

also, may antedate the Iroquoian occupation by hundreds of years, but these do not yield many animal remains.

By identifying the animal bones collected by the archæologist the zoologist can determine the former presence of (1) animals now extinct, of which we have no historical record; (2) animals which are known to have become extinct or to have been exterminated since the arrival of Europeans on this continent; (3) animals not now living in the vicinity of the prehistoric site, but found in other and more distant parts of the country; and (4) animals still living in the area covered by the archæological explorations. It is also possible for him to greatly extend the range of some species thus filling in gaps in distribution.

As practically all the bones owe their presence in archæological sites to the fact that they are those of food animals it would probably be possible to get an approximate idea of the relative abundance of any of these animals in a certain region. The bones of those most relished for food would naturally preponderate and there would be a preponderance of the herbivores as compared with carnivores.

Given a sufficient number of specimens it is possible for the zoologist to learn whether there is any difference in the size of the bones or shells of recent and prehistoric animals of the same species. For example, there is a difference in size between recent oyster shells and those from shell-heaps. Oyster shells found by Mr. Harlan I. Smith in a shell-heap on Merigomish harbor, Nova Scotia, are much larger than those of oysters now living in the vicinity. Those from the heaps of Damariscotta, Maine, likewise are much larger than recent shells, being from eight to ten and some even fourteen inches long. Then, too, Dr. Edward S. Morse has found that shells of *Mya* from prehistoric shell-heaps of the coast of Maine and Massachusetts were higher in comparison with their length than recent specimens collected in the immediate vicinity of the same heaps. He also observed a change in the shell of the common beach cockle (*Lunatia*). The ancient shell-heap form from Marblehead, Mass., "has a much more elevated spire than the recent form living on the shore today, and this variation curiously enough was in accordance with what he had observed in a species of *Natica* in the Japanese shell-heaps."¹

There is a possibility, too, that the zoologist might discover among archæological finds some bones exhibiting unknown pathological conditions of interest

¹Changes in *Mya* and *Lunatia* since the Deposition of the New England Shell-heaps, Proc. Am. Assoc. Adv. Science, 30th meeting, Cincinnati (Salem, 1882), p. 345.

to the student of animal pathology. It is of interest to note here that the shells of *Unio complanatus* Solander, one of our common fresh-water clams, found in the refuse of the Rockbuck village site, seemed to be affected by the same species of parasitic fresh-water sponge (probably *Vioa*), causing exfoliation of the sides and umbonic region, as are those of the present day.

ZOOLOGICAL INTEREST OF SOME ARCHAEOLOGICAL DISCOVERIES.

The mention of a few examples will suffice to show that some other discoveries made by archæologists are of considerable zoological interest. One of the most recent was made by the late Dr. H. Hæberlin, of Columbia University, New York, in a cave in Porto Rico.² The bones were those of a large extinct species of rodent belonging to a new genus and species, allied to *Plagiodontia*. To this rodent Dr. J. A. Allen has given the name *Isolobodon portoricensis*.³

In shell-heaps in Maine were discovered many bones of an extinct species of large and heavily built mink (*Lutreola macrondon* Prentiss), which "may have lived to historic times." Fifty-three finds of this mink were made in one shell-heap alone, one-fifth of all the animal bones found.⁴

Dr. Henry C. Mercer in his explorations of the Durham cave in Bucks county, Pennsylvania, found two vertebræ and a fragment of the lower jaw of an extinct species of peccary (*Mylohyus pennsylvanicus*). The modern peccaries are not known to have ranged any farther north than the Red river.⁵

As examples of discoveries which have extended the range of certain species, I might mention the following: In a mound in Lee county, Virginia, were found the bones of the caribou, which, on the authority of Dr. J. A. Allen, "is farther south than bones of the caribou have hitherto been found."⁶ In a shell-heap in Maine, Dr. Wyman found the bones of the elk or wapiti. This animal

²Some Archaeological Work in Porto Rico, American Anthropologist, N.S., 1917, Vol. 19, pp. 225-226.

³An Extinct Octodont from the Island of Porto Rico, West Indies, Annals of the New York Academy of Sciences, Vol. XXVII, pp. 17-22.

⁴Loomis, F. B., and Young, D. B., On the Shell-heaps of Maine, The American Journal of Science (New Haven, Conn.), 1912, Vol. XXXIV, pp. 27-28. See also F. B. Loomis, New Mink from the Shell-heaps of Maine, *ibid.*, 1911, Vol. XXXI, pp. 227-229; D. W. Prentiss, Description of an Extinct Mink from the Shell-heaps of the Maine Coast, Proceedings of the U. S. National Museum (Washington, 1903), Vol. XXVI, pp. 887-888, and an article by M. Hardy on The Extinct Mink from the Shell-heaps, Forest and Stream, 1903, Vol. LXI, p. 125. Hardy thinks the animal became extinct about 1860.

⁵An exploration of Durham cave in 1893, Publications of the University of Pennsylvania, Vol. VI, p. 175.

⁶Carr, Lucien, Report of the Exploration of a Mound in Lee county, Virginia, etc., Report of the Peabody Museum, Vol. II, 1876-78, p. 89.