæan, the term Mareniscan, derived from the name of a township in Michigan.

A bibliography of the American Archæan to 1884, with various notes, is contained in the "Azoic System," by Whitney and Wadsworth, pages 331-506 of vol. vii. of the *Bull. Mus. Comp. Zool.*, Cambridge, 1886. A full bibliography, coming down to 1892, is published in the Report on the "Archæan and Algonkian," by C. R. Van Hise (1892), constituting Bulletin No. 86 of the *U. S. Geol. Survey*. The latter work contains brief abstracts of the publications noticed, a full exposition of the views entertained, and the author's own conclusions at length. The distinguishing characteristics of the subdivisions proposed by Hunt, Lawson, and others are given in this Report with much fullness; and all investigators of Archæan terranes should have a copy of it at hand. The subject is in an unsettled state, with wide divergences in opinion among investigators.