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MEMOIRS

OF THE

SCIENCE DEPARTMENT,

UNIVERSITY OF TOKIO, JAPAN.

VOLUME I. PART I.

SHELL MOUNDS OF OMORI.

BY

EDWARD S. MORSE.

PROFESSOR OF ZOÖLOOY, UNIVERSITY OF TORIO, JAPAN.

PUBLISHED BY THE UNIVERSITY.

TOKIO, JAPAN.

NISSHUSHA PRINTING OFFICE.

2539 (1879.)



U. S. NATIONAL MUSEUM.

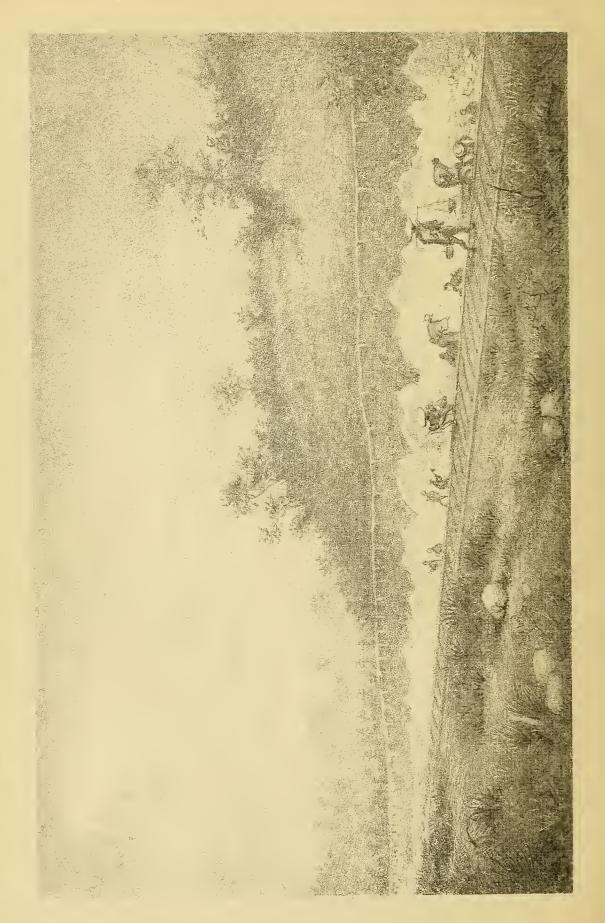
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DR. CHARLES RAU was born in Belgium in 1826. He came to the United States in 1848, and was engaged as teacher at Belleville, Illinois, and in New York. In 1875 he accepted an invitation from the Smithsonian Institution to prepare an Ethnological Exhibit to be displayed at the Centennial Exhibition, and subsequently was appointed Curator of the department of Archæology in the National Museum, which position he held at the time of his death, July 25, 1887. He bequeathed his Archæologic collections and library to the U. S. National Museum.







SHELL MOUNDS OF OMORI NEAR TOKIO, JAPAN.

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PREFACE.

During the preparation of this Memoir on the Shell Mounds of Omori, I have examined, in company with others whose names are mentioned below, deposits of a similar nature at Otaru, on the western Coast of Yezo, Hakodate, a number within the city limits of Tokio, and one of enormous extent and depth in the Province of Higo, Island of Kinshiu.

From all these places large collections have been made, and are now in the Archæological Museum of the University of Tokio.

As the Omori Mounds have proved so rich in material, it was thought best to limit this first contribution to an exhaustive illustration of the various forms and ornamentations there occurring, thus making it the basis for future comparisons when the other deposits shall have been worked up. In Yamagata Ken, for example, as well as in the Tokio Deposits, fragments of pottery are met with, bearing so close a resemblance to the Omori forms that a reference to them may be made without further illustration, while only new forms need be figured and described. For these reasons, the attempt has been made to figure every typical form of shape and ornamentation. In many cases, also, the varietal modification in shape and design has been given, as with the rims on Plate VIII. and the knobs on Plates XI. and XII.

It may be stated that many of the other forms figured, are represented by a number of varieties which are contained in the Museum of the University.

Professional duties at the University, connected with instruction and the arranging of the Museum, prevented my giving that supervision over the plates necessary to secure the uniformity which they lack. When it is considered however, that the drawing (with the exception of the last plate) and lithographing have been done entirely by Japanese artists,—the art of drawing in foreign style, and the art of lithography being still new to them,—some allowances may be made for the imperfections they present.

On the other hand, it may be said with truth that all the outlines are correct, and that full reliance may be placed on the figures. The same excuse may be made with reference to the composition and press work, as these labors have been done in a Japanese office, the compositors not being able to speak a word of English. With some pride, it may be said that the paper on which the book has been printed is of Japanese manufacture, so that from composition to binding, the mechanical production is entirely Japanese. As a Japanese version has been issued, the plates have been lettered for that edition also.

To the intelligent and cordial interest displayed by Mr. Kato, the Director of the University, and Mr. Hamao, the Vice Director, archeologists are indebted for this contribution toward a knowledge of the prehistoric pottery of Japan.

It is not too much to say that there is no other country in the world where so great a number of gentlemen interested in archæology can be found as in Japan. A native Archæological Society holds its meetings regularly in Tokio, and many of the contributions are of great value.

In the preparation of this work I have been greatly aided by the sympathy and practical assistance of a large number of Japanese scholars.

My thanks are especially due to Mr. Kanda, Mr. Kato, Mr. Hamao, Mr. Hattori, Mr. Ninagawa, Mr. Takamine, Prof. Yokoyama, Prof. Yatabe and Prof. Toyama, for many favors. To my special students, Mr. Sasaki, Mr. Iijima, Mr. Iwakawa and Mr. Fujitani, I am under many obligations for various translations which they havemade for me, and for other favors.

To my assistant Mr. Taneda who has copied all my manuscript for the printer, and who has assisted me in various ways, my thanks are also due.

To Prof. T. C. Mendenhall, of the University, my thanks are specially due for the reduction and averages of over a thousand measurements of Omori shells. I must also express my indebtedness to Prof. F. F. Jewett for a number of chemical analyses.

To Mr. E. H. House, Proprietor of the Tokio Times, for much assistance and advice I am also exceedingly grateful.

Acknowledgments are also due to Mr. Kimura the artist, Mr. Matsuda the lithographer, and the Nisshusha Printing Office, for the efforts they have made in securing accuracy in their respective lines of work.

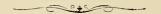
The collecting of the material illustrated in this first part has been done mainly by Mr. Sasaki and the lamented Mr. Matsura.

Part II. will present the pottery of the Shell Mounds of Yezo, Tokio and Higo.

E. S. M.

Tokio, Japan.

July 16th, 1879.



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THE SHELL MOUNDS OF OMORI, JAPAN.

BY EDWARD S. MORSE.

Since the appearance of Darwin's great work on the Origin of Species, and the subsequent revolution in the minds of thinking men regarding the origin of man and animals below him, a new impulse has been given to the investigations of man's early history; a new science, in fact, has sprang into activity, and Societies and Journals of Anthropology, Archaeology and Ethnology are the results of this wonderful awakening.

With the idea so long dominant that man had been specially created at a certain time to be measured by years, only those documents and those evidences were scanned which came within the prescribed time limits. Thirty years ago it seemed as useless a task to study the evidences of man's existence before these dates, as it would be for one to study the evidences of the Spanish occupation of America before the year 1492.

In fact so apathetic were men's minds on this matter, or rather so throughly was incorporated the idea of man's recent origin, that many valuable evidences have been neglected, or lost through this lamentable condition of things. Observations on the high antiquity of man made by Dr. Schmerling, Mr. Mac Enery, Mr. Godwin Austen and others attracted but little attention. Indeed they were received with incredulity, and the memoir of Mr. Vivian read before the Geological Society was considered too improbable for publication.* Yet the labors and discoveries of these men have been repeatedly confirmed by subsequent investigations.

Difficult indeed is it to restore the past history of mankind from the fragmentary remains found buried in the earth. Their life history must be made up entirely from the imperishable objects which have been preserved in eaves, burial places, the refuse piles of their villages, and similar places. They left no written record, no hieroglyphics to decipher, because they had none.

^{*} Lubbock's Pre-historic Man.

It seems at first sight impossible to build up any idea of their habits and comparative states of savagery from the few objects which have survived the corroding influences of time.

Were we to apply the same methods to the study of civilized races to day, very little could be gathered of our life by an examination of the refuse piles of our dwellings. All the delicate works of art, wood carving, embroidery, books, models, etc. would disappear in the time that has elapsed since the earlier ages of man, and we should only have left the glass, porcelain, and stone fragments which would survive. From the refinement and delicacy of these objects, however, we would have a right to infer the progress and condition of the race, and would be justified in the assumption that in their perishable art the same refinement had been manifested.

It is true these deposits do not give us their textile fabrics, if they had any, or their wood work or more perishable art; but judging the ancient savage by the modern one, the sites of their villages, or contents of their refuse heaps, give us a very fair indication of what they possessed. The imprint of matting or cloth upon their pottery tells us at once the texture and kind of fabric used. An arrow head presupposes a wooden shaft. Knowing how scantily supplied with objects the hut of a low savage is to day, we have every reason to believe that the primitive savage was no better provided in these respects.

The importance of studying deposits of the nature of the Omori Mounds has been fully realized, since the investigations of the Danish shell mounds brought to light so many facts bearing on the habits of the primitive races of Denmark. Of such importance was an examination of the Danish deposits considered, that the Government appointed a commission consisting of three men highly eminent in science to make exhaustive explorations. And now so jealously does she guard her treasures that laws have been enacted prohibiting the exportation of archæological specimens or antiquities of any kind from the country. existence of an Archæological Society in Tokio, consisting exclusively of Japanese, who hold their meetings regularly, and the fact that there have already been a number of works published by native archaeologists who have figured with more or less accuracy the stone implements, ancient vessels, inscriptions and the liket it seems proper and just that Government should follow the example of Greece, Italy and Denmark in passing laws to prevent these treasures from going ou, of the country. May the Government not only prevent the exportation of specimens, but may it jealously guard its ancient temples, monuments, gate ways I can not refrain from quoting at this point the words of an accomplished English archaeologist, Mr. Borlase, who expresses a hope "that the liberal views which have hitherto prompted the Mikado's Government in all that relates to science and art, may be extended to that chef d'œuvre of their country (which is indeed unmatched in the world) and that authors may yet have to record the graceful act, on the part of the present Administration, which has

saved from destruction the most beautiful relic of 'Old Japan' —the tombs of the Shoguns." *

Besides the investigations of Steenstrup in Denmark, we have the valuable memoirs of Wyman on the shell mounds of Florida and New England. Deposits of a similar nature have been recorded or described as occurring in England, Scotland, Ireland, France, the Eastern coast of the United States, the valley of the Mississippi, on the west coast from California to Behring Strait, Brazil, the Gulf of Guayaquil, Australia, Tasmania, and the Malay Archipelago; and doubtless they will be found scattered all over the world.

That these deposits are not all of the same age is certain; for just as the stone age exists in certain parts of the world to-day, so these deposits are in process of formation both among savage and civilized people. While the shell heaps of New England have the same essential features as those of Denmark, it can not be safely assumed they were made long before the advent of the Enropean; for the natives were then living in the stone age, as it were, and were still forming deposits of shell in precisely the same way. It is true that many of these deposits when first observed by the earliest settlers were covered with a heavy growth of forest trees, and the presence of a molar tooth of the polar bear, and the abundance of the remains of the great auk now supposed to be extinct, lead us to believe that the New England deposits have some antiquity.

In Japan, however, the ease is quite different; for with its ancient civilization and history, running back for fifteen hundred and perhaps two thousand years, and the fidelity of its records, we have as it were a longer time measurement by which to estimate the age of the shell deposits here. For this reason a much greater importance attaches to the minute and faithful exploration of such deposits in Japan.

Having for years studied these deposits in Maine and Massachusetts in company with Prof. Jeffries Wyman and Prof. F. W. Putnam, I felt prepared to undertake a similar investigation in this country and therefore at the outset kept a sharp look out for evidences of their occurrence. A few days after my arrival in the country I fortunately discovered a large and extensive shell mound on the immediate line of the railway a few miles from Tokio. A series of explorations was made in company with my special students, Mr. Matsura and Mr. Sasaki, and, in the first excavations Prof. Yatabe, Prof. Toyama, Mr. Matsumura, Mr. Fukuyo, Dr. David Murray, and Prof. Parson participated. The collections from Omori are now arranged in the Archæological Museum of the Tokio Daigaku. Most of the specimens have been collected by Mr. Sasaki and the lamented Mr. Matsura, who were indefatigable in their efforts to make the series as complete as possible.

^{*} Niphon and its Antiquities.

The Oniori Shell Mounds lie on the western side of the Imperial railway between Yokohama and Tokio, at a distance of nearly six miles from Tokio. They may be seen from the car windows just after leaving Omori Station in going toward Tokio.

The railway has indeed passed through a large portion of the mounds, as in the field beyond the track the ground is strewn with the fragments of pottery and the shells formerly composing the deposit. The length of the deposit along the embankment is about eightynine meters. Its depth in the thickest part is four meters. Another exposure of considerable thickness is seen, back from the track at a distance of ninetyfive meters, but whether it is a continuation of the first deposit I have not been able to determine.

The fields to the south show that in their cultivation another deposit has been removed.

The mounds are nearly half a mile from the shores of the Bay of Yedo.

As deposits of this nature are always made along the immediate shore, whether they be upon the banks of a river, or on the coast, the occurrence of these deposits inland may be looked upon as an evidence that the land has been elevated since they were made. And when they occur inland, geological, and often historical evidences are not wanting to support this view.

The shell mounds along the Baltic are in many cases far removed from the coast line. They also contain species of shells not found in the Baltic, in consequence of the freshening of the water resulting from the geological changes that have taken place in that water basin.

Along the eastern coast of the United States, the ocean has been encroaching upon the land, and shell mounds in Casco Bay, Maine, are in process of being washed away by the waves.

Rev. James Fowler, in the Smithsonian Report for 1870, comments upon the absence of these deposits along the New Brunswick coast, and offers this as one of the evidences that the sea is encroaching upon the land, and calls attention to the fact that buildings which stood at some distance from the shore, fifty years ago, have since been washed away.

Geological evidences show that marked changes have taken place in the shore line of the Bay of Yedo. A portion of these changes are recorded historically on ancient maps of Yedo.

Shell mounds discovered by Mr. Kanda and Prof. Yatabe in the Botanical Garden, and others discovered by Prof. Chaplin and Mr. Ishikawa in Oji, show a recedence of the waters of the Bay of Yedo of from five to seven miles.

In every case these mounds are on ground slightly elevated above the sur-

rounding country, and in indicating their various positions on a map of Tokio, the coincidence between the shaded line of an embankment, and the position of the deposit is at once seen.

SPECIAL CHARACTERISTICS OF THE OMORI DEPOSITS.

The shell mounds, or deposits, in various parts of the world have many features in common. They also have their distinguishing peculiarities. Their similarity arises from the fact that they are the refuse piles of savage races who came to the shore at certain times of the year, or who occupied the shore permanently and there availed themselves of the food so easily secured from the water, in the shape of mollusks and fishes. That they were hunters as well as fishermen is attested by the presence of the bones of wild animals, such as the deer, bear, and wild boar, as well as the bones of certain birds. The bones being in nearly every case broken into fragments, show that they did this to secure the marrow, or to more conveniently get them into their cooking pots. That they cooked their food in clay vessels, is evident from the carbonized remains of the food found on certain fragments of pottery. In all these deposits various primitive implements are found, fabricated out of either bone, horn, stone or shell.

The horn, bone and shell implements are generally in the shape of gouges, bodkins, needles and other pointed instruments. The stone implements are usually of the rudest kind, and consist of hammers, celts, axes, arrows, and spear points. The pottery is rude, and in all parts of the world bears the impression of the well known cord mark. Beside this ornamentation, if indeed it was intended for that purpose, there are often rude designs, (rarely, if ever imitative of natural objects) made by incised lines in the soft clay, or impressed upon the clay by While these features are common in deposits of this nature, even in those most widely removed, the deposits of each country and region seem to have their distinguishing peculiarities, so that one familiar with the description of them might tell with considerable accuracy the place of each deposit by an examination of a mass of material from it. The Danish deposits contain a great many flint chips and rude flint implements. The pottery does not appear to be common, and is of the simplest description. No evidences of cannibalism have been noticed. The New England deposits resemble greatly the Danish deposits in the character of the animal remains. The stone implements are very much fewer however, and the pottery is not common.

Simple horn and bone implements occur in both. In the New England deposits, Prof. Wyman found a few evidences of cannibalism. In the Florida mounds, as studied by Prof. Wyman, the pottery is again very rude, and besides the cord mark and incised lines, presents an ornamentation produced by stamps

with definite designs upon them. Rule arrow heads and spear points were met with, and more rarely bone implements. These are made from the bones of the deer, and Wyman observes that the bones are broken, rather than split, as is the case with the old world deposits. Beside the stamped pottery, another marked peculiarity of the Florida mounds consists in the presence of gouges, chisels and other implements worked out of shell, generally the columella or axis of the large Strombus and Fasciolaria being used. Widely distributed evidences of cannibalism also occur.

The Omori deposits are also specialized. First: by the presence of enormous quantities of pottery, of many different shapes, and of an almost infinite variety of ornamentation. Second: by the great scarcity of stone implements, and the absence of arrow heads, spear points and other pointed implements of stone. Not a single arrow head, flake or chip has been found by the various parties who have been there in the interests of the University; and the combined time spent there, if represented by a single individual, would equal over eighty days work of seven hours each. The men of the Omori period were also cannibals, the evidences of which will be presented further on. Peculiar clay tablets or amulets, to be described elsewhere in this memoir are also unique. The Omori deposits are not only peculiar for what they possess, but for what they do not possess.

The following list presents the objects thus far found at Omori, and in another column is also given a list of objects characteristic of shell mounds generally, not yet found there.

OBJECTS FOUND AT OMORI.

EARTHEN.

Cooking vessels.

Hand vessels.

Ornamental jars.

Ornamental bead.

Tablets.

Spindle whorl —(?)

Disk, shaped from fragment of pottery.

STONE.

Hammers, Celts. Rollers. Skin dresser —(?) Stone mortar.

HORN.

Awls.

Handle.

Prongs of deers' antlers.

Other implements — (use unknown.)

BONE.

Fish spine needles.
Bird bone with two holes in side.
Cube from metatarsal of deer.
Os calcis of deer probably used as handle.

MISCELLANEOUS.

Arrow point from boars, canine. Shells used as paint cups.

OBJECTS NOT FOUND AT OMORI.

Flint or obscidian implements.

Arrow heads.

Spear points.

Scrapers.

Skinning knives.

Mortars or pestles—(?)

Drilling stones.

Ornamental stones.

Stone net sinkers.

Pipes.

Worked shell.

Wampum.

Stone beads.

POTTERY.

A great many earthen vessels, more or less perfect, and thousands of fragments, were collected in the Omori deposits.

The material of which the vessels is composed is coarse, and the vessels are

in many cases, unevenly baked.

The pottery with few exceptions is quite thin, averaging 6 mm. in thickness; the surfaces are in many cases smooth. The rims of the vessels are either straight, undulating, notched, or projecting at intervals into points, or into variously formed knobs.

In some cases loops take the place of knobs. The borders of the vessels are often ribbed within, and sometimes marked with one or more parallel lines outside, the lines often enclosing a row of rude dots.

The lines marking the surfaces of the vessels are either roughly incised in wet clay, or smoothed out of wet clay, or carved in dry clay before baking.

The designs are infinitely varied; generally areas partially or wholly enclosed by curved lines, the area within or without the lines being cord marked, the other area being smooth. Deep pits or grooves often join the areas, and these may be repeated in regular succession round the vessel.

A common mode of ornamentation is a band of oblique lines running in one direction round the vessel, followed by a band of oblique lines running in an opposite direction. Somtimes these lines cross each other.

In many cases wreaths of clay, pinched into scallops by the fingers, border the vessel in one or more bands, either straight or undulating. These wreaths frequently separate from the vessel, showing that they were put on after the vessel was made.

Dr. Wilson in his work on Pre-Historic Man has mentioned the absence of imitative figures in the pre-historic pottery of Europe. He says; "In no single case is any attempt made to imitate leaf or flower, bird, beast or any natural object." His words would apply with equal truth to the Omori pottery for in no case can any form or design be construed into representing any natural object.

More curious still is the absence of legs or knobs of any description for the support of the vessel from below. A feature so common in the ancient pottery of Peru and Central America, is entirely absent in the ancient pottery of Omori.

On the contrary the Omori pottery presents knobs and loops of an infinity of form projecting from the rim of the vessel. In this respect the Omori pottery resembles the pre-historic pottery from Brazil and Porto Rico, though these forms often represent the heads of animals.

Some of the knobs from the shell mounds of the Amazon discovered by Prof. Hartt bear a remarkable resemblance to the commonest types of knobs from Omori.

The earthen vessels may be grouped as follows:—

Cooking vessels answering to pots, stewpans, etc. Hand vessels such as bowls and cups. Vessels with constricted necks, used as water bottles, possibly, and a few vessels of various forms which may be designated as ornamental jars and bowls.

The cooking vessels are of the following kinds: Deep vessels with slightly bulg-