

its larger pebbles, and possibly stone implements of late origin, upon the gravel of the new bed of the stream." But after giving every legitimate weight to such probabilities, experience has satisfied him that there is no difficulty in separating chance-buried neolithic or modern implements from the genuine paleolithic celts or hatchets abundantly present in the undisturbed gravel beds, from which they have been taken on their first exposure.

The importance attached to the recovery of the turtle-back implements in undisturbed gravel-beds has received full recognition; and it cannot admit of doubt that repeated discoveries have now been made under circumstances which prove them to have been a constituent part of the gravel, and not intrusive objects. Professor Henry C. Lewis, of the Pennsylvania geological Survey, in discussing the age of the Trenton gravel, remarks:—"At the localities on the Pennsylvania Railroad where extensive exposures of these gravels have been made, the deposit is undoubtedly undisturbed. No implement could have come into this gravel except at a time when the river flowed upon it, and when they might have sunk through the loose and shifting material. All the evidence points to the conclusion that at the time of the Trenton gravel flood, Man, in a rude state, with habits similar to those of the river-drift hunter of Europe, and probably under a climate similar to that of more northern regions, lived upon the banks of the ancient Delaware, and lost his stone implements in the shifting sands and gravel of the bed of that stream."\* Notwithstanding the revolutions that time has wrought, the locality retains sufficient indications of its ancient characteristics to satisfy the experienced eye of its fitness to have been the habitat of a race of primitive hunters and fishers. "It is evident," says Dr. Abbott, "that at just such a locality as Trenton, where the river widens out, traces of man, had he existed during the accumulation of the gravel, would be most likely to occur. This is true not only because there is here the greatest mass of the gravel, and the best opportunities for examining it in section; but the locality would be one most favourable for the existence of man at the time. The higher ground in the immediate vicinity was sufficiently elevated to be free from the encroachments of the ice and water, and the climate, soil, and fauna are all such as to make it possible for man to exist at this time, in this locality."† The remains not only of the American bison, but of the extinct mastodon, occur in this gravel. Professor Cook, the State geologist, in his report for 1878, describes the tusk of a mastodon found under partially stratified gravel at a depth of fourteen feet; and Dr. Abbott states that, within a few yards of this tusk paleolithic implements have been gathered, one at the same, and three at greater depths, from which he assumes the unquestionable presence of man on the Atlantic coast, contemporary with the mastodon and other extinct mammals of the drift.

An inter-glacial age is no longer claimed for the primitive American tool-maker; and though Dr. Abbott still maintains the glacial origin of the Trenton gravel, he no longer deems it necessary to claim for it a greater antiquity than ten thousand years. "It may be, indeed," as Professor Lewis adds, "that as investigations are carried farther, it will result, not so much in proving man of any great antiquity, as in showing how much more recent than usually supposed was the final disappearance of the glacier."‡ The date thus

\* The Antiquity and Origin of the Trenton Gravel, p. 547.

† Primitive Industry, p. 481.

‡ Ibid, p. 551.

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