

water-basin of east Kentucky, southeast Ohio, West Virginia, and western Pennsylvania, up to a height of perhaps 1000 feet, forming a lake at that level.<sup>47</sup> Similar indications of a lake, caused by an ice-dam ponding back the drainage, are found at the head of the Red River in Minnesota.<sup>48</sup> The largest sheet of fresh water which has left its records in that region has been called "Lake Agassiz." It occupied the basin of the Red River of the North and Lake Winnipeg. It is computed to have covered an area of 110,000 square miles, thus exceeding the total area of the five great existing lakes—Superior (31,200), Michigan (22,450), Huron with Georgian Bay (23,800), Erie (9960), Ontario (7240), which have a united area of 94,650 square miles.<sup>49</sup> Many other "glacial lakes," which no longer exist because their ice-barriers have disappeared, have been found scattered over Canada.<sup>50</sup>

The deposits left by the ice-sheet within the limits of the terminal moraines so resemble those of Europe that no special description of them is required. The lowest of them, resting on ice-worn rocks, is a stiff, unstratified boulder-drift or till, full of polished and striated stones. Occasional intercalations of sand and clay, which at Portland, in Maine, have yielded many existing species of marine organisms, and in some places land-plants and fresh-water shells, separate the lower from an upper boulder-clay, which is looser, and more gravelly and sandy than the older deposit, contains larger rough and angular blocks, and has acquired a yellow tint from the oxidizing influence of surface waters. The boulders vary up to 10 feet (sometimes even 40 feet) in diameter, and have seldom travelled more than 20 miles. The boulder-clays over wide areas are distributed in lenticular hills or drums from a few hundred feet to a mile in length, from 25 to 200 feet high, and with a persistent smoothness of outline and rounded tops.<sup>51</sup> As in Europe, the longer axes of these drums is generally parallel with that of the striation of the underlying rocks.

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<sup>47</sup> H. C. Lewis, "Report on the Terminal Moraine," cited on p. 1724.

<sup>48</sup> W. Upham, *Proc. Amer. Assoc.* xxxii. 1883, p. 214.

<sup>49</sup> For a full account of this vanished lake (now represented only by scattered sheets of water in the hollows of its basin), with its terraces, dunes, deltas and other features, see W. Upham, *Rep. Geol. Surv. Canada*, vol. iv. for 1888-89.

<sup>50</sup> W. Upham, *Bull. Geol. Soc. Amer.* ii. 1891, p. 243.

<sup>51</sup> W. Upham, *Proc. Bost. Soc. Nat. Hist.* xxiv. 1889, p. 228. See on Till, W. O. Crosby, *op. cit.* xxv. 1890, p. 115.