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

the stream. Short journeys may be made on the beach, but one soon comes to the outlet of a lake or swamp which cannot be crossed.

Settlements are confined entirely to the banks of the river, at points where there is good landing for canoes. Most native villages, and some belonging to the Russians, are subject to overflow. There are very few high terraces bordered by a good beach. On a rocky shore, canoes would soon be dashed to pieces by waves, which in severe storms attain a height of five or six feet.

Above the mouth of the Garoon River dwells the native tribe of Gold or Goldi. Below Sophisk, extending along the coast to Okhotsk Sea and Saghalien Island, are the Gilyaks. The intermediate territory is occupied by both tribes. At present they obtain guns and knives from the Russians; formerly they had only such hunting or fishing material as they could make for themselves or get from the Manchu traders.

In summer the elks come down from the mountains to feed on the lilies and grasses in the marshes. The Gilyak hunter secretes himself and patiently waits for his quarry to come within easy range. In winter they go, either singly or in a party, into the mountains to hunt fur-bearing animals. The sable is the chief animal sought, as a good skin is easily exchanged for its weight in silver, and a fine one brings much more. Sometimes they spend the entire winter at the camp, though it may be only a few miles from home.

At their summer camps they make huts of birch-bark. Sometimes there is constructed a framework of posts, cross-poles, and rafters, on which the bark is fastened by tough, twisted vines, the roof being held down by poles and stones. Again, they tie a bundle of poles together at the top, and spread the bottoms as far as they wish. This framework is covered with bark (or sometimes with skins, and nowadays possibly with tent-cloth), in the fashion of an Indian wigwam. A fire is made in the middle of the floor; blocks of wood, or short forks driven into the ground, support poles, brush, and grass for seats and beds.

Winter dwellings are more elaborate. A space is marked out from twenty to fifty feet square, the size depending upon the number of persons to be housed. The earth is excavated within these lines, the depth of the excavation being governed somewhat by the character of the soil. It is usually between two and three feet. Posts are set around the edge of this, on which a wattle is constructed; mud is thickly plastered on both sides. The roof is made of poles and heavily covered with mud. Earth is also piled up around the base of the house to a height of three or four feet. A fireplace or furnace is made of stones in one corner. A large kettle is set into the top of this, and every crevice chinked with mud. From the fireplace, flues extend around the sides of the room, made of flat stones set on edge and covered with others. There may be two, three, or four of these flues, side by side. If flat stones cannot be had, others are used, the interstices being chinked. In large houses two furnaces are made in opposite corners. All the flues unite finally into one, which is carried through the wall and to a chimney from fifteen to twenty-five feet away, on the outside. This may be a hollow trunk or may be made of boards. It furnishes sufficient draught in any weather. Over all the flues are piled sand and fine gravel, confined at the front by boards, and carefully levelled on the top. The 'bench' thus formed is sometimes six feet wide. The inmates literally live on it when in the house. It is always warm and dry when the fires are going.

A careful and methodical investigation was made along the river for three hundred and fifty miles above its mouth, and of the

coast along the Channel of Tartary as far as Okhotsk Sea. No evidence whatever could be found to indicate a former population different from the present. The swift current and high waves keep the gravel and sand of the beach continually shifting. It was possibly for this reason that so little was found on the shores. Not a worked flint was seen. There were hundreds of fragments of pottery, about thirty polished stone hatchets or scrapers, some notched sinkers and a few other stones, showing marks of use or attempts at shaping. Above the water-line, grass and weeds grow so abundantly that the ground is hidden. In the few places, where vertical exposures of the banks occurred, every foot was carefully examined; but there was not a fragment of pottery, a piece of charcoal, or any other evidence of human occupation, to be seen below the sod. This is true of all terraces, whether subject to overflow or not. The natives say the 'old people' (meaning thereby their predecessors, without regard to time) used the polished stone implements. Now better utensils can be had from the Russians. Most of the pottery is Manchurian, as is proved by its marking or decoration. The remains of a Chinese town may be seen in the woods at Tyr; three inscribed monuments formerly stood near here. The inscriptions have been deciphered, and prove to be Manchurian.

There are no shell-heaps, of course, because no shells; no mounds; no stone graves; no graves, except modern ones, with any mark to show their existence.

When a Gilyak house is abandoned, it soon goes to decay. The earth piled around the base is increased in amount by that falling upon it from the walls, and when the wood all decays there is left an embankment surrounding a depression. If the roof-timbers hold for a year or two, the earth is washed off and adds to the embankment; if this dirt falls directly downward, it lessens the depth of the depression.

In the entire region examined, these abandoned house-pits was found. In some, part of the timbers were still in their proper position. In others the timbers were all more or less decayed. In still others no trace of wood remained. Step by step could be traced the gradation from the house just deserted to the house-pit covered with moss and turf to an equal thickness with that on every side, and overgrown with pine trees up to thirty inches in diameter—as large as any observed along the river. All are constructed in the same way, and several which were trenched across showed the stone flues just as they are made at present.

There may be ancient remains here yet to be discovered; but so far none have been found which may not be properly attributed to the present native tribes, or to the Manchurians, who until recently owned this territory.

GERARD FOWKE.

ON BIOLOGICAL TEXT-BOOKS AND TEACHERS

A GENERAL indictment against text-books may be drawn, to the effect that, like the teachers who are usually their authors, they proceed on the assumption that all who pass through their sphere of influence are to become specialists in that particular department of knowledge. This tendency carries its own *reductio ad absurdum* and is the cause of frequent revolutions in 'methods of teaching.' A new phase of the subject, a new standpoint from which to present it, is at first tentatively added or partially substituted for the old course of study, with noticeably excellent results. Not realizing that the improvement is secured by the introduction of moderation, balance and sanity into the work of instruction, the inference is at once drawn that still more startling effects are possible through further progress in the direction whence the light