and other smaller pieces from other parts of the state, and also from the southern part of Illinois. It came from the Keweenaw Copper region, in northern Michigan, south of Lake Superior, for this is the only possible source. The distance is about 450 miles. A slope of 20 feet a mile, noting that the locality in Lucas County has a height of 1000 feet, would give, for the height of the ice-surface in the Keweenaw region, 10,000 feet. The present height of the land in this region is about 1500 feet; it was possibly then 3500 feet. It may be thought that detached ice, floating down the Mississippi, might have transported the copper. But the Lucas County locality is about 120 miles west of this river, and 500 feet higher than the land at Burlington, Iowa, a Mississippi town.

The distribution of copper in the drift has been attributed to the Indians. But in all probability they would have gathered it from the drift, and thus diminished the amount rather than increased it.

The distance of travel appears to have been still greater in British America. Along a line from the Laurentide ice-plateau in Canada, across the region of Lake Winnipeg, to the western limit of the drift, even a slope of 12 feet a mile would make the height of the Laurentide ice-surface over 8,000 feet. The drift at this limit contains Archæan bowlders of varying size up to a length of 40 feet, which proves its eastern origin. The rocks on the west side of Lake Winnipeg are Archæan.

With the slope at a minimum, the rate of transportation per century would be at a minimum, and the time for corrasion and decomposition, or the wearing out of stones, at a maximum; so that the material for the terminal moraine, under such circumstances, should be at a minimum.

The thickness of the ice in any place equaled the total height *less* the elevation of the land beneath; as the latter is an unknown quantity, the actual thickness is seldom obtainable. A thickness of ice of 4000 to 5000 feet probably existed along the Canada watershed, in northern New England and New York, and west of New York, in the region of the more northern of the Great Lakes; and a thickness of 1000 to 3000 feet was common over the region to the southward.

One large area of snows and thin ice — not thick enough to participate in the glacier movement — existed in the midst of the moving glaciers of Wisconsin, Iowa, and Minnesota. It is now driftless, and has an area of 12,000 square miles (map, Fig. 1548). J. G. Percival, in his survey of Wisconsin, first recognized its driftless character, and J. D. Whitney, in 1862, described and mapped it. It is now an area of minimum winter precipitation. The ice flowed either side of it, passing on the west side over the east border of Iowa.

Courses of glacial scratches in the White Mountain region, *New Hampshire*, according to C. H. Hitchcock: Near Lake of the Clouds, 5000′ to 5200′ above the sea, S. 34°–54° E.; on the N. side, near top of Mount Clinton, 4430′, 17 m. W. of Mount Washington, S. 50°–54° E.; and on S. peak of Mount Clinton, 4320′, S. 54° E.; between Mount Pleasant and Mount Franklin, 4400′, S. 30° E.; between Mount Pleasant and Mount Clinton, 4050′,