

**NOTES ON CERTAIN ABORIGINAL SHELL MOUNDS ON THE COAST
OF NEW BRUNSWICK AND OF NEW ENGLAND.**

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During several successive visits made to New England and the Provinces, I embraced the opportunity of examining a number of interesting shell mounds, intending to continue the research and to prepare a detailed account of them. Subsequent events, however, have prevented my doing this, and I now publish some fragmentary notes on the subject, for the purpose of calling attention to the localities and inviting further examination.

In general, it is possible to determine beforehand the existence of shell heaps by the physical surroundings. Thus, whenever on the sea-coast the shore sloped gently to the south, with fresh water in the neighborhood, shell mounds or beds could always be inferred, especially if in the vicinity of flats where clams could be obtained. Here were generally established the sites of villages or of temporary encampments.

Prof. F. W. Putnam, in one of his papers upon shell mounds in New England, has remarked upon the comparative absence of stone implements therein. This I did not find to be the case in Maine and New Brunswick; indeed, in some cases, the abundance was quite remarkable.

The examinations of the shell beds in New Brunswick and Eastern Maine were mostly made in the summer of 1869; of those on Cape Cod, in 1870 and 1871; and of those on Casco Bay, in 1873. All the specimens collected are in the National Museum at Washington.

No. 1.—*Oak Bay, St. Croix River, St. David's Parish, New Brunswick.*—This locality is on the eastern side of Oak Bay, and is about eight miles from Calais, on the farm of Josiah Simpson. This is the most extensive and in fact one of the richest mounds I have ever examined. The total thickness of the bed is about 5 feet, and the different layers occur in a succession indicated in the accompanying diagram.

A striking feature in this mound is the abundance of spines and shells of *Echini*, which evidently constituted a large portion of the food of the aborigines. A careful examination of the ashes indicated that they were derived, for the most part, from eel-grass (*Zostera marina*), and it is suggested that the cooking of the shells was done by wrapping them up in dry eel-grass and setting fire to it. This would probably cook the animals sufficiently to enable them to be readily withdrawn from the shell.

Oak Bay is a narrow fjord, extending northward from Passamaquoddy Bay, the water being entirely salt. The tides are very high, and a vast extent of flats is exposed at low water, still abounding in the soft clam.

The area of the shell bed appears to be about one acre. The principal shells are the following:

Buccinum plicosum.

Mya arenaria.

Natica heros.

Mytilus.

Pecten tenuicostatum.

Helix alternata.

Pecten cardium

VERTICAL SECTION OF SHELL HEAP, OAK BAY, NEW BRUNSWICK, SEPTEMBER, 1869.

[Scale $\frac{1}{16}$.]

6 in.	Top sod, fine powdery humus.	1.
6 in.	Much decomposed clam shells.	2.
3 in.	Fine flat gravel—Ancient beach.	3.
3 in.	Finely comminuted shells: carbonaceous matter.	4.
3 in.	Clayey humus, nearly pure.	5.
4 in.	Fine shells, white ashes, carbonaceous matter.	6.
4 in.	Finely comminuted shells, carbonaceous matter.	7.
6 in.	Shells.	8.
2 in.	Layer of <i>Echinus</i> spines.	9.
3 in.	Black bed.	10.
8 in.	Shells.	11.
3 in.	Blackish matter.	12.
	Original clay.	13.

Several visits were made to Oak Bay in company with George A. Boardman and Dr. Todd, of St. Stephen's, New Brunswick.

No. 2.—*Cobscook Bay, Washington County, Maine; Farm of Levi Hallowell.*—This point was reached by water from Eastport, Me., and is five miles south of Denysville. It is on a narrow, sloping point, running sharply into the bay and cut away at the water's edge. The surface is about 6 feet above the level of high tide. The edge has been much worn away by the water, and probably at one time extended considerably beyond its present position. The shells were much broken in the beds. The abundance of roots of trees rendered digging very difficult. The shells formed a layer of from 6 to 20 inches below the surface of the sod. Bones were very abundant, especially those of the moose and beaver. Stone arrows and flint flakes, &c., were also very numerous. The area of the bed is about 30 feet by 20, and gives rise to a decided swell in the slope. At other points in the neighborhood there are thin seams of shells in the sod, much mixed with charcoal and black earth, without any bones. I made several visits to this locality, and a more extended exploration was made by Mr. Gardiner, of Eastport, who presented his collections to the National Museum.

No. 3.—*Cobscook Bay, Washington County, Maine; South Bay, at the southern end of Long Island.*—This bed is at some distance from the water and was not very productive. It is situated on a high bank, sloping gradually to the water, and terminating abruptly. Much of it has been washed away. There appears to have been one continuous layer, covering about 30 or 40 feet by 20 with outlying hummocks. The sod is five or six inches thick, succeeded by a bed of large unbroken shells, with little or no dirt within eight or ten inches of the top. A few stone arrows were obtained here, but not many bones—none to warrant further exploration.

No. 4.—*Grand Menan, New Brunswick; Grand Harbor.*—Grand Menan is situated about 20 miles from Eastport. This was found to contain many deposits of small shell heaps; no beds, however, were very extensive. Those at Newton's Point and Ingal's Head, in Grand Harbor, were found to be the most productive localities.

The shells were much broken and mixed with dirt. Where the bed reached the water's edge it was about 40 feet wide and 10 inches thick. The only mammals observed were seals, some beaver, many bones of birds and a few of fishes were obtained. Stone articles were abundant; many arrows, flint flakes, &c. A few worked bones of the beaver were secured.

No. 5.—*Grand Menan; Nantucket Island.*—This is the residence of Simeon L. Cheney, the well known naturalist of Grand Menan, whose assistance to many American naturalists has been so often gratefully acknowledged.

No. 6.—*Grand Menan, Cheney Island, near Whitehead Island.*—The shells in the last two localities occur on the south side of the island in detached heaps or hummocks, containing each from half a bushel to three or four bushels, not connected by any layers. They are usually high up

in the field and covered with thick sod. These heaps show very few bones, and very seldom any stone implements. They appear to have been casual in their origin, and do not mark long continued settlements.

Cormorant bones were found quite abundantly in the Nantucket Island heaps. There appeared to be an unusual scarcity of bones of fishes in the Grand Menan deposits, and those chiefly of small fishes, such as sculpins, and the like. Bones of codfish, and perhaps even of goose-fish, and other large fish were more common at Eagle Hill, Ipswich, where the mounds, while abounding in the bones of fish, furnished very few of mammals and birds.

No. 7.—*Pope Logan, Lepreau Bay.*—The locality visited is on Holland's farm, on the north part of the island and west of the westernmost saw-mill. Of the numerous deposits in the vicinity only one was examined; this revealed an abundance of shells of the soft clam (*Mya arenaria*), still found in numbers in the neighborhood, the locality being celebrated all along the coast in this respect.

The shell heap examined is on a sloping bank descending to the south, the lower end being about 10 feet above high tide, and occupying an area of 150 feet by 50, and having a depth of 20 feet in the several layers. The shells were, for the most part, entire and unstratified, with very little mixture of earth. The bones of large mammals, such as the moose, and probably the caribou, were extremely abundant, occurring by the cart-load. They were much less broken up than usual.

No. 8.—*Bliss's Island, New Brunswick.*—This locality is situated near the head of the bay on the right hand of Pentlow's Cove, to the southwest. Here the shells occur in thin, compact layers on the bank facing the northwest, much mixed with black dust. The deposit is scanty and scarcely worth working.

No. 9.—*Bliss's Island, Fisherman's Cove, New Brunswick.*—This locality is on the northeast side and north of the weirs. Here the shells occur unstratified in a bed about 20 inches thick, almost free from mixture, and covered with a light, loose soil, 6 to 10 inches deep. Very few bones were found.

No. 10.—*Frye's or Cailiff's Island, New Brunswick.*—This bed was one of the richest I have ever examined. It is situated on English Cove, directly opposite Bliss's Island, to the east of Long Point. It is near the farm buildings, between two willows. Here the shell bed was a very large one, about 15 feet above the present high tide, and seems to have been torn up by the tide and re-stratified by the water, so that articles of the same kind and specific gravity were usually found in association. The layers consisted of black beach gravel, alternating with nearly pure gravel. The total bed was from 20 to 30 inches thick, the productive layers occupying only a few inches of it. The shells had been cast in strata on either side of a ravine or gulch, along the bottom of which there were but few shells, but containing nearly all the bones and stone implements of the original bed mixed with gravel. West of this locality is another bed at a lower level than the first.

I am much indebted to Mr. Henry Frye, of St. George, New Brunswick, for permission to examine this locality, the scientific interest of which he appears fully to appreciate.

No. 10A.—*East side of Digidequash River, Passamaquoddy Bay, New Brunswick.*—Not very productive.

No. 10B.—*Roque's Island, Maine.*—This is on the southern side of an island bordering on Roque's Island thoroughfare, which separates Roque's Island from Spruce Island, and situated between Machias and Quoddy Head. The bed here was 3 feet thick, with old loam above it nearly a foot thick, the whole extending nearly a mile. This locality was not visited by myself, but reported by Lieut. J. A. Slocum, of the revenue-cutter Mosswood.

No. 11.—*Green Point along Letite, Passamaquoddy Bay, Maine.*—Not examined.

No. 12.—*Seely's Cove.*—Not examined.

No. 13.—*Bocabee, Passamaquoddy Bay.*—Not examined.

No. 13a.—*Damariscotta, Me.*—The shells of this well-known locality consist almost entirely of oysters, the beds covering many acres in extent to a depth of from 5 to 15 or 20 feet. The oysters were all very large and usually narrow or slipper-shaped. Very few are now found living in the vicinity. The number of worked bones of animals or of stone implements, mixed with the shells, is extremely small; a long search of perhaps an hour will sometimes be necessary before anything of the kind can be detected.

No. 13b.—*Bocabee.*—Not examined.

These constitute the principal localities examined in Eastern Maine and New Brunswick. As already stated, they are characterized in some cases by large beds of shells of the soft clam (*Mya arenaria*), never of the quahog or *Venus mercenaria*, with a little admixture of earth; in others the shells are in a much decomposed condition, with black earth scattered among them; again, by the association of large bones, especially of the moose and caribon, with but little mixture of anything else. Occasionally these beds alternated with pure shell or pure bone, possibly the shells being aggregated in summer and the bones of mammals in winter. Everywhere the bones of the great auk were found, as also those of the beaver. The only other localities examined in Maine were some islands in Caseo Bay, where the bones of the great auk were unusually abundant.

No. 13B.—*Nantasket Beach, Boston Harbor.*—At various points in the vicinity of this beach are found numerous seams and hillocks of shells, consisting, however, almost entirely of *Maetra solidissima*, or horse-clams; neither *Mya* nor *Venus* were observed. The deposits are small and situated in the sand. The principal locality examined was near Skull Head.

No. 13C.—*Eagle Hill, near Ipswich, Mass.*—This locality is widely known from the investigations made therein by Messrs. Morse, Putnam, and other Massachusetts specialists.

The aboriginal shell beds are very extensive, and consist very largely

of shells of the *Mya*, or soft clam. The number of stone implements and of worked bone is, however, extremely small, much less than in the shell heaps of Maine and New Brunswick.

No locality on the coast perhaps furnishes so many fresh clams for commercial purposes as the vicinity of Ipswich, ploughs being used for turning them up. They are obtained by the thousands of barrels for bait for codfish, and the refuse shells constitute masses of enormous magnitude.

No. 14.—*Nonamesset Island, near Naushon, Buzzard's Bay.*—This locality is in the inner Hadley's Harbor, on Nick's Neck, the property of Mr. John M. Forbes, and nearly opposite to Wood's Holl, Mass. The heap is very extensive, covering quite an area of the beach, and abounds in bones of the deer. The shells are principally soft clams (*Mya*), with a few quahaugs and pectens. The stone implements are extremely scarce.

No. 15.—*Great Harbor, Wood's Holl, Mass.*—Quite an interesting locality exists on Long Neck, to the west of the guano factory. The deposit covers about one hundred square yards to a depth of a foot. The shells consist almost entirely of *Crepidula plana*. Bones were very scanty, and quite a notable proportion of these were of birds. Very few stone implements were found.

No. 16.—*Parker's Point, Wood's Holl.*—On the east side of Parker's Point, opposite the low, depressed portion, is quite an extensive bed of almost entire clam-shells, the quahang, or hard clam (*Venus mercenaria*), and but little broken. The locality covers about two hundred square yards, to a depth of about two feet. No implements or bones of any kind were ever found in this locality.

No. 17.—*Quisset Harbor, on Buzzard's Bay, north of Wood's Holl.*—Here the heaps consisted entirely of shells of the quahang. No bones nor implements of any kind were found.

No. 18.—*Cataumet Harbor, North Falmouth, Buzzard's Bay.*—Here is a very large deposit of quahang shells, on a point in Squeteague Pond; but no bones or implements.

No. 19.—*Mud Core, back of Toby Island, north end of Buzzard's Bay.*—Here, as in the three preceding localities, the deposit consisted also of shells, without any bones or implements.

I have already referred to the abundance of bones of the great auk in the shell heaps of New Brunswick and Maine. They also occur in considerable numbers at Eagle Hill, near Ipswich. I do not remember to have found any myself on Cape Cod, but am under the impression that Professor Wyman reports them as discovered by him at Cotuit, on Vineyard Sound. There is certainly a great scarcity of stone implements in the shell heaps of Southern Massachusetts, compared with what we find farther north.

All the collections made by me at the localities mentioned in the present paper are now in the National Museum.