in both instances, and the tales of the Raven as culture hero and trickster, so well known among the Indians farther north, are heard here among the Quilleutes, while the same adventures are told of Blue Jay among the Quinaults, as is the case among the Chinook and other neighboring peoples in the south. These traditions will form an excellent basis for a comparative study of the mythology of the region.

Particularly valuable information in regard to the conventional development of design in basket ornamentation was obtained among the Quinaults, bearing out the theory that the common geometrical figures which are used so much are almost invariably conventionalized representations of natural objects, and, as a rule, of animals. Notes on the social life and beliefs of the Indians were also secured, and observations made on the influence of the so-called 'Shaker' religion, which has been gaining a strong hold on the natives of that section during the last half-dozen years. In general it is hoped that the work of the summer will contribute very materially to the solution of many of the problems, general and special, which are offered by the Indians of the Northwest.

LIVINGSTON FARRAND.

ARCHÆOLOGICAL INVESTIGATIONS ON THE NORTH PACIFIC COAST OF AMERICA.

THE archæological work conducted on the northwest coast of America, prior to the organization of the Jesup North Pacific Expedition, was not extensive. The available knowledge concerning it is largely confined to three publications—two by Dr. William H. Dall, on cave and shell-heap remains of the Aleutian Islands; and one by Mr. Charles Hill-Tout, a *résumé* of the archæology of the southwestern portion of British Columbia.

The archæological investigations which I carried on in connection with the Jesup Expedition during the past two years dealt chiefly with two problems: (1) examining the archæology of the southern interior of British Columbia; and (2) investigating the shell-heaps of the coast of Vancouver Island, together with those of the adjacent mainland.

In the southern interior of British Columbia, more particularly in the valleys of the Thompson and Fraser Rivers, now live tribes of the Salish Indians. This region is one of almost desert dryness. The houses of the Indians are covered with a roof of timbers and earth, and are partly underground. Unlike the tribes of the coast, who have such an abundance of the few staples —cedar, seal, salmon, and shell-fish—that they depend almost exclusively upon them, these people have to resort to a great variety of natural resources. Primarily among them may be mentioned the deer, which furnish them with skins for clothing, flesh for food, and bone and antler for implements. The sagebrush-bark is used for textile fabrics. Salmon are taken for food in the rivers, and berries and roots are obtained in the mountain valleys. Many objects are made of stone. They bury their dead in little cemeteries along the river, although an isolated grave is sometimes seen. Their method of burial in the ground, instead of in boxes deposited in trees, in caves, or on the ground, the conical form of their lodges, and their extensive use of chipped points of stone rather than of those ground out of stone, bone, and antler, ally their culture with that of the tribes of the East, and differentiate it from that of the coast people. None of the native peoples of British Columbia make pottery, and no pottery has been found by archæological work. Food was boiled by dropping hot stones into baskets or boxes containing it.

The archæological remains are found in the light sand of the valleys and hillsides. The wind is continually shifting this dry

sand from place to place. For this reason no definite age can be assigned to the specimens secured. It is certain, judging from the complete absence of European objects at many of the localities explored, that the remains found at these places antedate contact with the whites. A number of them must carry us back several hundred years. The modern Indians make small arrow-points, and disclaim the large kind found in excavations. The work undoubtedly proves that these ancient people and those now inhabiting this region were practically the same.

Numerous circular depressions were found, indicating the sites of ancient underground houses. The dry climate, and the action of copper salts, preserved bits of skin garments. Portions of the clothing, and bags that were made of the bark of the sagebrush, remain in the dryest places. Beaver-teeth dice, exactly like those used by the present Indians; digging-stick handles made of antler, similar to those in use to-day; charred berries; fish-bones; and skin scrapers made of stone—were unearthed.

The graves were found in groups and also singly, as is the case with the modern ones. The bodies were buried upon the side, with the knees drawn up to the chest. They were wrapped in a fabric made of sagebrush-bark, and were covered with mats of woven rushes. Over the forehead and around the neck were strings of beads, some of copper, others of dentalium-shell. At the side, in a pouch also made of woven sagebrush-bark, were usually found such objects as pieces of glassy basalt, points chipped out of the same material for arrows and knives, a pair of grooved stones which were used for smoothing and straightening arrow-shafts, a set of beaver-teeth dice, bone awls and needles, quantities of red ochre, copper-stained clay and yellow earth used for paint.

The beads of dentalium-shell from the Pacific coast probably indicate intertribal trade. A number of war-clubs and several small animal figures carved in bone were found. The handles of the clubs were artistically sculptured to represent human heads with plumed head-dresses. Such specimens show that the ancient people were capable of a high order of artistic carving, which, perhaps, more than any of their other work, resembles the products of the coast culture. Stones burned and crackled, evidently by basket or box boiling, are found at all the village-sites and shell-heaps explored in British Columbia.

Several specimens, such as the stone mortar and the tubular pipe, remind us of the types found in Oregon and California. Ethnological investigations have shown the affiliation of the recent culture of this region to that of the Rocky Mountain region. These archæological evidences suggest that this similarity was even greater in the past.

Turning to the problem of the shell-heaps of the coast, it is necessary to note that the present tribes of the coast of British Columbia build immense houses of cedar planks. They depend largely upon the cedar and other wood for their implements and utensils. The bark of the cedar is made into garments, bags, mats, and the like; in fact, the cedar is to these people what the bamboo is to the Japanese. They rely greatly upon salmon and shell-fish for food. The seal also furnishes them with food and material for manufactures. They have developed an exceedingly high art in carving and painting, which is quite characteristic for the North Pacific coast.

The most extensive remains of the early inhabitants of the coast are shell-heaps. Their general distribution may be judged by the fact that in the region, less than a hundred miles square, on the shore of the north end of Vancouver Island, and the

mainland opposite, over a hundred and fifty were noted. In general they are located at the mouths of fresh-water streams, and are several hundred yards in length by five or six feet in depth, while a few are miles in length, and some reach a maximum depth of over nine feet. The presence of stumps over five feet in diameter standing on nine feet of these layers, of which but few are more than an inch or two in thickness, indicates a considerable antiquity for the lower layers. These are composed almost exclusively of the well preserved shells of clams and mussels, scattered among which are found a very few points and barbs rubbed out of bone, such as were used recently for harpoons, and bone-choppers for preparing cedar-bark, exactly like the implements used to-day in the manufacture of cedar-bark, mats, and clothing. Numerous stone pebbles with battered ends, such as are still used in a game resembling quoits, and a copper ornament in shape like those made of iron and now worn in southern Alaska, were also found in the heaps. One pair of these ornaments, made of copper, was found in a grave in the interior. The extreme scarcity of archæological specimens in the very extensive shell-heaps of northern Vancouver Island is what we might expect if the early people depended as largely as do the present natives upon cedar products easily disintegrated by the warm, moist climate. The scarcity of human remains in the shell-heaps may be accounted for on the supposition that tree-burial, where the bodies fall and are soon destroyed or the bones scattered, was as extensively employed in former times as at present. Everything which has been found tends to prove that the ancient people who discarded the shells forming these immense heaps, over successive layers of which forest trees have grown to a diameter of four or five feet, were in all essential particulars similar in their culture to the tribes at present inhabiting the same areas.

The shell-heaps in the delta of the Fraser River, while in general resembling those of the coast, present several marked differences. There is much more black soil, charcoal, and ashes among the layers of the shell-heaps here than in those along the beaches of the sea. The shells are much more decayed, and mixed with the black soil. Among the layers are found numerous skeletons of two distinct types of men; and the proportions of specimens to the extent of the shell-heaps is vastly greater than in the other localities, the specimens in the coast shell-heaps being much separated by vast amounts of shell material. Whether these differences are peculiar to the lower Fraser River, or are common to all fresh-water streams of the region, is problematical; and their cause, whether due to a change in the customs of the people, or to a variation in the people by mixture or succession, is worthy of study.

The age of these heaps is considerable. A stump of the Douglas fir over six feet in diameter stood on one of the heaps where the layers, there reaching a depth of over eight feet, contained human remains. This tree indicates an age, for the top layers, of more than five hundred years; and allowing for the formation of eight feet of strata of shell, ash, and earth, most of which are but a few inches in thickness, it must be conceded that the bottom layers are much older than this rather conservative estimate for the minimum age of the top layers. The annual rings upon an ordinary stump standing upon this shell-heap numbered over four hundred. The circumference of another stump exceeded twenty-eight feet.

The shell-heap at Port Hammond, in the upper part of the Fraser delta, is over twenty miles by water from the present seashore, where the shell-fish are found. By land, the nearest point of seashore is over ten miles.

Judging from the customs of the present natives, the water route would be used. But they prefer to live near the shell-beds. It is hard to believe that any of them would carry shell-fish from the present seashore to the shell-heaps at Port Hammond. The distance that the delta is built out into the sea, and the time required for this deposition, may furnish us some information as to the age of the Port Hammond shell-heaps.

There is no apparent difference in the character of the specimens found in the recent and in the older layers. The general style of the objects is similar to those made by the present tribes of the coast. Several exquisite specimens of stone and bone carvings were discovered, which rival in artistic merit the best sculpture of the existing natives.

Two types of skeletons were found which belonged apparently to coexistent people, as they were excavated from the same layers. If one of these types consisted of captives or slaves, there was nothing in the manner of burial to indicate it. Probably one type succeeded the other in occupation of the area. The fact that bodies were found in shell-heaps indicates that the customs of this people must have differed from those of the people who formed the shell-heaps on northern Vancouver Island, or that the former people was subjected to other influence.

The skeletons found were deposited at the time of the layers, and were not intrusive burials, as was clearly shown by the numerous unbroken strata extending over them. The bodies were usually lying upon the side, with the knees close to the chest. Unlike the skeletons in the interior, these have but few, if any, objects accompanying them, except, in rare instances, a few shell beads, copper objects, and chipped and ground stone points for arrows, spears, etc. Such specimens, and even more interesting objects, were frequently found in the layers.

There has been an apparent movement in prehistoric times of the Salish of the upper Fraser toward the coast. The skulls found in the old shell-heaps of the delta differ from those of the present coast Salish. The modern coast Salish has a skull apparently modified from this by admixture since coming to the coast. This is only additional evidence to what has already been suggested by linguistic research. A movement of such importance, and its attendant influences, may account for certain changes in ethnological customs, such as the rapid modification of the method of burial on the southeastern part of Vancouver Island. The earliest known kind of burial, and the one that is known to have antedated contact with the whites by a considerable period, was in stone cairns. Later, and even since contact with the whites, the bodies were placed in wooden chests, which were deposited on platforms in the branches of trees. This method was changed to depositing the boxes in caves or on little islands. In such cases a canoe was sometimes used instead of a box. Now, under missionary influence and legal restraint, these people bury as do the whites of the region.

The cairns come within the field of archæological investigation. They consist of irregular piles of bowlders, from twelve to twenty feet in diameter, thrown over the body, which was placed in the usual flexed position. In most cases it was surrounded by a rectangular vault formed by placing the straight sides of four or five bowlders toward the body, and covering the cyst thus made with one or two slab-shaped rocks. Over this the rough pile of the cairn would be reared. A few copper ornaments have been found buried in cairns. The skeletons are usually much decayed, and complete skulls from the cairns are rarely obtained. In excavating twenty-one cairns in 1897 no entire bones were secured. In

1898, however, we met with better success, obtaining a number of complete skeletons.

Several burial-mounds were formerly located along the lower Fraser River, between Hatzic and Port Hammond. The remains in them are usually much decayed, and but little is known about them. The one which we found intact was explored by us, and its contents were seen to be much decayed.

It remains to find material upon which to reconstruct a knowledge of the builders of the burial-mounds of the lower Fraser River. The map showing the distribution of cairns should be completed. The marked difference between the shell-heaps explored along the salt water, and those investigated in the delta of the Fraser River, demands that inquiry be continued to determine whether this difference is correlated to salt- and fresh-water shell-heaps, to heaps of certain geographical areas, or is due to change in customs. The determination of the distribution of shell-heaps of both varieties is also necessary. Many of the specimens discovered in this work are known to be of considerable antiquity, and, on the whole, the culture shown by the archæological finds is similar to that of the present Indians. It is consequently known that this culture has continued practically unchanged during recent times. This being settled, it is desirable to learn of its development, for which it is imperative to search out older deposits. These may possibly be found in shell-heaps, under cave-floors, or in post-glacial gravels.

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ARCHÆOLOGICAL INVESTIGATIONS ON THE AMOOR RIVER.

THE Amoor River, below Khabarovsk, flows through a succession of former lakes and the rocky barriers which separated them. There are extensive level tracts, the bottoms of drained lakes alternating with passes between hills or mountains. Nearly all the flats are subject to overflow. They are covered with coarse grass from four to seven feet high, and intersected in all directions by sloughs and bayous. At no point is the river less than a mile wide; in floods there are many places where no land is visible for ten miles or more; and at one locality it is fully twenty miles across. At such times the current in some parts of the channel flows from twelve to fifteen miles an hour. The shores are free from silt or mud. One may walk for miles on the beach, immediately after a heavy rain, without soiling his shoes. An important result of this, to primitive people, is that shell-fish are almost entirely lacking. A few periwinkles and occasionally a mussel are found, but there is not the slightest evidence that such were ever used as food. The water seems comparatively free from lime.

There is no flint from which arrow- or spear-heads could be made, and very little stone, except bowlders and pebbles on the shores, suitable for the manufacture of axes. None of the former, and very few of the latter, were found. Wood, bone and antler seem to have been about the only material for weapons and implements.

The winters are long and severe. A temperature of 67° below zero (Fahr.) has been recorded at Nikolaievsk, and a skim of ice was formed there in August (1898).

There are no roads. Navigation is possible for only four months, sledge travel on the river, another four, while for two months in spring and two in autumn all travel is suspended.

The hills are steep, rugged, and covered with fallen timber, brush and vines. Only hunters and prospectors ever go among them. In most places primitive wilderness is reached within a few hundred yards of