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Minimum Durations of the Glacial and Interglacial Ages in the Pleistocene of Iowa

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THE STRATIGRAPHIC RELATIONS OF THE GREENHORN AND NIOBRARA FORMATIONS OF WESTERN IOWA AND ADJACENT AREAS

N. C. GEORGESEN¹

(Abstract)

The purpose of this paper is to show the stratigraphic relations of the Greenhorn and Niobrara formations from Sioux City, Iowa, northward along the Big Sioux river, and westward along the Missouri river. It is concluded that the Niobrara formation does not occur in Iowa, but that the chalky beds described by Bain, Calvin and others belong to the Greenhorn formation.

STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.

SUGGESTED REVISIONS OF PLEISTOCENE CLASSIFICATION

GEORGE F. KAY

(Abstract)

Recently suggestions have been made by Leverett, Leighton, and by the writer with regard to the revision of the generally accepted classification of the Pleistocene or Glacial Period of the Mississippi Valley. Each of the proposals is discussed.

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MINIMUM DURATIONS OF THE GLACIAL AND INTERGLACIAL AGES IN THE PLEISTOCENE OF IOWA

GEORGE F. KAY

(Abstract)

The minimum durations of the glacial ages in Iowa have been estimated from present-day consensus of opinion as to the rates of advance and retreat of ice sheets. For the retreat of the late Wisconsin from Iowa the rate of one mile in ten years was adopted. The same rate was assumed for the advance of this ice sheet into Iowa and also for the advances and retreats of earlier ice sheets.

¹ Introduced by A. C. Tester.

The minimum duration of glacial time in Iowa was calculated to be about 30,000 years.

The evidence used in reaching judgments as to the durations of the interglacial ages was gained chiefly from extensive field studies in Iowa of relative depths of leaching of calcium carbonate in similar materials which throughout their times of leaching were similarly situated topographically and climatically. Leached gravels of known ages were compared. The differences in depths of leaching are the result of the different lengths of time to which the gravels were subjected to weathering agents. The depth of leaching of upland gravels in the Late Wisconsin drift was determined to be about two feet six inches. This depth of leaching has been the result of exposure to weathering since the retreat from Iowa of the Late Wisconsin ice sheet. This time has been estimated to be about 25,000 years. With this rate of leaching of gravels as a unit estimates were made of the lengths of time involved in the leaching of other gravels of known ages. The results given in this paper for Iowa are as follows: Post-Late Wisconsin time, 25,000 years; post-Iowan time, 55,000 years; Sangamon interglacial time, 120,000 years; Yarmouth interglacial time, 300,000 years; and Aftonian interglacial time, 200,000 years. The combined durations of Aftonian, Yarmouth, and Sangamon interglacial ages, and of post-Iowan, total about 675,000 years.

The combined minimum estimates of glacial and interglacial ages give a total of about 700,000 years.

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ORIGIN OF THE PEBBLE BAND ON IOWAN TILL

GEORGE F. KAY

(*Abstract*)

According to one view the pebble band on the Iowan till is the result of wind action in a marginal area during the retreat of the Iowan ice. An alternative interpretation is that the pebble band is the result chiefly of the erosion of Iowan till by running water, considerable time having been involved in its formation.

Evidence which strengthens the former of these two views has been found recently in Greenland by Dr. W. H. Hobbs of the <https://scholarworks.uni.edu/pias/vol38/iss1/47>