

up the crevices in the body of the rock. The plateau is not very wide before the foot of the high rolling hills is gained. In fig. 1 the constant barricades of driftwood, met everywhere on the many islands of these rivers, are shown, and are much below the average in amount; the heads of the islands being often piled up with stacks ten to twenty feet high, forming more or less a protecting dam, in freshets, from the eroding power of the swift water.

An Ayan (or Iyan) Indian grave some two or three months old, on the bank of the river

From the grave itself there is erected a light pole twenty to twenty-five feet high, and having some colored cloth flaunting from its top; although in this identical grave the cloth was white, or, rather, dirty white. Not far away, always close enough to show that it is some superstitious adjunct of the grave, is another pole of about equal height; and to its top there is fastened a poorly carved figure of a fish, duck, goose, or bear, which, I think, designates the sub-clan to which the departed belonged. This pole may be, and often is, a fine

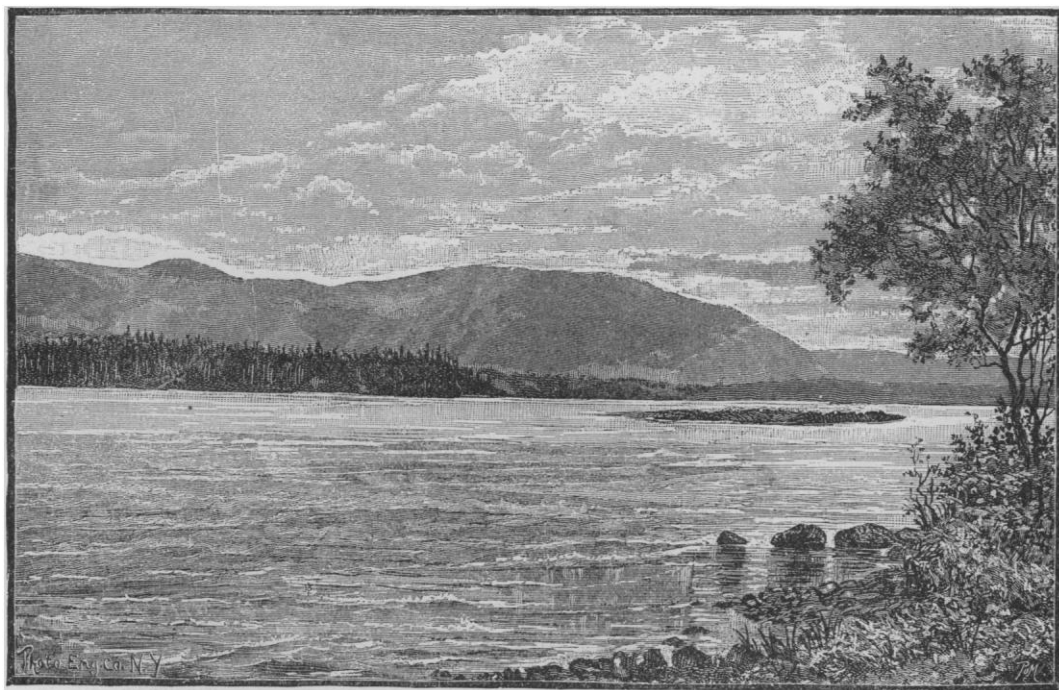


FIG. 2.—VIEW LOOKING UP THE YUKON FROM THE MOUTH OF THE PELLY.

near the site of old Fort Selkirk, was a typical one of the many we saw from here to Fort Yukon. The body is bent up, with the knees to the breast, so as to take as little space as possible, and enclosed in a very rough box of hewn boards two and three inches thick, cut out with their hand-axes, and then buried in the ground, the lid seldom being over a foot or a foot and a half below the surface. The grave-enclosure is made of roughly hewn boards, four corner-posts being prolonged, and rather neatly rounded into a design represented in fig. 3, and from which they seldom depart. It is lashed at the top by willow withes, and one or two stripings of red paint are just below this.

young tree of proper height and convenient situation, stripped of its limbs and bark. The 'totem' at the top is sometimes made as a weather-vane, or probably it is easier to secure firmly by a pin driven vertically; and it becomes a sepulchral anemoscope without their intending it for any such meteorological object. These poles may be striped with red paint, and the outside pole has one or several pieces of cloth hung from its length. The graves are always near the river-bank, and, when fresh and white, can be seen for many miles. There is no tendency whatever to group them into graveyards, beyond the fact that they are a little more numerous near their semi-permanent vil-

lages than elsewhere, the ease of interment being evidently the controlling cause of location. Leaving out the poles, there is a strong resemblance, in a rough manner, to civilized graves; and no doubt much of its form is due to the direct and indirect contacts with civilization, as my own Indians (Chilcats) told me that they formerly placed their dead on pole scaffoldings in the branches of trees, somewhat after the manner of the Sioux; and in one instance a very old and rotten scaffold in a tree was pointed out to me as having once subserved that purpose, although no surroundings confirmed the story; but these could have easily been obliterated.

We succeeded in getting a photograph (fig. 4) of a group of Ayan or Iyan Indians, with their birch-bark canoes. It was very hard work to keep them still; and, as far as fineness of features is concerned, the photograph was not perfect. Their birch-bark canoes are the best on any part of the river in lightness, compactness, and neatness of build and design. The paddle, well shown in outline in the hands of one of the group, is of a cross-section shown in fig. 5, the ridge or rib, *r*, being always held to the rear in using it. In addition to the paddle, there are two light poles for each canoe, about as long as the paddle, and as heavy as its handle; and these are used in

ascending the river by keeping near the shore, and using one on each side of the canoe, poling against the bottom. So swift is this great river in these parts, that they use no other method in ascending it, except for very short distances. In descending, the current is the main motive power, especially for long journeys, and the

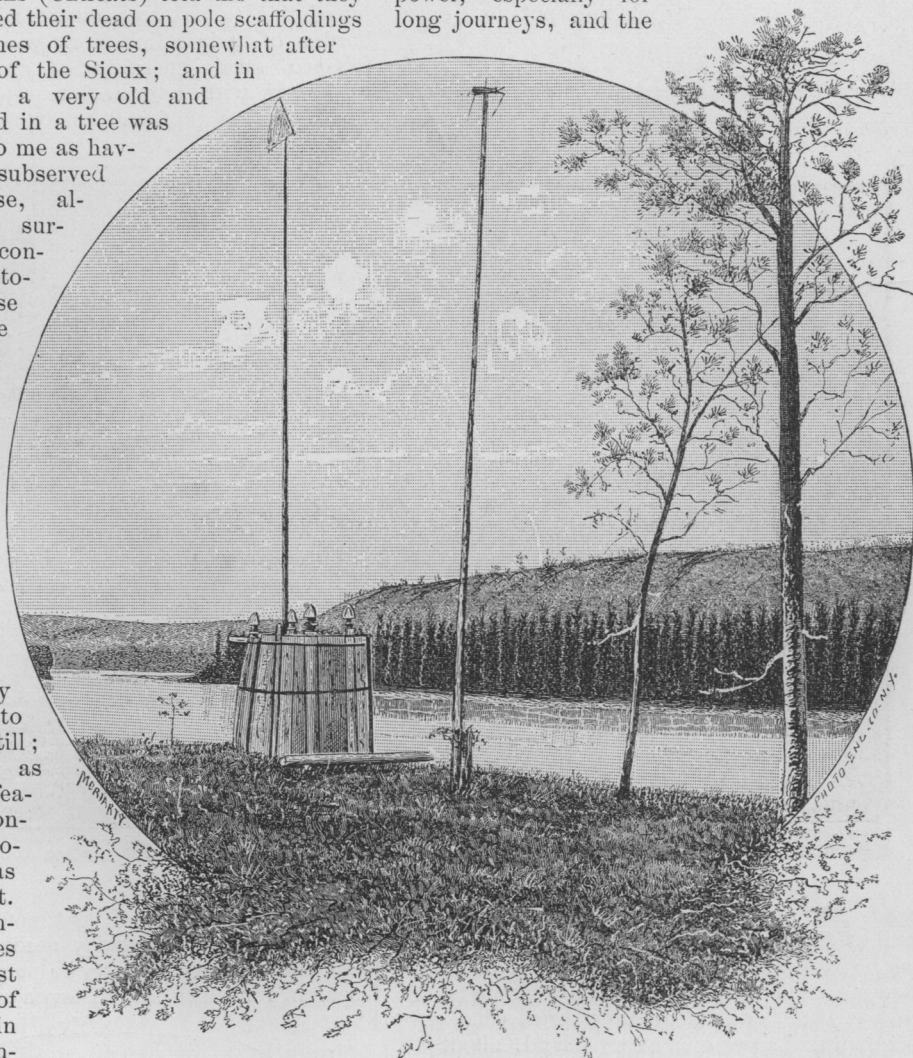


FIG. 3.—LOOKING ACROSS THE YUKON. THE BLUFFS ARE OBSCURED BY THE HIGH SPRUCE-TREES ON THE ISLAND, THE HILLS BEYOND SHOWING ABOVE.

paddle is only leisurely used to keep them in the swiftest part of the stream. When they desire, however, they can go at a gait that few canoe men in the world, savage or civilized, could equal.

A couple of species of fish were caught near the site of Selkirk, — the grayling being the

same kind that was caught in such immense numbers near Miles' Rapids, and observed in varying numbers from Perthes Point, on Lake Bove, to the mouth of White River, averaging a trifle over a pound in weight; and a trout-like salmon, caught sparingly from Lake Nares to White River, occasionally with a fly, but more often on the trout-lines put out over night.

We got away from Selkirk, July 15, at 1.15 P.M., having waited for a meridian culmination of the sun for an observation for lati-

bulky raft was swung in as if it had been a canoe.

From previous explorers on the river, I had been deluded into the idea that useful articles — as knives, saws, and files — were the best for trading-purposes, the purchase of native work, and payment of services; but I soon found this to be erroneous, for the constant burden of their solicitations was for tea and tobacco, small quantities of which they get by barter with intermediate riparian tribes. These desires I found to extend the whole



FIG. 4.—AYAN INDIANS AND THEIR BIRCH-BARK CANOES.

tude. Although we had understood from the Indians that had visited us, that their village was but a few miles below Selkirk, we had become so used to weak, straggling numbers of natives, that it was a great surprise when we rounded the lower end of an island, about 4 P.M., to see from a hundred and seventy-five to two hundred Indians on the south bank of the river, ready to receive us; our coming having been heralded, evidently, by advance couriers, and all of them apparently half frantic with excitement for fear that we would drift past without visiting them. A line was thrown ashore, and every man, woman, and child got hold of it, and the great



FIG. 5.

length of the river; and, as the former article is light, I would especially recommend it to those entering that country to pursue scientific research, for which there is such a grand field.

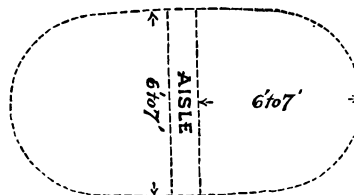


FIG. 6.

These Indians call themselves the *Ā-yans*, with an occasional leaning of the pronuncia-

tion towards I-yan; and this village contained the majority of the tribe. The village was called Kah-tun^g, also Tah-kon^g or Tahk-ong (*tahk* seeming to be a root in the language of this country: *vide* Tahk-heesh, Tahk-heen-a, Tahk-o, etc.). It was of a semi-permanent character; the huts made of spruce brush, over which there was an occasional piece of cloth or canvas, or a caribou or moose skin. These brush houses were squalid affairs, and especially so compared with the bright, intelligent look of the makers, and with some of their other handicraft, as their canoes and wearing apparel. One could hardly stand up in the houses: they were generally double, facing each other, with a narrow aisle between, each one containing a single family, and about the area of a common government A tent. Fig. 6 gives a ground plan of a double brush house. The village of Kah-tung contained about twenty of these houses, huddled near the river-bank, and altogether was the largest Indian village we saw on the whole length of the Yukon River. There was a most decided Hebrew or Jewish cast of countenance among many of the Ayans; greater, in fact, than I have ever seen among any savages, and so conspicuous as to make it a subject of constant remark.

Their household implements were of the most primitive type,—such as spoons of the horn of the mountain sheep, very similar to those of the T'linkits, but in no wise so well carved; and a few buckets, pans, and trays of birchbark, ingeniously constructed of one piece so as not to leak, and neatly sewed with long withes of trailing roots.

Just after landing the raft, the crowd that

lined the narrow beach commenced singing and dancing,—the men on the (their) left, and the women on the right. The song was low and monotonous, but not unmusical,—characteristic of savage music. Their hands were placed on their hips, and they swayed laterally to the rude tune; while the medicine-men went through the most hideous gymnastics possible. A photograph was attempted of this group; but the weather was so unfavorable, the amateur

apparatus so incomplete, and the favorable opportunity so hard to seize, that it was a complete failure. After tea and tobacco, which we could spare only in small quantities, fish-hooks seemed to be their favorite demand; and the very few articles they had to spare, mostly spoons and birch cups and buckets, were eagerly exchanged. Another article freely brought us was the pair of small bone gambling-tools, so characteristic of the whole north-west country. Fig. 8 is from a pair in my possession, and about true

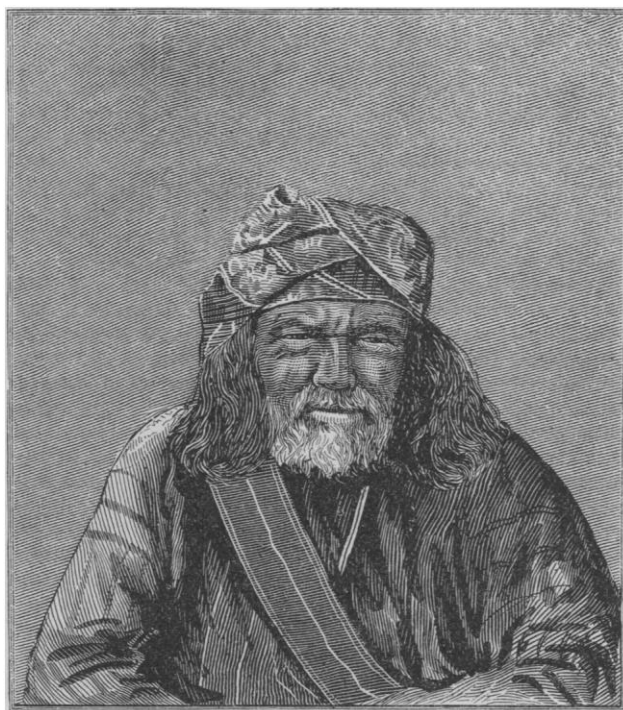


FIG. 7. — KON-ITL, CHIEF OF THE AYANS.

size. They are always used in pairs in gambling, one being distinguished from the other by one or two bands of black engraved around it. The game has been so often described that I will not repeat it. Their present village was evidently but a semi-permanent one, used only in summer during the time that salmon were running by; the pink sides of this fish, as they were hanging around, split open, forming a not unartistic contrast with the dark-green spruce boughs of the houses, especially if the nose was held between the two fingers. The women, instead of carrying the babes on their backs with their face to the front, turn them around so as to be back to back, and carry them so low that they fit somewhat in the

'hollow of the back.' The moose-arrows used by this tribe have a double barb forward, as in the common arrow, while one side is prolonged for two or three inches into a series of barbs; and these have the effect of working inward with the motion of the animal, if it be only wounded. In hunting

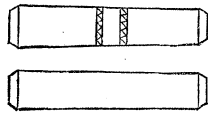


FIG. 8.

moose, while these animals are crossing the streams or lakes, so one of my interpreters said who had traded among them many times, they do not hesitate to jump on the animal's back in the river, leaving the canoe to look after itself, and despatch the brute with a hand-knife. Of course, a companion is needed in a canoe to get the carcass ashore, and secure the captor's canoe.

Small black flies were now commencing to be annoyingly numerous, and were added to the plague of mosquitoes, that never left us. The bars, that were some protection from the latter, were of no use against the former. Nearly directly opposite the village the perpendicular bluffs shown in the first illustration ceased; and from here on, the hills on both sides of the river commenced to grow higher and even mountainous in character. About thirty-four miles beyond the Selkirk a very conspicuous mountain stream came in from the south, which I named after Prof. A. R. C. Selwyn of Ottawa. The river was still very full of islands, however, many of which are covered with tall spruce, and look very picturesque in the almost cañon-like river-bottom, the steep hillsides being nearly barren of such heavy timber. At this time our attention was called to a singular phenomenon, while riding on the raft, and especially noticeable on quiet, sunny days. I refer to a very conspicuous crackling sound, which was not unlike that of fire running through cedar-brush, and which the men attributed to a pelting on the raft from underneath by a shower of pebbles brought up by the swift current, and which would have been a good-enough theory as far as the sound was concerned; but measurements in these places invariably revealed no bottom for a sixteen-foot sounding-pole, and, when going over shallower and swifter water with pebbly bottoms, the crackling ceased. It being always in deep water of a boiling nature, figuratively speaking, I attempted to account for it in a manner explained by fig. 9. The raft *x*, drifting with the arrow, passes from a shallow to a deep stretch of water. The Yukon is very swift (we drifted that day, July 16, forty-seven and a half

geographical miles in eleven hours and fifty minutes), and the pebbles, carried forward over the shallow part, and reaching *a*, are carried forward and literally *dropped* on a gravel-bank at some point forward, as *b*; and, water being a good conductor of sound, a person on a floating craft, during quiet days, would distinctly hear this falling, when it would not be heard if they were simply rolling along the bottom in swifter water. The suddenness with which the crackling commenced, and the gradual manner in which it slowly died out, also help this idea. A series of soundings before and after these sounds would have settled this theory; but it occurred so seldom (once or twice, or possibly three times, a day in this part of the river), that it was impossible to foretell it so as to do so, unless one kept sounding all day. It was noticed in a much less degree on the lower river, but probably would not have been observed if previous experience, of a



FIG. 9.

more marked character, had not brought it before us. Some twenty or twenty-five miles below the Ayan town, we saw a large black bear about halfway up the hillsides of three thousand feet altitude, and, not far from this, three mountain goats near the summit. A number of Ayan graves were seen on the banks of the river, resembling, in general, the one photographed at Selkirk.

(To be continued.)

DEVELOPMENT OF SIPUNCULUS NUDUS.

DR. HATSCHKE adds to the list of his valuable embryological memoirs a very elaborate and interesting paper on the development of the gephyrean, *Sipunculus nudus*.

The cleavage is unequal, and results in the formation of about twenty-four cells, of which *seven* form the endoderm, and *seventeen* the ectoderm. The endodermal cells are arranged in three pairs on the lower pole of the egg, with an odd cell at the hind end. This stage corresponds to a blastula with a single wall of cells enclosing a cleavage-cavity. The odd endodermal cell is the mother-cell of the mesoderm, and is called the 'primary mesoderm cell' in the following stages. An invaginate gastrula is formed; and during this stage the primary mesoderm cell divides, thus giving a pair of mesoblasts at the