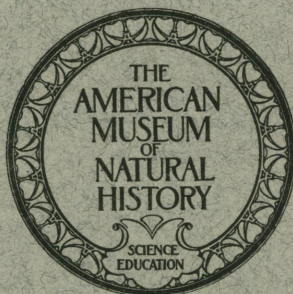


ANTHROPOLOGICAL PAPERS
OF
THE AMERICAN MUSEUM OF NATURAL HISTORY

VOLUME XXXVI, PART IV

ARCHAEOLOGY IN CENTRAL ALASKA

BY FROELICH G. RAINEY



BY ORDER OF THE TRUSTEES
OF
THE AMERICAN MUSEUM OF NATURAL HISTORY
NEW YORK CITY
1939

THE AMERICAN MUSEUM OF NATURAL HISTORY

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INTRODUCTION

In the spring of 1936, arrangements were made for an archaeological survey of the Copper, Tanana, and central Yukon valleys, Alaska, to be conducted under the direction of the American Museum of Natural History¹ and the University of Alaska. Accompanied by Mr. John B. Dorsh, then a fossil collector for Mr. Childs Frick, Honorary Curator of Late Tertiary and Quaternary Mammals in the Museum, and Mr. Tim Twitchell, a student at the University, I left Fairbanks in June for the Copper River Valley. We worked up that valley, crossed to the Tanana via the Nabesna River, and returned to Fairbanks down the Tanana Valley in July (Fig. 1). Subsequently, I continued down the Tanana Valley and some distance up the Yukon. In August, I returned to Fairbanks, crossed over to the Yukon at Circle, worked down to Beaver, and then up the Chandalar River for a distance of sixty miles. In September I returned to the University at College, to continue excavation of a site on the campus which had been partially worked by Mr. Dorsh during the two preceding summers.

In May, 1937, I returned to the upper Tanana Valley for extended excavation of an old site known as Dixthada which is located near the present Mansfield Village. Later in the summer, excavations were continued at a site in the Yukon Valley near the Rampart Rapids which are some forty miles above the confluence of the Tanana and Yukon rivers.

A survey of this kind in central Alaska, with its scattered population of trappers, miners, and traders, must depend largely upon information obtained from natives living in the region. The native population has rapidly declined and large areas are now deserted, but in some places, such as the upper Tanana Valley, thriving groups remain. One of the chief objectives of the investigation was to obtain all available information regarding the location of old semi-permanent dwellings and the focal points for the seasonal concentration of the shifting, partly nomadic population.

Accidental discoveries of archaeological remains, through cultivation, have been reported to the University, offering another opportunity for the location of cultural deposits. Gold dredging operations, recently developed in central Alaska, have occasionally produced artifacts as well as large collections of faunal remains, and offer another means of investigation. This paper includes a description of the survey, an

¹ Frederick G. Voss Anthropological and Archaeological Fund.

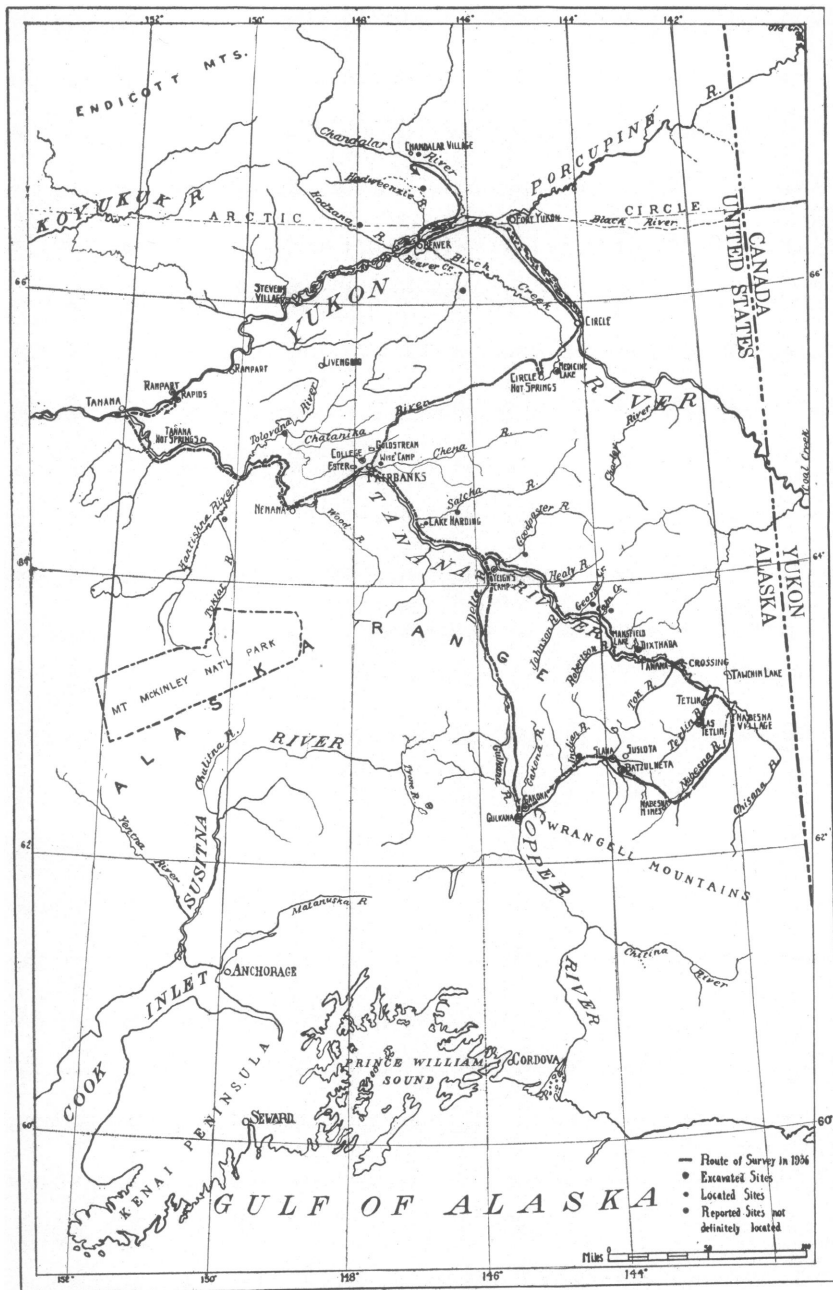


Fig. 1. Map of Survey in Central Alaska.

account of the Campus site, as well as other accidentally discovered deposits, and a description of the artifacts found in the gold dredging operations. Thus, each of three methods of approach is utilized in order to present all available information regarding archaeological possibilities in the central Alaskan area.

ARCHAEOLOGICAL SURVEY IN 1936 AND 1937

THE UPPER COPPER RIVER REGION

The first exploration of the upper Copper River was undertaken by Lieutenant Henry T. Allen in 1885. The lower reaches of the river, however, had been visited by Russians as early as 1781,¹ and one Rufus Seréberinikoff ascended the river to a point some distance above the mouth of the Chitina in 1848. Seréberinikoff and his party were killed during the journey and only a part of his notes were recovered from the natives some years later. He describes the region as occupied by small nomadic bands of Indians, annually suffering from starvation during the winter months. Lieutenant Allen, some forty years later, found the same conditions prevailing. He estimates the population of the entire valley at about 366. Both Seréberinikoff and Allen found the natives starving, and during his whole journey Allen himself faced starvation through lack of game, indicating that in recent times, at least, the region could not support a large hunting population. Present conditions are apparently no better; we saw no game during the summer of 1936 and found the few remaining Indian groups anxiously awaiting the salmon run to allay their hunger.

Although meager results might be expected from archaeological investigation in this region, it is one of a very few in central Alaska where prehistoric dwelling sites have been reported. Allen records old house sites above the mouth of the Chitina River.² The road builders who have recently completed the highway from Gulkana to Nabesna found house sites and crude stone tools near Indian River (a tributary of the upper Copper), and a supposed old village site, the mythical home of the *Tcet-tin*, the aborigines of the Indian legends, has been described as in the vicinity of Batzulnéta.

Proceeding south from Fairbanks, on the Richardson Highway, we reached the Copper River Valley near Gulkana and continued along the new Gulkana-Nabesna road, up the Copper River to its source. Modern Indian villages are located at Gulkana, Indian River, Batzulnéta, and Suslota. Through inquiry among the natives living in these small settlements we located numerous old house sites, marked by shallow rectangular depressions, usually on small, clear water streams, some distance above their confluence with the muddy Copper River.

¹ Allen, Henry T., *Report of an Expedition to the Copper, Tananá, and Koyukuk rivers in the Territory of Alaska in the Year 1885* (Washington, 1887).

² Allen, *ibid.*, 128.

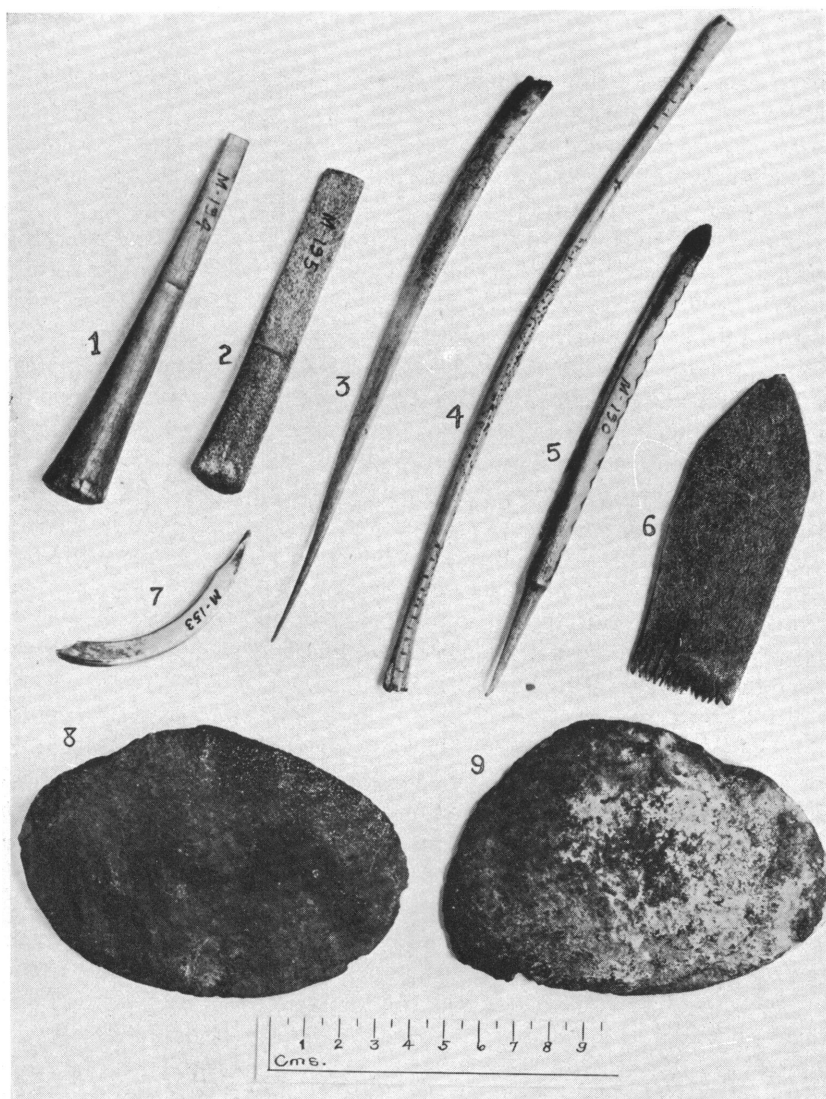


Fig. 2. Bone and Stone Implements used by Present Natives of the Upper Tanana and Copper River Valleys. 1, 2, Blunt bone arrowpoints, Mansfield Village, Tanana Valley; 3, Bone awl, Slana, Copper River Valley; 4, Bone drinking tube, Dixthada, Tanana Valley; 5, Barbed bone arrow, Mansfield Village, Tanana Valley; 6, Bone comb, Slana, Copper River Valley; 7, Beaver tooth used as cutting tool, Slana, Copper River Valley; 8, 9, Stone skin scrapers (*tei-tho*), Slana, Copper River Valley.

Excavations were made in the sites near Gulkana, at Gakona, at Slana, and near Batzulnéta.

Gulkana. The two old house sites which we excavated near Gulkana are certainly prehistoric, since the refuse in and about the central hearths contained no modern trade objects and dead trees standing in the depressions were over one hundred years old. The depressions marking the house sites are about thirty centimeters deep and some six meters wide by seven meters long. At one end of each is a deeper depression, presumably the sweat-house, measuring some three meters in width, three and four tenths meters in length, and one and two tenths meters in depth. Unlike the historic sites, there were here no refuse mounds in front of the house site depressions. Fire pits found near the center of each large depression contained rabbit, fish, bird, unidentified rodent and caribou bones, and several crude stone skin scrapers. A fragment of a multi-pronged bone arrowpoint was also found in one hearth. Some bone refuse and ash were found scattered over the floor of each large depression, but only burned stones appeared in the deeper excavations, bearing out the assumption that these were used for sweat-houses heated by hot stones. No refuse middens were found near the house depressions. The skin scrapers (Fig. 2, Nos. 8, 9) are of a type still used by Indians in central Alaska. One of the native women at Gulkana obligingly made several for us in the following manner: a flat oval pebble selected from the beach was struck so that a thin, disc-like flake was detached; the edge of the flake was then battered against another stone to produce a blunt, retouched edge. In the upper Tanana dialect these tools are called *tci-tho*.

Gakona. The single house pit excavated near Gakona, which is about three miles above Gulkana at the mouth of the Gakona River, was obviously historic, as a small iron knife blade was found in the refuse. No other implements were found, although a hearth with bone refuse and wood ash occupied the center of the depression. Blackened stones were again found near the surface at the bottom of the sweat-house pit. Near the mouth of the Gakona is the site of a recently abandoned village and along the bank of the Copper at this point are many pits (clearly storage pits for salmon), measuring about one and eight tenths meters in width, two and one half meters in length, and one and two tenths meters in depth. During the summer we excavated a large number of these storage pits at various points in the Copper and Tanana valleys, but found only charred wood, poles, and birch-bark lining.

Indian River. The old Indian site reported by the road-building crew on the Indian River, some five miles above its junction with the Copper, is a comparatively recent settlement. Old Chief Nicolai, whom we found here, described sprucebark and log houses located there when he was a boy, about the time of Allen's exploration of the valley. The house depressions, with the associated sweathouse pits, resembled those at Gulkana and Gakona.

Slana. Near the junction of the Slana and Copper rivers, sixty miles above Gakona, we found a group of old house sites larger than those near Gulkana, but similar to them in shape. The deep sweathouse pits again appeared in association with rectangular shallow depressions. Unlike those at Gulkana, however, these house sites were associated with low middens composed of refuse and sweepings from the house floors. The middens, averaging four and six tenths meters in diameter and seventy centimeters in depth, contained spruce needles, ash, bone refuse, pebbles, and wood chips, the latter indicating that the occupants of the site had possessed iron axes. A large number of glass trade beads were found throughout the refuse. Other artifacts included several stone skin scrapers, bone and wooden points or awls, a bone comb, and beaver teeth (Fig. 2, Nos. 3, 6, 7) which, according to the Indians, were used in carving wood. As usual in such sites, a hearth was found at the center of each large depression and burned stones at the bottom of the sweathouse pits. It is clear that the Slana settlement consisted of the old type of bark houses built before the introduction of log houses by the Russians, but after beads and iron tools had been obtained in trade from the white man.

Batzulnéta. A camp of some ten to fifteen natives, situated seventy miles above Gakona, near the headwaters of the Copper, is very probably the settlement visited by Allen in 1885 where he found Chief Batzulnéta, "head man" among the Tatlatáns of the upper river. Through Batzulnéta Charlie, we located the site marking the home of the mythical *Tcet-tin*, of whom we had heard from both natives and whites, less than a mile from the present village, on a low bench above an old stream bed which is now dry. The thirty rectangular pits in this bench average one meter in depth and one to two and one half meters on a side. The pits are undoubtedly pre-Columbian as they are overgrown with unusually large spruce trees and covered with a thick mat of the slow-growing moss. They are not regularly orientated and one pit is often joined to two or three others, forming a series of connected excavations. Test pits and trenches were dug through and around them in an

attempt to find cultural refuse, but we encountered only scattered pieces of charcoal. Due to the thick mat of moss and the large trees, excavation was very slow and it is possible that associated refuse deposits may still be found if the entire site is subjected to extensive digging. Their size, however, suggests that they are simply very old fish-storage pits, similar to those utilized in historic times, and not actual house sites. Their number is impressive and suggests a larger settlement than any now existing.

Batzulnéta Charlie also directed us to another old site near his village where we found house depressions, sweat-house pits, and low refuse mounds resembling those at Slana. These clearly belonged to the historic period, since the refuse contained a large number of glass beads. The natives gave no information as to when the site was first occupied, but assured us that their immediate ancestors had lived there.

The broad fertile valley of the upper Copper is practically unoccupied by white settlers. As there are only four roadhouses and a mine on the hundred miles of road between Gulkana and Nabesna, there is little chance of accidental discovery of archaeological sites. Those we located were known to the Indians and, with the exception of the Gulkana and Batzulnéta sites, are comparatively recent. The natives occupying the region depend for a livelihood on the yearly salmon run and on the grayling in the small streams. Game is obviously scarce in the valley. Under these conditions only a very small population can be supported, but it is possible that earlier conditions were different, for a site such as that at Batzulnéta would indicate a former population larger than that of recent times. A thorough knowledge of archaeological remains in this area will depend upon its settlement and agricultural development.

THE UPPER TANANA VALLEY

The Nabesna River on the west and the Chisana River on the east join to form the Tanana. The Nabesna springs from a glacier in the Wrangell Mountains only a few miles from the source of the Copper (Fig. 1). Allen's route apparently followed an Indian trail, still used, from the head of the Copper River Valley to the Tanana via Suslota Lake and Suslota Pass to the Tetlin River, which enters the Tanana some fifty miles below the junction of the Chisana and Nabesna. The Nabesna River is still unmapped, but has been successfully navigated

in small boats by a few prospectors. Rather than cross overland along Allen's route we decided to run the Nabesna. For this purpose we purchased, at Slana on the Copper, a fifteen foot, flat-bottomed boat, freighted it across the divide to Jack Creek, a tributary of the Nabesna, and followed this to the main river.

Nabesna. A single Indian settlement, known as Nabesna John's, had been reported in the Nabesna Valley and this we found a few miles below the mouth of Jack Creek on the east bank of the Nabesna. About one mile distant from the present village are ruins of an older settlement composed of several log structures, obviously built after contact with the white man. No aboriginal campsites were found in the vicinity.

The entire valley is apparently uninhabited between Nabesna John's and the present Nabesna Village which is near the mouth of the river. The river itself is a muddy glacial stream broken up into many swift channels throughout most of its course and clearly no highway for native craft. Nabesna John stated that Indians never traveled the river and assured us that we could not possibly reach the mouth in our boat. With considerable difficulty, staying clear of sweepers, log jams, snags, and the more difficult rapids, we descended the river in four days, estimating the distance at approximately one hundred miles.

In the upper part of the Tanana Valley there remain four of the most thriving Indian villages in central Alaska.¹ Near the junction of the Nabesna and Chisana rivers is the present Nabesna Village, a settlement of some thirty people; sixty miles below, on the Tetlin River, are two settlements, known as Tetlin and Las Tetlin, comprising some eighty people, and ninety miles below this is the Tanana Crossing-Mansfield Village group composed of about one hundred individuals who occupy the two settlements alternately.

The present Nabesna Village has been built around a trading post situated seven miles above the mouth of the Nabesna, but the old village, as well as the one now occupied during the summer fishing season, is located on a lake some five miles distant. When we arrived at the trading post in June, the whole village was temporarily abandoned. The Nabesna people, who depend for food primarily on the whitefish caught in small clear water streams flowing out of the numerous lakes, were camped at the old site taking the summer's catch.

Tetlin Village. This is undoubtedly the Tetlin's Camp visited by Lieutenant Allen. It is situated on the Tetlin River seven miles above

¹ Doctor Robert McKennan carried on ethnological work among these people in 1928. His report has not yet been published.

its mouth. Normally, there are probably no more than thirty or forty Indians encamped here, but at the time of our arrival many natives had come in from neighboring regions to attend the school recently opened by the Indian Bureau. Chief Peter, the nominal leader of the group, believes that the settlement is relatively recent and knows of no ancient campsites in the immediate vicinity. However, he repeated the legend of the *Tcet-tin* and stated that their old village site was not far from Tetlin. We found the supposed site some two miles below Tetlin, on an old sand dune back from the river, but the series of pits which had attracted Peter's attention proved to be simply wind-blown excavations.

Las Tetlin. According to Chief Peter and Chief Luke of Las Tetlin, this is the older of the two settlements on the river. It is eleven miles upstream from Tetlin and is quite certainly Nandell's Village as described by Allen. Its present population is fifteen adults and twenty children. The Tetlin River at this point is slowly cutting away the bank on the right limit¹ and exposing a deposit of refuse some three hundred and seventy meters long and thirty centimeters to one meter deep. Several old house pits can be seen, many of them partly cut away by the river. The size of this deposit indicates a large population and suggests an old site, but we soon found trade beads scattered through the refuse from top to bottom. All refuse exposed by the river is obviously recent and if there are sections of the deposit which are ancient we were unable to locate them. Chief Luke and Little John have lived at this site the greater part of their lives, and Little John, a shaman, clearly remembers Lieutenant Allen when he arrived from the Copper in 1885. Both of these men are very much interested in old implements used by their ancestors, prizing a few objects which have come down to them, yet neither one has ever found even so much as an arrowhead in the eroding deposit before their houses.

Dixthada. In the Mansfield Village-Tanana Crossing region, ninety miles below the Tetlin River, there are several abandoned fishing campsites located on Mansfield and Fish creeks, clear water streams which flow from lakes into the Tanana. Most of the abandoned camps are known to the Indians by name and some have been utilized within the past two decades. They are marked by shallow rectangular house pit depressions resembling those on the Tetlin, Slana, and Gulkana rivers. Most of the sites were, apparently, small camps of one to three

¹ Throughout this paper I have used the surveying terms "right" and "left" limit referring to the right and the left bank as one faces downstream.

houses, but one known as "Dixthada" includes nine well-defined house pits as well as numerous fish-storage pits and eleven tent rings. Located on Mansfield Creek one half mile below the present native fishing village, Dixthada is said to be the site of a populous camp abandoned since the time of Allen's reconnaissance (1885) when the present Mansfield Village replaced it as the focal point for native fishing on the stream.

From each house pit a perceptible refuse mound extends to the bank of the stream. In the summer of 1936 we made numerous test pits in these mounds and found the familiar "*tei-tho*" and bone points. In certain of the mounds, however, a few retouched flint and obsidian flakes were also found, a type of material which had not appeared in any other site excavated in the upper Tanana or Copper River valleys. Furthermore, in this vicinity well-formed flaked stone tools had been found by the Indians, who disclaimed any knowledge of the use of such implements, but attributed them to the mythical characters described in native legends.

In May, 1937, I returned to Dixthada with Chief Walter Isaacs of Tanana Crossing for a more thorough excavation of the site. We removed most of the refuse in the mounds before six house pits in a series of trenches excavated in twenty-five centimeter levels. The larger mounds were ten to twelve meters in maximum diameter and seventy-five centimeters in depth. The bulk of the deposit was relatively uniform in composition, containing ash, charcoal, wood chips, birchbark, burned stones (probably used in birchbark cooking baskets), bone fragments (principally caribou, moose, fish, beaver, bird, rabbit, and other rodents), a few fresh water shells, and various artifacts.

The surface appearance of the house pits and the degree of decomposition of bone refuse found in them indicated that those at the northern end of the site were the older. Furthermore, trade objects such as glass beads and iron fragments were found only on the surface at the northern end, but throughout the deposits at the southern end. The collections indicate that, proceeding from north to south, House Pits A, B, and C were utilized before any modern trade objects found their way into the upper Tanana; that D was occupied at the period when trade objects were first introduced; and that all other house pits were occupied since that time. The trade objects found on the surface at the northern end of the site were never an integral part of the refuse and it is assumed that they were lost on the surface while the southern end of the site constituted the camp.

All artifacts, except the trade objects, were made from stone, bone, horn, copper, wood, or birchbark. Pottery was entirely absent and there were no "Eskimo types" comparable to those associated with Eskimo culture on the coast and on the lower Kuskokwim and Yukon rivers. Wooden implements were found only in the recent middens at the southern end of the site. The number of specimens obtained, excluding wood, birchbark, and other small fragments, as well as flint chippings, totals 496. Of these, 206 are stone, 187 bone and horn, 50 native copper, 44 trade beads, 9 iron objects.

The most remarkable artifacts in the collection are those made from native copper.¹ Of these, the commonest implements are double-pointed awls or needles (eight specimens, Fig. 3, No. 11) and stemmed arrowpoints (eight specimens, Fig. 3, Nos. 10, 12, 14), but there are also several ear and nose ornaments (Fig. 3, Nos. 8, 9), a skin scraper (Fig. 3, No. 13) of a type now being made of iron by the Tanana natives and utilized for scraping moose hides, and numerous unidentified objects. Copper tools were the most numerous in the oldest house midden (A), but native copper fragments were also found in the very recent middens.

The usual crude stone skin scrapers (*tei-tho*, Fig. 4, Nos. 4, 5) as well as whetstones (Fig. 4, Nos. 2, 3) were found throughout the whole site, but the oldest middens (A, B, C, D) contained the only flaked stone implements made from such flint-like materials as chalcedony, chert, obsidian, jasper, and agate. These flaked stone implements include small stemmed arrowpoints (Fig. 5, Nos. 1-4), blades with bilateral retouching (Fig. 5, Nos. 15, 16), side scrapers with unilateral retouching (Fig. 5, No. 17), various retouched flakes (Fig. 5, Nos. 5, 18), small end scrapers (Fig. 5, Nos. 10-14), two small polyhedral cores (Fig. 5, No. 6), and six small prismatic flakes derived from such cores (Fig. 5, Nos. 7-9). Furthermore, in one of the oldest middens (B) were three fragments of roughly polished adze blades (Fig. 4, No. 1) of a type found on the surface in many regions of central Alaska. Although the Indians who constantly visited the excavation invariably identified most copper, bone, and horn implements, as well as the crude skin scrapers (*tei-tho*), all disclaimed any knowledge of the flaked stone tools made from obsidian and flint-like materials. Although with the introduction of modern trade objects, stone implements would be discarded first, and one might expect the present Indians to know little of their use, it is a curious

¹ An analysis of these implements shows that they range from 97.9 to 98.1 per cent pure copper, which closely approximates the percentage of copper in nuggets from the Nabesna River.

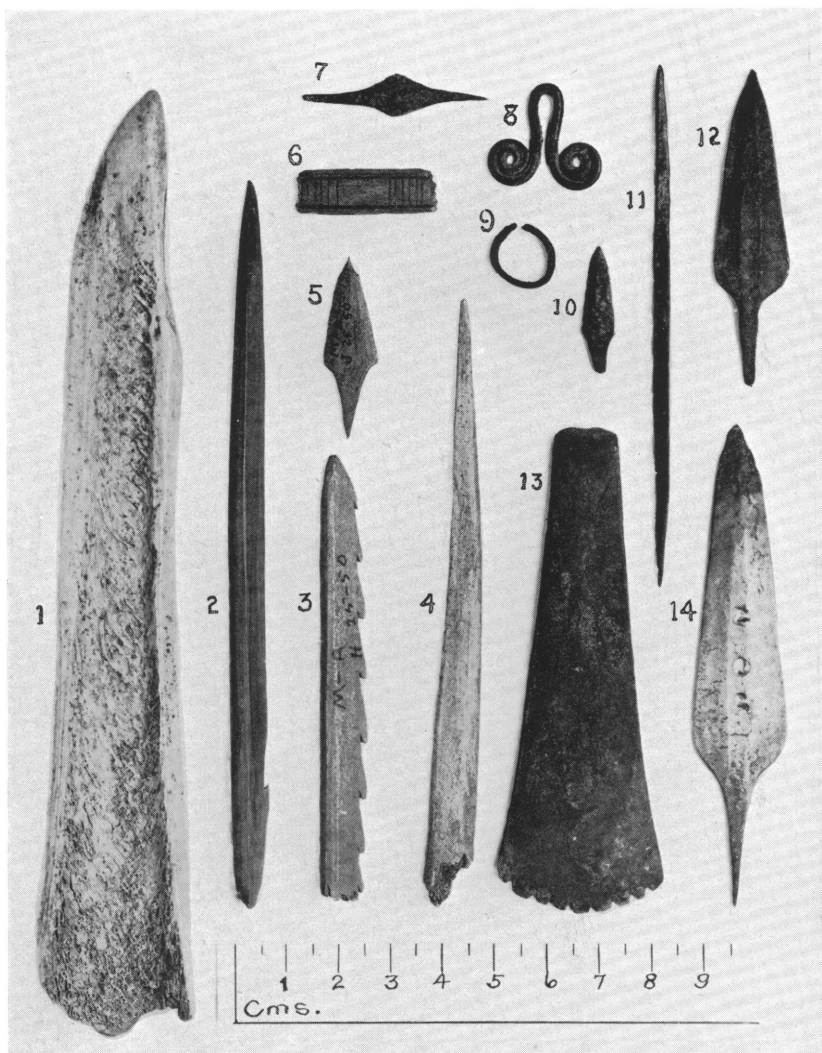


Fig. 3. Bone, Horn, and Copper Implements from Dixthada, Upper Tanana Valley. 1, Bone knife; 2, 3, Barbed bone points; 4, Bone awl; 5, Stemmed horn arrowpoint; 6, Bone day tally; 7, Unidentified copper implement; 8, 9, Copper ear or nose ornaments; 10, 12, 14, Copper stemmed arrowpoints; 11, Copper awl or needle; 13, Copper skin scraper.

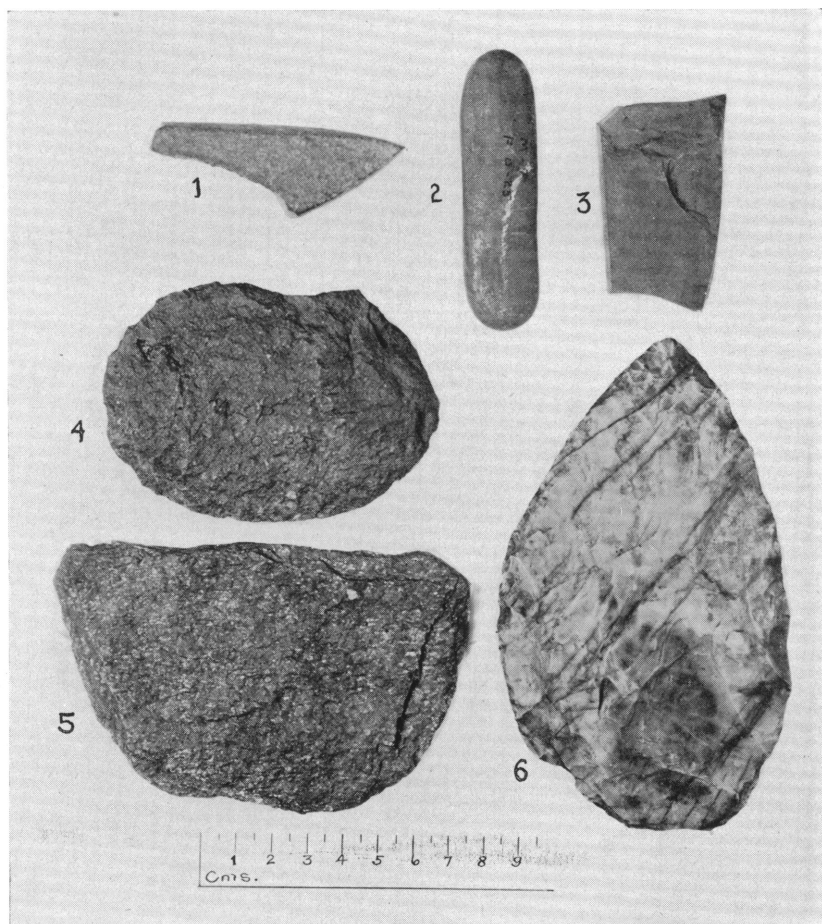


Fig. 4. Stone Implements from Dixthada, Upper Tanana Valley. 1, Fragment of ground stone adze blade; 2, 3, Whetstones; 4, 5, Skin scrapers (*tci-tho*); 6, Laurel-leaf-shaped blade.

fact that the crudest type of stone implement found in the deposit is still being used while the much finer flaked stone implements are unknown to them.

All the Tanana Valley natives with whom I have come in contact repeat the same group of legends referring to a recent migration into the Tanana Valley from the upper Yukon in Canada and from the lower Copper River Valley near the coast. These tales invariably describe people who were found already living in the upper Tanana Valley and who opposed the advent of the present natives. In some stories these "aborigines" are decidedly mythical, and are described as naked, tailed beings who lived in holes (the *Tcet-tin*), but in the upper Tanana origin legend of the present clans, the early inhabitants appear to be real people, although cannibalistic and distinctly "inferior." This legend states that the clan ancestors of the Igalyu, Tisyu, and Icelyu groups came into the country from "salt water" via the Copper River; that the Naltsin people came up the Tanana from the upper Yukon, and that the Altsa'dene people were found by the others living on an island in Tawchin Lake.¹ The Altsa'dene are described as cannibals who fought with the new arrivals and were finally all killed, except for one woman. Chief Peter explained that "the Altsa'dene to other Indians were like Jews to Christians." All members of this clan are thought to be descendants of the one surviving woman.

These legends of recent migration into the upper valley suggest that material from the older deposits may be referable to the "original inhabitants" of the legends, and not to the direct ancestors of the people now living there. If so, these "aborigines" must be closely related to the more recent migrants, since many implemental types appear in all deposits and only the well-flaked stone implements are unknown to the present natives. In this connection it is interesting to note that Doctor Osgood describes well-chipped knives made of flint-like material for the Tanaina of Cook Inlet,² but not for the Kutchin of the Fort Yukon region. Furthermore, implements of this type found in the Yukon territory of Canada are extremely rare. My informants at Tanana Crossing are chiefly "Naltsin people" who, according to the legends, recently migrated from the upper Yukon in Canada.

Bone and horn implements found at the Dixthada site, as mentioned above, are all types familiar to the present Indians. They include numerous barbed or notched points (Fig. 3, Nos. 2, 3) (said to be used

¹ Tawchin Lake lies on the opposite side of the Tanana, twelve miles from Tetlin.

² Osgood, Cornelius, *The Ethnography of the Tanaina* (*Yale University Publications in Anthropology*, No. 16, New Haven, 1937).

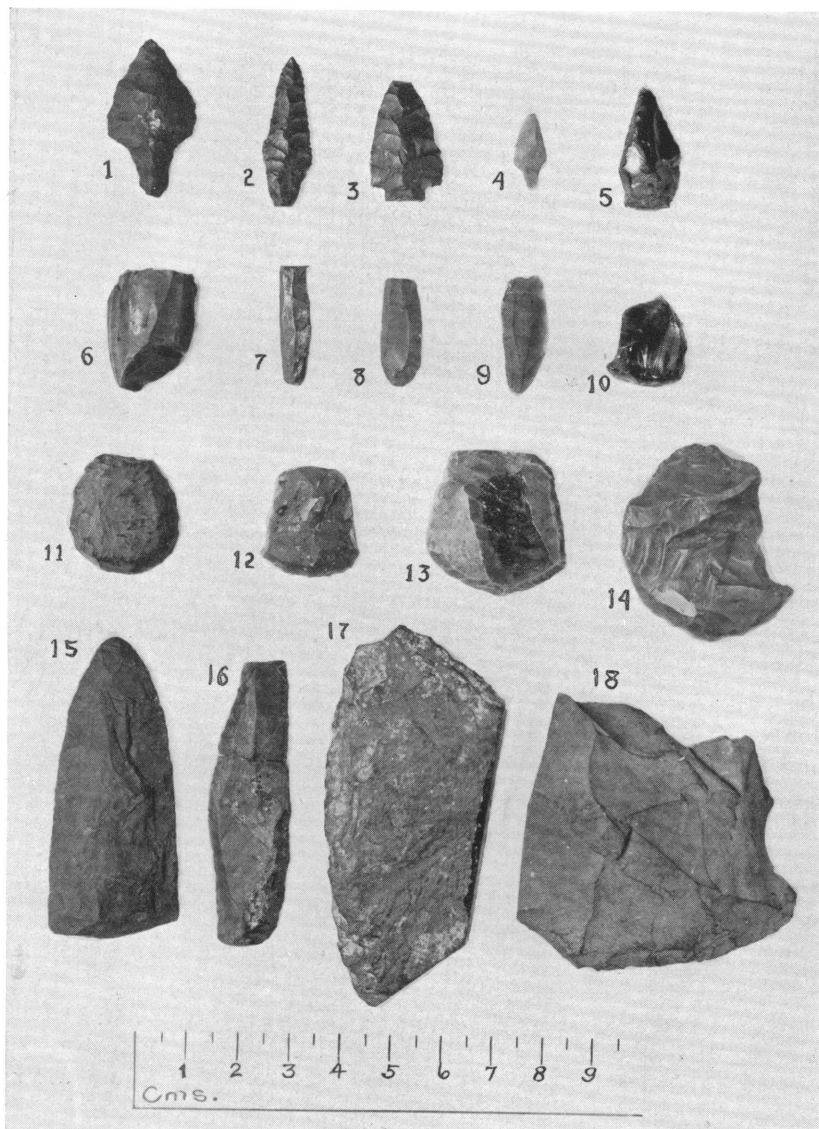


Fig. 5. Flaked Stone Implements from Dixthada, Upper Tanana Valley. 1-4, Small stemmed arrowpoints; 5, Retouched obsidian flake; 6, Polyhedral core; 7-9, Small prismatic flakes struck from cores; 10-14, End scrapers; 15-16, Bilaterally retouched blades; 17, Side scraper, retouched from both surfaces; 18, Retouched flake.

on fish spears), awls (Fig. 3, No. 4), stemmed arrowpoints (Fig. 3, No. 5), knives (Fig. 3, No. 1), leg-bone scrapers, engraved objects said to be day tallies for reckoning the time of potlatches (Fig. 3, No. 6), and numerous worked fragments of unknown use. Two types of bone arrowpoints, a blunt point for shooting birds (Fig. 2, Nos. 1, 2), and a barbed point with slot for a stone blade, used in shooting moose and caribou (Fig. 2, No. 5) were obtained from the natives of the Tanana Crossing settlement. These types were used immediately prior to the introduction of firearms.¹ It is a somewhat curious fact that none of these was found in the Dixthada excavations.

This collection of some five hundred objects from Dixthada is the only adequate archaeological inland Alaskan series which definitely may be referred to Athapascan Indians uninfluenced by any contact with the Eskimo of the coastal region.² Some indication of a minor cultural change may be reflected in legends, but all material can be referred to peoples of the Athapascan stock with a general cultural pattern similar to that functioning immediately prior to white contact.

TANANA CROSSING TO THE YUKON

Below Tanana Crossing are several muddy glacial rivers entering the Tanana from the southwest. Among these are the Robertson, the Johnson, the Delta, and the Kantishna. None of these river valleys is now occupied by a native group, nor, in so far as I can learn, has any been occupied in the memory of Indians now living.³ Flowing into the Tanana from the northeast, however, are many clear water streams, the majority of them flowing out of lakes. Practically every one of these clear water streams or river valleys is now, or has recently been, the home of a group of natives. Below Tanana Crossing, village sites are found on Sam Creek, George Creek, Healy River, the Goodpaster, the Salcha, the Chena, and the Tolovana. Proceeding downstream the clear water streams from the northeast increase in size and the Indian encampments are found farther and farther away from the Tanana up its tributaries. Thus settlements on Mansfield, Sam, and George creeks are only seven to ten miles from the Tanana, while that on the Tolovana is at North Fork, some ninety miles from the main river.

Between Nenana and the mouth of the Tanana, a distance of about

¹ Bows and arrows are still used occasionally by old men of Tetlin and Las Tetlin for shooting rabbits and ducks.

² Material obtained by Doctor De Laguna on the lower Yukon apparently shows Eskimo influence.

³ There is, however, a settlement on the Toklat, a clear water tributary of the Kantishna.

two hundred miles, are numerous fishing camps where Indians now operate fish wheels to secure the summer's catch of salmon; but these natives all come down to the river from the upper reaches of tributary streams. Inquiry at all the fishing camps on the Tanana brought the response that the "real homes" and the "old sites" were to be found some distance up each clear water stream or river.

Many of the Tanana Valley sites have been recently abandoned, following white settlement of the country, and Indians from various settlements in the lower river valley have now moved up to the Tanana Crossing-Mansfield Village region. From these people and from Indians encamped on the banks of the lower Tanana, I learned of the old settlements in the lower valley and the reason for their situation on clear water streams some distance from the muddy Tanana. Whitefish can be trapped in large numbers as they move into and out of the lakes at the head of each stream. It is clear that fish, rather than moose or caribou, is the staple food of these people. Although salmon run in some numbers as far up the Tanana as the Goodpaster River, there was no great dependence upon them prior to the introduction of the modern fish wheel. The salmon taken were speared in small clear water streams. This is borne out by the fact that the Indians know of no very old sites on the banks of the Tanana proper.

ACCIDENTAL SURFACE FINDS IN THE TANANA VALLEY

The accidental discovery of archaeological sites, through cultivation in the Tanana Valley, has brought to light some unusually interesting objects.

Goodpaster. About one mile above the mouth of the Goodpaster River, Mr. Tom Yeigh has two garden plots in connection with his mink farm. In one of them he found several chipped tools made of flint, chert, chalcedony, and unidentified materials, scattered through the surface soil, but not associated with a hearth or other refuse deposits. Among them are twenty recognizable tools which include thin, slender blades, rough, lozenge-shaped blades, crescentic side scrapers, retouched knives or scrapers of varying shapes, and fragments of obsidian implements. Several fire pits in the second garden plot contained bone refuse, trade beads, and an occasional bone arrowhead, but no flint objects. Also in the vicinity of the mink farm and at the lower mouth of the Goodpaster River are numerous pits, some lined with birchbark, obviously fish storage pits, and certainly recent. Those at

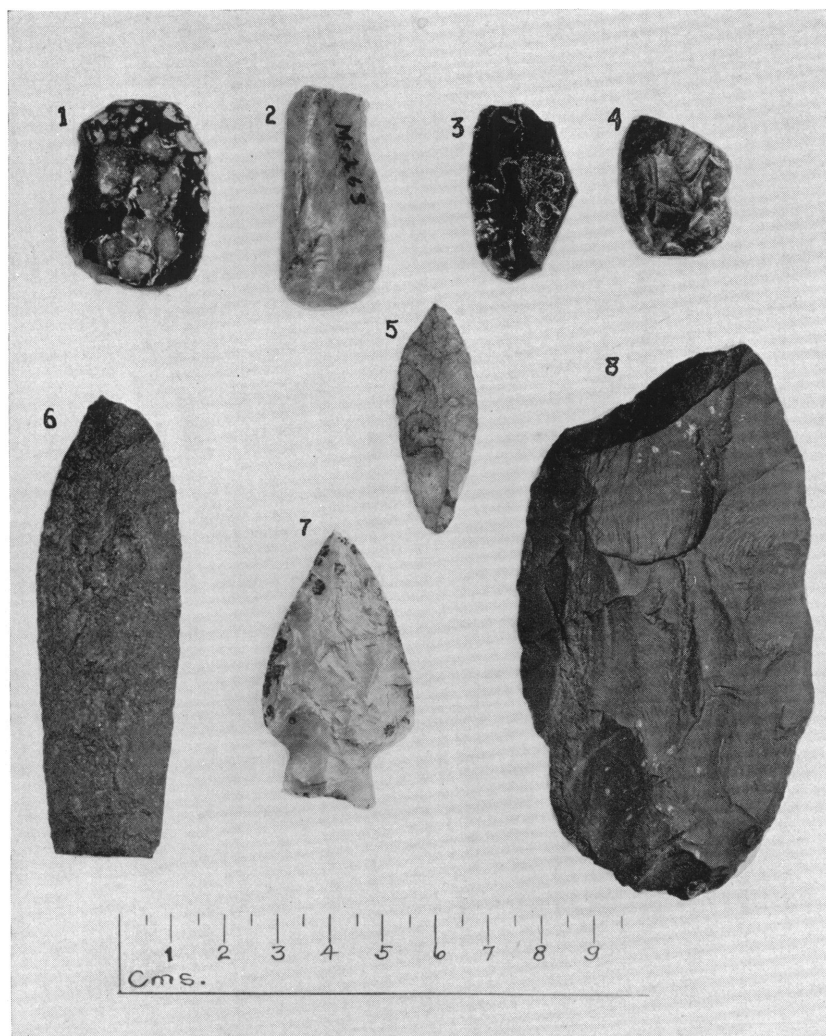


Fig. 6. Flaked Stone Implements from Accidentally Discovered Sites in the Tanana and Central Yukon Valleys. 1, 2, Obsidian and flint end scrapers, Chena River; 3, 4, Obsidian and flint side scrapers, Rampart Rapids; 5, Flaked blade, Rampart Rapids; 6, 7, Flaked stone implements, Birch Creek; 8, Flaked blade, Lake Harding.

the mouth of the Goodpaster are associated with modern burials and a recently abandoned village which was probably settled after white contact.¹ We excavated seventeen sites, including hearths and pits, in the vicinity of Yeigh's place and at the mouth of the Goodpaster, without discovering a single artifact other than the beads in the recent fire pits. Apparently, flint tools do not occur in recent deposits with trade beads and, as at Dixthada, are segregated in particular sections which indicate an earlier deposit.

Chena. Another accidental discovery of flint tools was made by James Wise in his garden plot on the right limit of the Chena River, seven miles above Fairbanks. Two of the implements found by him are well-formed end scrapers, of obsidian and flint (Fig. 6, Nos. 1, 2). The others are fragments of unrecognizable implements. There are no hearths or other cultural refuse at this site and I was unable to locate a deposit of chips and implements. Mr. Wise died some time before I learned of his discovery so that the only guide to the actual site was the cultivated field.

Lake Harding. In the summer of 1936 Mr. William Wagner found two flaked stone implements on the surface of a road along the shore of Lake Harding, forty miles southeast of Fairbanks. The following summer he found three more, as well as numerous large irregular flakes. Two of the implements are flat, oblong side scrapers, eight to ten centimeters in greatest diameter, and crudely retouched along one edge. The other three are oval blades formed by the removal of large spalls and sharpened around the entire margin (Fig. 6, No. 8). The materials represented are flint, argillite, basalt, and what is probably metarhyolite. In the summer of 1937, I investigated the area in the hope of finding an actual site, but found that the implements were probably brought in when the road was surfaced. Gravel for surfacing came from a small gravel bank near the lake, but no habitation refuse appeared in this pit.

The sites on the Chena River above Fairbanks and on the Tanana above the Goodpaster River appear to be ancient workshops where flint tools were made, and not dwelling sites like the fishing camps found along the tributary streams in both valleys. In this respect they resemble the University of Alaska campus site which will be described in a following section.

¹ The prehistoric settlement on the Goodpaster is known to be several miles above the mouth, but it has not been definitely located.

THE CENTRAL YUKON VALLEY

The report of three sites in the central Yukon Valley led to a continuation of the survey in that region. Furthermore, Indian settlements of some size are to be found at Circle, Fort Yukon, Beaver, and Stevens Village, and it was hoped that among these people information could be obtained regarding old settlements.

Medicine Lake. At Circle, I learned from the natives now settled around the trading post that their traditional "old site" is on Medicine Lake which is situated at the headwaters of Birch Creek near Circle Hot Springs. Normally, one, and occasionally, several families return to Medicine Lake each fall to follow their trap lines during the winter. This site was one of the three reported in the region and was investigated by Doctor Charles E. Bunnell and Mr. John B. Dorsh of the University of Alaska in the summer of 1934. Small refuse deposits and hearths, but no artifacts, were found.

Birch Creek. The proprietor of the roadhouse at Circle Hot Springs, Mr. F. M. Leach, has during the past few years acquired six stone objects which were found on gravel bars by gold prospectors along Birch Creek. One of these is certainly a flint arrowhead (Fig. 6, No. 7), while the others are apparently segments of arrowheads, lance heads, or knives (Fig. 6, No. 6). The materials used are flint, quartz, and basalt.

Fort Yukon. The Great Yukon Flats between Circle and Fort Yukon are not now occupied by Indian groups and no old sites were reported in the region by natives at Circle or Fort Yukon. The natives now living at Fort Yukon have, for the most part, come down to the main river from the upper Porcupine and Black rivers since the establishment of a trading post at Fort Yukon in 1847. Inquiry among them led to the conclusion that the only ancient sites in the region were to be found on the Black, Porcupine, and Old Crow rivers.¹

Beaver. The next settlement below Fort Yukon, Beaver, was established about 1910 by Frank Yasuda, a Japanese trader from Point Barrow. It is now composed of Eskimo from Point Barrow and the Kobuk River region, Indians from the various stream valleys entering the Yukon near this point, and a few white trappers and miners. Both the Indians and the old prospectors agreed that the only semi-permanent Indian settlements in the region before the trading post was established

¹ Doctor Cornelius Osgood in his *Kutchin Tribal Distribution and Synonymy* (*American Anthropologist*, n.s. vol. 36, pp. 168-179, Menasha, 1934) describes six Kutchin tribes in the region about the great bend of the Yukon. Five of them, according to Doctor Osgood, the Chandalar River, Crow River, Black River, Upper Porcupine River, and Birch Creek, are located along clear water streams leading into the Yukon, while the sixth group, the Yukon Flats Kutchin, is located in the flats along the main river.

were on the upper waters of the Chandalar, Hadweenzic, and Hodzana rivers entering the Yukon from the north, and on Birch and Beaver creeks entering the Yukon from the south. Information as to the precise location of these semi-permanent village sites was very vague, except for those still occupied on the Chandalar.

Chandalar. From a group of Chandalar Indians who had come down their river to the Yukon to catch salmon with fish wheels, I learned of an ancient site near their present village, sixty miles above the mouth of the Chandalar. With one of them and a Kobuk Eskimo from Beaver I proceeded up the Chandalar to the modern village, but was unable to locate the old site as the one old man who knew its exact position was absent on a hunting trip.

Rampart. The Rampart Rapids of the Yukon River are situated about forty miles above the mouth of the Tanana. Above the rapids, at the Rampart settlement, Mr. George Gasser, of the University of Alaska, found a few fragments of pottery in the fields of the Government Agricultural Experiment Station, but not in association with hearths or other refuse deposits. Pottery has also been reported by Frederica de Laguna¹ as far up the Yukon as Tanana settlement, seventy-five miles below Rampart. Several Indians of the lower Tanana River told me of pottery-making somewhere in the vicinity of Rampart Rapids on the Yukon and described a trade in clay vessels which, in prehistoric times, extended up the Tanana to the Delta, a distance of four hundred and twenty-five miles. In 1936, while ascending the Yukon in search of deposits containing pottery, I found an old Indian, known as Chief Matthew, who knew where the pottery clay was obtained and remembered accounts of its manufacture. He directed me to Arland Jordan's camp located six miles below the Rapids. At this point a large deposit of fine clays has been exposed during the past few years by the river cutting into the bank on the left limit. Matthew told me that his people had discovered this clay deposit long before the arrival of the white men and had obtained the clay by digging through one to one and one half meters of surface soil. In proof of this he led us to a series of shallow pits, now overgrown with moss and trees, which had been excavated to the clay stratum. Matthew said that he had been told that Indians from both the Yukon and Tanana valleys came to obtain this clay for vessels. The clay was mixed with chopped bear's

¹ de Laguna, Frederica, *An Archaeological Reconnaissance of the Middle and Lower Yukon Valley, Alaska* (*American Antiquity*, vol. 2, pp. 6-12, Menasha, 1936), 11.

hair, moulded by hand into large semi-spherical vessels, and baked in an open fire.

On the right limit of the Yukon, opposite the clay deposit, Mr. Jordan has a garden plot in which have appeared numerous hearths containing bone refuse and pottery fragments. Several years ago he plowed out a complete vessel which was subsequently presented to members of the Geological Survey. On the left limit, near the center of the clay deposit, what appeared to be an extensive refuse deposit was also exposed by the river, but Mr. Jordan had found no sherds at this site. In 1937, after work was completed at Dixthada in the upper Tanana Valley, I returned to Mr. Jordan's camp below the Rapids for detailed excavations. Accompanying me was Father Raymond Murray of Notre Dame University. The excavation of several hearths on the right limit of the Yukon (two had been excavated in 1936) produced some thirty-five sherds of crude, poorly fired, dark gray pottery, tempered with coarse bits of quartz and schist. The hearths also contained ash, charcoal, and a few bone fragments, but no artifacts other than potsherds. These ash pits, which extend over perhaps an acre, have been plowed over several times and many have been washed away by the river during the past thirty years. During this time Mr. Jordan has found only one artifact other than potsherds, a polished stone adze which was presented to Doctor Ales Hrdlicka some years ago.

On the left limit of the Yukon, just across from these pottery-bearing ash pits, we made several cuts into the face of the river bank where some refuse had been exposed and found four distinct hearths extending to a depth of one and one half meters. The hearths contained numerous fish scales and bones, as well as a few moose and caribou bones, but only one artifact, a bone object resembling an Eskimo wrist guard. The levels of ash were seldom more than ten to twenty centimeters thick and although the lowest was buried at a depth of one and one half meters I presume the hearths are recent, deposited since the modern advent of fish wheels on the Yukon. With the break-up of ice in the spring and the consequent overflow on the river banks, large quantities of sediment are deposited almost yearly. The unusually high water in the spring of 1937 left from five to eight centimeters of fine silt which completely buried the refuse thrown out by Mr. Jordan during the summer of 1936.

While hunting suitable logs for building a raft in order to float down the Yukon, Father Murray and I noticed another hearth in the river bank about one half mile below Jordan's camp. This was also ex-

cavated, together with a second hearth found about two meters distant from the first, both lying three to four meters below the surface. They produced eleven flaked stone artifacts and some seventy-five angular flakes of flint, obsidian, chalcedony, and similar materials. Two of the implements are small flint and obsidian side scrapers (Fig. 6, Nos. 3, 4) (three centimeters in length) with unilateral retouching from both surfaces; one is a small laurel-leaf-shaped blade (Fig. 6, No. 5) (four and five-tenths centimeters in length); one is a whetstone; and the rest are irregular flint and obsidian flakes, retouched along one or more edges. Bone refuse was very rare, but one fragment of moose horn appeared to be roughly shaped for some use. Potsherds were absent. After the discovery of these hearths we searched the left limit of the Yukon from the Rapids to a point some six miles below, without success. Two stone skin scrapers (*tci-tho*) and two whetstones, found on the surface along the Rapids, were of no significance since both types of implement are still being used by natives who go there to set fish wheels each summer. The flint and obsidian implements from the two hearths resemble, in part, implements found at Dixthada, but the limited number of artifacts and the absence of bone and copper implements leave the assumption of relationship uncertain.

SUMMARY

The survey of 1936 and 1937 extended through the entire Tanana Valley, a distance of some seven hundred fifty miles¹; along one hundred miles of the upper Copper River Valley; the length of the Nabesna, including Jack Creek (one hundred twenty-five miles); through the central Yukon Valley between Circle and Beaver (one hundred seventy-five miles); the lower Chandalar Valley (sixty miles); and between Tanana and Rampart Rapids (forty miles). Information regarding the location of archaeological sites was largely obtained from natives in each region, as might be expected in an uncultivated area containing only scattered settlements of white traders, trappers, and miners. Practically all old sites known to the Indians are found on small clear water streams tributary to the Tanana, Copper, and Yukon rivers and not on the banks of these great rivers, as had been expected. The reason for this is that the bands of Athapascan Indians occupying the area depend for food primarily upon fish which can be obtained most easily in lakes and clear water streams. The Indians at present, and

¹ Distances given are by water and only approximate as they are computed on the basis of speed of small boats, current, and time elapsed in travel.

quite certainly aboriginally, disperse in family groups at certain seasons to trap and to hunt caribou and moose, but return to the fishing sites in spring and summer to obtain the staple food. Salmon run up both the Yukon and the Tanana and now supply the staple food along the Yukon and lower Tanana valleys, but these fish were also taken in shallow clear water streams before the modern fish wheel made it possible for the Indians to catch a large supply in the main turgid rivers. The Chandalar Indians have come down to the Yukon only during the past few years. The yearly movement to the banks of the Tanana by the Indians of the lower Tanana Valley is also a relatively recent procedure. The establishment of trading posts on the Yukon and Tanana has also contributed to the modern concentration of natives on the main rivers. The one notable exception to the rule is the site below Rampart Rapids which is actually on the main river bank. Its location on the right limit is quite obviously due to the clay deposits utilized in the manufacture of clay vessels, while the two small hearths on the left limit, containing flint and obsidian objects, probably represent a temporary workshop and not an actual village site.

As a result of this survey, six types of sites in central Alaska have been determined:—

1. Historic house sites containing trade beads, bone implements, and the crude skin scrapers still in use.
2. Prehistoric house sites of the same type, but with trade beads absent.
3. Prehistoric house sites containing copper and flaked stone tools, in addition to bone and horn implements.
4. Hearths and refuse pits containing pottery.
5. Hearths, which may be temporary workshops, containing flaked stone implements.
6. Workshop (?) sites containing chips, flakes, and flaked stone implements, but without associated house depressions, hearths, or culture refuse.

Most of these cultural deposits are small and contain very few artifacts, but Dixthada, on Mansfield Creek near Tanana Crossing, has yielded collections which are adequate to characterize the aboriginal trait complex in the upper Tanana Valley, at least, and which define an entirely inland culture, uninfluenced by the Eskimo culture of the coast. There are numerous sites like this on clear water tributaries of the Tanana and similar deposits will probably be found on tributaries of the central and upper Yukon. Although there is some indication in

the Dixthada site of a minor cultural change in the upper Tanana Valley, all implemental types quite certainly can be referred to the Athapascan stock inhabiting central Alaska and Canada. Further excavations in sites of this kind will make it possible to reconstruct recent cultural developments in this inland area. Potsherds found below Rampart Rapids, in hearths which were located through the present natives of the Yukon Valley, indicate that Athapascans of the central Yukon knew the technique of pottery manufacture; legends now current among the natives of the Yukon and lower Tanana suggest that pottery was traded as far up the Tanana as the Delta River. Excavations in the upper Tanana and Copper River valleys produced no pottery and we may assume, for the present, that the knowledge or use of pottery did not extend to these regions.

The accidentally discovered sites which have been termed "workshops" appear to be related to a site on the University of Alaska campus which has attracted attention because it contains certain material closely related to that found in Mongolia. This site and the artifacts obtained from it in 1936 are described in the following section.

THE UNIVERSITY OF ALASKA CAMPUS SITE

During the past three summers limited excavations have been made in an archaeological site accidentally discovered in 1933 on the University campus at College, Alaska. Doctor Charles E. Bunnell initiated the excavations in 1934; they were carried out during that and the following season by Mr. John B. Dorsh. In the fall of 1935, I joined Mr. Dorsh for a few days' work, and the following fall, after the summer survey of central Alaska, I continued, with the assistance of the students in a class in Arctic archaeology.

The collections obtained in 1934 and 1935 were sent to Mr. Childs Frick of the Museum and were examined by Mr. N. C. Nelson, who has published two brief accounts of the discovery of the site and the material obtained.¹ The site is of unusual interest, as it contains certain types of stone implements which Mr. Nelson believes are related to pre-Neolithic implements found by him in Mongolia, thus suggesting a cultural relation between Alaska and Mongolia during an early period. The nature of the site, and the lack of archaeological specimens from central Alaska for comparison with the material excavated, has made it difficult to determine the real significance of this practically isolated deposit. It was hoped that with a more adequate knowledge of archaeological sites in the region as a whole, our excavations in the fall of 1936 might throw more light on its relative age and the suggested cultural relation with the Mongolian material. With this objective, a brief description of the deposit and the specimens obtained in 1936 is included here.

DESCRIPTION OF THE SITE

The actual extent of this deposit has never been determined. The first flint arrowhead or knife was found at the brow of College Hill just east of the administration building. Excavations were begun at this point in 1934. Since that time, trenches have been run along the brow of the hill for a distance of some thirty meters and at right angles, toward the west, for a distance of twenty meters. Flint flakes and tools have been found in all sections removed. Test pits have been dug in the adjacent field at various points within a radius of one hundred meters; in most cases, these have produced at least scattered flint chippings. Furthermore, fragments of stone implements and flint

¹ Nelson, N. C., Early Migration of Man to America (*Natural History*, vol. 35, p. 356, New York, 1935); Notes on Cultural Relations Between Asia and America (*American Antiquity*, Vol. 2, pp. 267-272, Menasha, 1937).

flakes have been picked up on the surface over a large part of College Hill which has been under cultivation from time to time. A few flakes have also been found in the fields of the University Farm, over a mile distant. There is, however, a marked concentration of material in a limited area near the point where the first implement was found. This section extends along the brink of the steep incline which descends from the hilltop to the floor of the Tanana Valley, twenty meters below.

The University buildings are situated at the eastern end of a ridge or promontory which juts out into the flat level floor of the valley and overlooks the maze of sloughs and swamps at the apex of the converging Chena and Tanana rivers. Thus the concentrated section of the site, east of the main building, is situated on an elevation commanding a view of a large part of the valley. Numerous small lakes or ponds in the vicinity suggest that at one time the site was situated on an old channel of the Chena River. Constant changes in the channel of the Tanana undoubtedly have had a marked effect on the terrain of the entire valley. At present, College is four miles from the main channel of the Chena River and about five miles from the junction of the Chena and the Tanana (Fig. 1).

The series of trenches dug during the past three seasons represents the removal of approximately one hundred twenty cubic meters of deposit. All trenches have been excavated to the depth of bedrock, which at this point, however, never lies more than forty centimeters below the surface. A thin layer of turf or humus, not more than ten centimeters in depth, covers a shallow stratum of fine, reddish, residual material which, in turn, rests on the decomposed bedrock of schist. None of the deposit which I have removed contained habitation refuse other than stone implements. There is no bone refuse and no soil blackened with organic decay. Bits of charcoal are scattered through the soil, but there are no hearths or other ash deposits. At one time, the University held the annual student bonfire on the crest of this hill where the site is situated, and from time to time refuse has been burned here. This accounts for the ash on the surface and may be responsible for the bone fragments in the collections examined by Mr. Nelson.

It appeared at first that all the stone tools in this collection were found below the turf, in the reddish subsoil directly above bedrock. In order to check this, during the last season, we removed the deposit in ten centimeter layers and found implements, fragments, and chips both in the surface turf and in the subsoil. The majority of objects, however, lay in the subsoil at depths of from ten to thirty centimeters.

Each trench dug was divided into sections measuring three by three meters. As many as forty objects, including chips, fragments, and complete tools were found in some of these sections, while others contained no more than a half dozen. In no case, however, was there a cache or pocket of chips and tools.

So far as I can determine from the composition of the site, there is evidence neither of very ancient nor of comparatively recent deposition. The depth at which the specimens were found has no bearing on their age, since it is possible that surface soil has been eroding rather than accumulating on this abrupt hillside. Furthermore, the formation of soil in this region is an exceedingly slow process. The absence of house site depressions and of bone or ash deposits does not necessarily indicate great age, since the site may have been simply a workshop rather than an habitation. If there were a true village site in the vicinity, it must have been located somewhere on the flats below, as cultivation over most of the hilltop has exposed no such deposit. In this connection, it is interesting to note that chipped stone tools have been found at other sites in the valley under similar conditions. The specimens found by James Wise in his garden on the Chena River, seven miles above Fairbanks, were also on an abrupt hilltop and not in association with other cultural refuse, while those found by Tom Yeigh near the mouth of the Goodpaster River were at the base of an isolated bluff, also without associated campsite refuse. None of these sites is located near a deposit of flint, obsidian, or other fracturable material suitable for tools, and it is apparent that the supply was brought from some distance to be worked locally.

THE 1936 COLLECTIONS

The collection obtained during the fall of 1936 amounts to approximately five hundred specimens. Of these, only eighty-one can be recognized as implements, the balance being simply rough angular stone flakes. The implements may be listed as follows:—

- Retouched flakes, 29
- Complete blades, 4
- Fragmentary blades, 6
- Side scrapers, 2
- End scrapers, 4
- Cleavers, 2
- Cores prepared for the production of slender flakes, 3
- Small flakes obtained from these cores, 31

The raw materials used for the artifacts include flint, obsidian, fine-grained basalt, quartz, quartzite, and jasper.¹

The retouched flakes are in some cases apparently small fragments of blades or scrapers, but there are also thin, irregular objects, with one or more edges retouched, which are obviously complete tools. In every case the chippings are only on the outer surface, while the inner, or bulb, face presents a single surface of fracture. The majority are roughly triangular and often somewhat beak-shaped (Fig. 7, Nos. 1, 2). They vary from two to six centimeters in greatest diameter.

The complete blades, which may be knives or spearpoints, are remarkably well chipped and symmetrical. Three (Fig. 8, Nos. 20–22) are elliptical and beautifully chipped on both surfaces, while the fourth (Fig. 8, No. 19) is chipped only on the outer convex surface: the inner bulb face consists of a single fracture plane. A long spall has been removed from the convex face of this last specimen, leaving a broad groove which extends from the point to the center of the face. The three small blades which have been chipped on both faces are approximately the size of arrowheads, but in the absence of lateral notches or stems there is no indication of hafting. (Fig. 8, No. 21, was nicked during excavation and appears to be notched near one end.) The fourth and largest specimen is obviously too curved to have been used as an arrow or spearhead and might better be classed as a knife or scraper. The smallest blade is made of obsidian and the other three of flint.

Fragmentary blades, like the complete examples, are of two types: those with both surfaces retouched (Fig. 7, No. 3) and those with a single convex surface retouched, with an inner bulb surface consisting of a single fracture plane (Fig. 7, No. 4). All of these fragments are quartzite; the chipping is therefore crude.

Side scrapers are represented by two implements with convex, retouched edges and thick backs. Both are semi-lunar, with a single cutting edge chipped from one face only. One specimen (Fig. 7, No. 5), made of fine-grained basalt has a bulb-like eminence on the inner surface,

¹ Mr. Nelson summarizes the 1934 and 1935 collections from this site as follows:—

The resulting two collections have been examined with some care, and the combined inventories, amounting to about 800 mostly fragmentary specimens, may be given in brief form as follows: miscellaneous pebbles and boulders of no account as artifacts; 3 fragmentary and unidentifiable bones—one possibly human; 1 hammerstone (?); 1 oblong rubbing stone of reddish vesicular lava or volcanic tuff; about 500 raw angular flakes of small to medium size; 63 apparently used angular flakes; 77 angular flakes with more or less chipped margins; 2 oblong pointed flakes with marginal chipping; 1 chopping tool or scraper; 21 side scrapers with straight, convex, or concave retouched edges and thick backs; 19 small and medium-sized end scrapers; 3 biface blanks suitable for knives or spearpoints; 22 knives or spearpoints of which only 3 are complete; 3 arrowpoints, respectively, with straight base, simple stem, and side notches; 31 small semi-conical or polyhedral cores roughly prepared by cross-flaking and partly utilized for the production of slender prismatic flakes; and, finally, 29 small prismatic flakes derived from polyhedral cores. The raw materials used for the flakes and chipped artifacts include quartz, quartzite, basanite, chert, jasper, obsidian, and moss agate. (Nelson, *Notes on Cultural Relations Between Asia and America*, *ibid.*, 268).

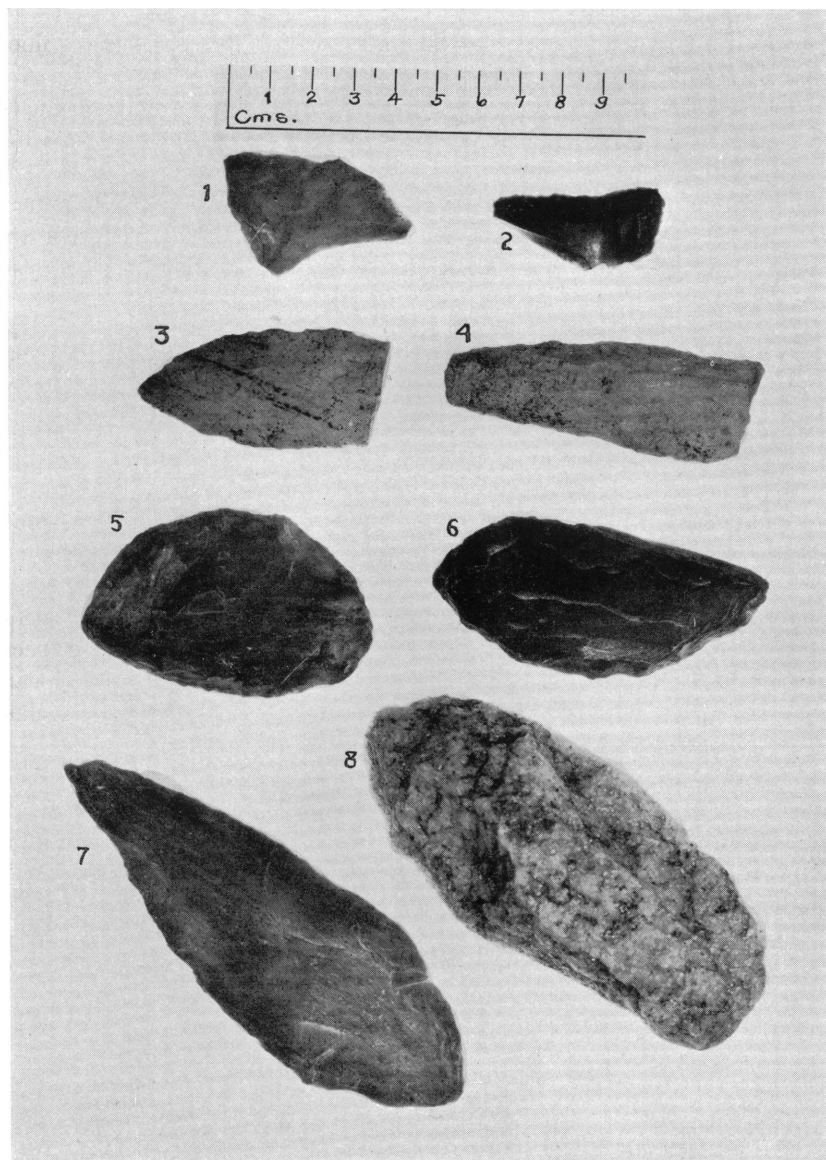


Fig. 7. Artifact Types from the University of Alaska Campus Site. 1, 2, Retouched flakes; 3, 4, Fragmentary blades; 5, 6, Side scrapers, retouched one face; 7, 8, Cleavers.

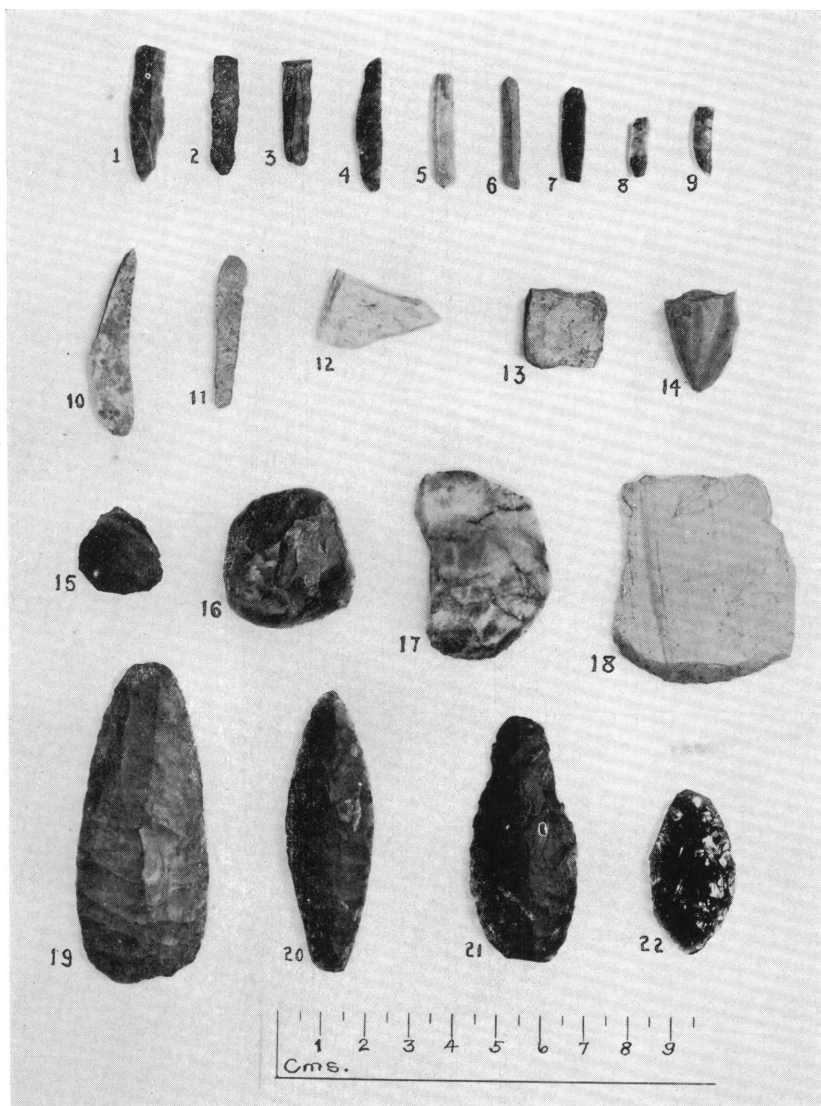


Fig. 8. Artifact Types from the University of Alaska Campus Site. 1-11, Prismatic flakes struck from prepared cores; 12-14, Polyhedral cores; 15-18, End scrapers; 19-22, Flaked blades of flint and obsidian.

while the other (Fig. 7, No. 6), of schist, has a flat inner surface. The chipping on both specimens is crude, as is to be expected where such materials as schist and basalt were utilized.

The four end scrapers (Fig. 8, Nos. 15-18) are flat, rectangular to triangular implements with one or more retouched edges. Chippings appear only on the outer, convex surfaces. The largest (Fig. 8, No. 18) is of quartzite and its broad end is chipped to a beveled edge. The smallest (Fig. 8, No. 15) is jasper and is crudely chipped along each of the three edges. The intermediate specimens are flint and somewhat more regularly formed by marginal retouching.

Cleavers or chopping tools are probably represented by two specimens (Fig. 7, Nos. 7, 8), one of flint and the other of quartz. The quartz cleaver is thick (three and one half centimeters), elongate-oval, and blunt-pointed at one end. The entire margin is irregular, but relatively sharp. The flint implement (Fig. 7, No. 7) is much thinner (one and one half centimeters), more slender, and sharply pointed. It has been formed by the removal of large, broad flakes, and then slightly retouched along one edge. This latter is the "twisted" type of cleaver, one of the diagonally opposite edges being raised above the common plane. The margin throughout has been worked to a sharp edge.

The polyhedral cores from the campus site have been described at some length by Nelson¹ because of their unusual form and because of their relation to those found by him in Mongolia.² There were thirty-one of these in the 1934 and 1935 collections and only three in the 1936 collection. They are characterized by lateral flutings formed by the removal of small prismatic flakes, a striking platform, and transverse preparatory flaking.³ Furthermore, they are unusually small and derived from spalls with a thick, flat edge, rather than from complete nodules. One of those found in 1936 is somewhat cone-shaped (Fig. 8, No. 14), while the others are flat, irregular objects with fluting along one lateral edge (Fig. 8, No. 12). These appear to be fragments of knives or scrapers subsequently utilized as cores.

The small slender flakes removed from these cores are numerous and of various sizes and shapes (Fig. 8, Nos. 1-11). Those found in 1936 are commonly of flint or jasper and vary in length from one and one half to four centimeters, in width from one to two millimeters. Some are very sharp-pointed and beak-shaped (Fig. 8, Nos. 1, 10), while

¹ Nelson, *ibid.*, 268 *seq.*

² Nelson, N. C., *The Dune Dwellers of the Gobi (Natural History, Vol. 26, pp. 246-251, New York, 1926).*

³ Nelson, *ibid.*, 268 *seq.*

others have a rounded bit end. Slight retouchings occasionally appear along one edge (Fig. 8, No. 4) or on an end (Fig. 8, No. 3). These minute implements are probably even more numerous in the deposit than their number (thirty-one) in the collection would indicate, since all material was passed through a screen with a quarter inch mesh and many were undoubtedly overlooked during the excavation.

SUMMARY

The presence of a large number of flakes, as well as of complete and fragmentary chipped stone implements and the absence of any other culture refuse in the campus site, suggests that it was a workshop rather than an habitation. It is quite clear that there are no house sites, hearths, or other indications of dwellings on the hillside or along the ridge, but it is possible that a true habitation site may be found on the river flats somewhere in the vicinity. The composition of the deposit offers no indication of its age, which can only be determined through extended correlation with other sites in central Alaska.

The chipped points, or blades, and the side scrapers are not unusual, and appear in many regions throughout the Americas, but the small end scrapers and cores, resembling Mesolithic types in Mongolia, as Mr. Nelson points out, are of particular interest. Small end scrapers of precisely the same type were found in considerable numbers (thirty-two) in the oldest house middens at Dixthada and therefore can be associated with relatively recent Athapascan culture. Polyhedral cores and the small prismatic flakes struck from these cores were also found in the oldest middens at Dixthada, but in very small numbers (two cores and six flakes). This is not comparable to the campus site where the cores and small prismatic flakes constitute one of the chief industries (thirty-four cores and sixty flakes). Furthermore, the semi-lunar side scrapers retouched on one face only, the cleavers, and the small elliptical blades regularly flaked on both surfaces, found in the campus site, do not occur at Dixthada.

It may be that the campus site is simply a workshop contemporaneous with the older Athapascan campsites, such as that in the upper Tanana Valley, but these notable differences in the stone industries represented make a definite correlation at present uncertain. Furthermore, if the deposits are contemporaneous, it is a curious circumstance that no bone, horn, or copper implements are found in the campus site. Those accidentally located sites termed workshops, such as that at Mr. Yeigh's

place above the Goodpaster River, that on the Chena River above Fairbanks, and possibly that on the Yukon below Rampart Rapids, which contain flaked stone tools comparable to those in the campus site, and no bone, horn, or copper implements, may be grouped with the campus site as deposits which are not definitely recent Athapascan and may be older.

The relation of certain implemental types in central Alaska, such as the end scrapers, polyhedral cores, and small prismatic flakes, to those found in Mongolia, remains a striking indication of cultural contact between Asia and America, even though all the types eventually may be correlated with recent Athapascan culture. The difference in age, pre-Neolithic in Asia and relatively recent in Alaska, does not necessarily preclude the possibility of cultural connection, and the fact remains that the technique of stone work represented by the polyhedral cores and small flakes links the culture with Asia rather than America, where the industry is apparently limited to Alaska. In this connection, it is interesting to note that some of the flaked stone implements found by B. E. Petri at Verkholskaia Gora near Irkutsk, Siberia,¹ like those reported from Mongolia by N. C. Nelson, are types found in the Athapascan campsite at Dixthada, as well as in the deposit of uncertain age on the University of Alaska campus.

¹ Field, Henry, and Prostov, Eugene, *Archaeology in the Soviet Union* (*American Anthropologist*, n.s. vol. 39, pp. 457-490, Menasha, 1937), Fig. 1 and Fig. 2.

ARTIFACTS FOUND THROUGH GOLD DREDGING OPERATIONS

Many of the richest gold deposits in Alaska are found in gravel beds buried beneath a mantle of frozen silt on the floor of stream valleys tributary to the main water courses. These silt deposits, which are locally known as "muck," may be no more than a meter deep, but in some valleys they extend to a depth of forty-five meters. In the early days of Alaskan mining small independent crews sank shafts through the over-burden and then cut "drift" tunnels along the rich stratum near the base of the gravel deposits, but in the large scale placer gold operations carried on at present the over-burden is thawed and sluiced off by hydraulic methods. Powerful jets of water from hydraulic giants strip away the thawed surface, expose the frozen sections to the sun, and gradually wash the silt into drainage ditches which carry it off to the main rivers. When the gold-bearing substratum of gravel is cleared, dredges or other placer mining methods are utilized to separate the gold from the gravel. Placer operations in the vicinity of Fairbanks, Circle, Tanana Hot Springs, Nome, Livengood, and Coal Creek in Alaska, as well as in the Dawson district of Yukon Territory are now "stripping" wide cuts, often miles in length, along numerous stream courses.

The over-burden of frozen muck which is made up largely of fine mica silt from eroded schist bedrock also contains lenses of gravel, sand, peat, volcanic ash, large quantities of vegetable matter, and often clear ice deposits. In addition to trees, stumps, brush, moss, and other vegetable remains there are fresh water mollusks and diatoms, as well as large numbers of mammal bones. The identified plant remains, possibly excepting two species, belong to living genera.¹ The mammal remains, although they include bones of many living species, such as the moose and caribou, also represent extinct animals such as the mammoth, horse, and super-bison, which are referred to the Pleistocene period. Judging from the stratigraphy of the muck deposits and the faunal remains contained in them, it has been concluded that they were laid down during late Pleistocene and Recent times, but an explanation of the origin of the deposits cannot yet be given.²

A more accurate dating of the muck deposits in the vicinity of Fairbanks, where several creek valleys are being stripped by the Fairbanks Exploration Company, is now being attempted, through the tree-ring

¹ Chaney, R. W. and Mason, H. L., A Pleistocene Flora from Fairbanks, Alaska (*American Museum Novitates*, No. 887, New York, 1937).

² Mertie, J. B., Jr., The Yukon Tanana Region (*Bulletin 872, United States Geological Survey*, 189, Washington, 1937).

method, by Mr. J. L. Giddings, Jr., for the Frick Laboratories in the American Museum. In 1937, Mr. Giddings collected sections of spruce stumps in the muck near the mouth of Engineer Creek, and by cross-dating methods he has determined the length of time in which some five to seven meters of muck were deposited.¹ This dated section, however, lies near the center of the over-burden and neither a beginning nor an end date for the deposition has been established as yet. Mr. Giddings points out that no regular stratification exists in the muck, but that there were, apparently, separate flows of muck from higher slopes in the valley, and that these covered older deposits upon which trees, brush, and moss had grown for relatively long periods. The tree-ring investigations may well lead to an explanation of the origin of these peculiar deposits as well as to a determination of their age. J. B. Mertie² tentatively rejects the opinion that the silt is a deltaic or lacustrine deposit, but offers no alternative explanation. The "flow" of soil from upper slopes down into broad glacial stream valleys, brought about by alternate freezing and thawing (a condition which can be observed at the present time in central Alaska), may prove to be the explanation; if so, it is probable that some vegetable as well as faunal remains in the muck have been redeposited, or moved down from the slopes during many different advances.

Bones of extinct as well as living species of mammals have been found in most of the regions mentioned above where large scale stripping has been done. They remain not as fossilized bones but in a frozen state,³ and in some cases ligaments, skin, and flesh adhere to the bones. During the past season almost the entire skin of a super-bison, the hair remaining, was found in the Fairbanks area.

For several years the Frick Laboratories in the American Museum have had a representative stationed in the Fairbanks district coöperating with the University of Alaska and the Fairbanks Exploration Company in order to collect faunal remains as they are unearthed by the hydraulic giants. In this district mammoth and bison bones are the most common, undoubtedly representing the remains of huge herds of these animals which roamed the Alaskan valleys some time during or immediately following the last great ice advance of the Pleistocene period. Many other now extinct species are also represented, such as mastodon, horse, two species of musk ox, saber-toothed tiger, lion, camel, gazelle,

¹ Giddings, J. L., Jr., Buried Wood from Fairbanks, Alaska (*Tree Ring Bulletin*, vol. 4, No. 4, Tucson, Arizona, April, 1938).

² Mertie, *op. cit.*, 189.

³ Frick, Childs, Alaska's Frozen Fauna (*Natural History*, vol. 30, pp. 71-80, New York, 1930).

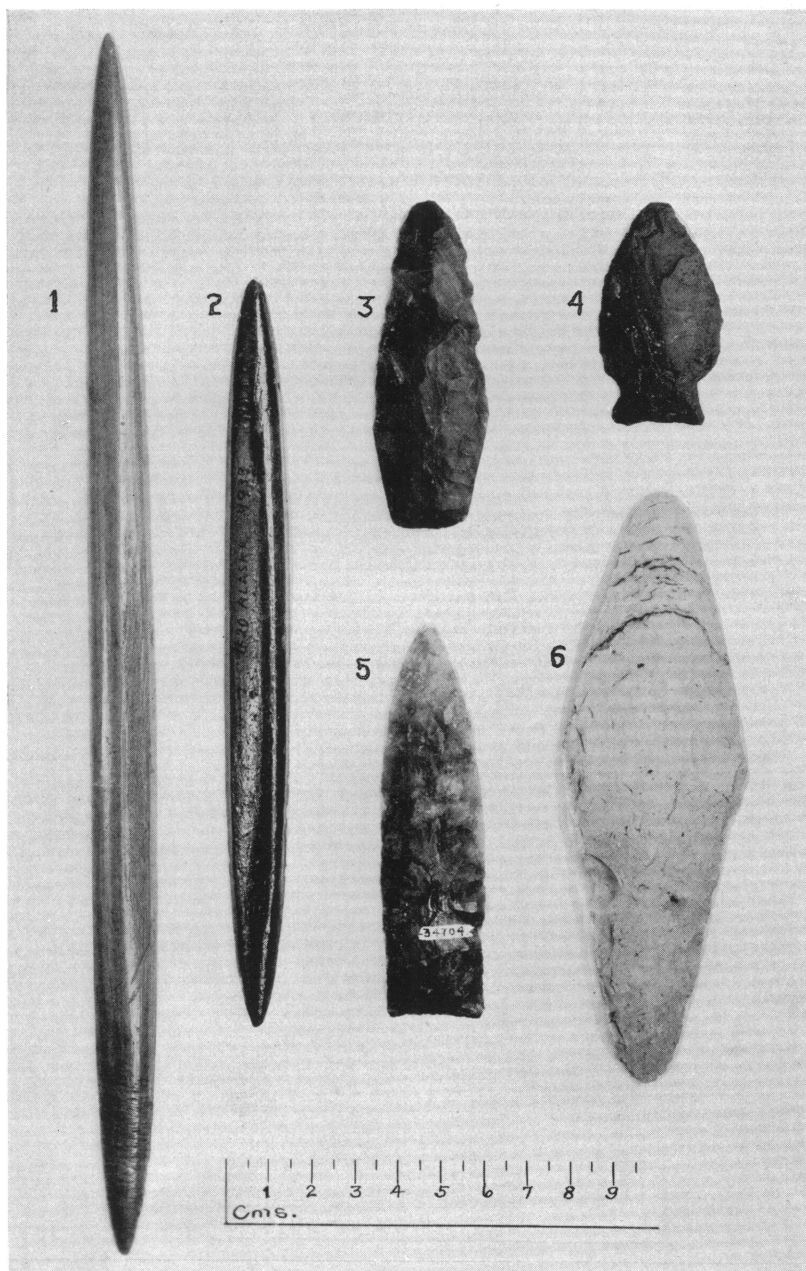


Fig. 9. Artifacts found in the Pleistocene Muck Deposits on Goldstream, Tanana Valley. 1, 2, Bone lance points; 3, Flaked stone blade; 4, Flaked stone arrowpoint; 5, "Yuma type" flint blade; 6, Double pointed flaked stone blade.

antelope, an extinct bear, rodents, and sheep. From time to time, during the past five years, implements of human manufacture have been unearthed by the hydraulic giants in the muck deposits containing this frozen fauna. Several of those examined may be classed as "pseudo-artifacts," but others are unquestionably well-made tools. In the stripping process all heavy material settles to the gravel substratum which is to be removed by the dredge. Thus, it is generally impossible to determine the original position of implements which are found during the hydraulicking unless they appear in the frozen hummocks which often remain after the bulk of muck has been thawed and removed. Extinct animal bones appear to be most common in the lower levels of the muck and often remain frozen in these ice hummocks which are left to be thawed by the action of the sun. Some of the artifacts found after the stripping at depths of eighteen and twenty meters below the original surface may have been on or near the surface originally, but the position of others, as reported, tends to associate them with extinct animal bones at great depths. The recognizable artifacts are implements of chipped stone, bone, and ivory, which for purposes of description will be listed here with the names of the section in which they were found. All are in the vicinity of Fairbanks.

Goldstream. In the summer of 1933, three implements were washed out of the muck deposits at Goldstream in approximately the same area. Two of the artifacts are long, slender bone points (Fig. 9, Nos. 1, 2) measuring twenty-eight and one half and seventeen and one half centimeters in length. At one end of each specimen there is a scratched or roughened section which probably indicates that they were hafted as lance or spearheads. They were found about ninety meters apart in drift washed out of a frozen muck pillar remaining on the gravel substratum after most of the muck deposit in that section had been washed away. Since they were found in loose drift washed out by the hydraulic nozzle, their exact original position is uncertain, but in this pit the loose débris was sluiced periodically into the drainage ditch, leaving the pit clean, and it is quite certain that both implements came from a thin gravel lens containing numerous animal bones in the muck pillar about one and one half meters above the creek gravels, or between twelve and fourteen meters below the original surface. Mr. John B. Dorsh of the Frick Laboratories carefully examined the conditions of the discovery and states that he can see no possible way for these specimens to have worked down from the surface.

It is a rather striking circumstance that Doctor Edgar B. Howard reports the discovery of what appear to be similar long bone points in direct association with mammoth bones found in New Mexico.¹ Mammoth remains are abundant in this section and at this level of the muck deposits on Goldstream.

The third specimen found at Goldstream in 1933 is a stone point made from chert partly re-crystallized (Fig. 9, No. 5). It was discovered by Mr. Carl Durant, a Fairbanks Exploration Company employee, at the bottom of a drain, and may have been transported some distance by the nozzle. Mr. Durant states, however, that it must have been washed out of the muck from a depth of at least four and one half meters and possibly as much as eighteen meters. Its peculiar interest lies in the fact that it closely approximates the "Yuma type," a chipped stone point which, like the "Folsom types," is found associated with bones of various extinct animals in late Pleistocene deposits of Southwestern United States. This point not only has the concave base of "Yuma" and "Folsom-like" points, but conforms exactly in shape and size to "Yuma types" from Clovis, New Mexico, illustrated by Howard.²

Another artifact, found at Goldstream in 1935, is a blade or point made from siliceous argillite (Fig. 9, No. 3). Chips have been removed from both surfaces and the entire margin, including the base, is brought to a sharp edge. This specimen was found by Mr. John B. Dorsh near what he believed to be its original position in the muck, some twelve to fifteen meters below the surface of the ground, but since it was found in loose drift washed out by the hydraulic nozzle its exact location is uncertain.

A fifth artifact (Fig. 9, No. 6) made from what is probably meta-rhyolite was obtained in September, 1936, by Mr. Albert Dickey, a student at the University of Alaska, who, during the summer, was employed by the Frick Laboratories. It was reported by Mr. Frank Fenton, superintendent of hydraulics on Goldstream, who stated that it was piped out of the gravel substratum after some twenty-four meters of muck had been removed. Workmen engaged in cutting a drain through the gravel bed observed the implement as it was exposed, lying nearly one meter deep in the gravel. Mr. Fenton believes that the specimen was not dis-

¹ *Science News Letter*, March 20, 1937.

² Edgar B. Howard, "Evidence of Early Man in North America" (*Museum Journal of the University of Pennsylvania*, Vol. 24, No. 2-3, Philadelphia, 1935).

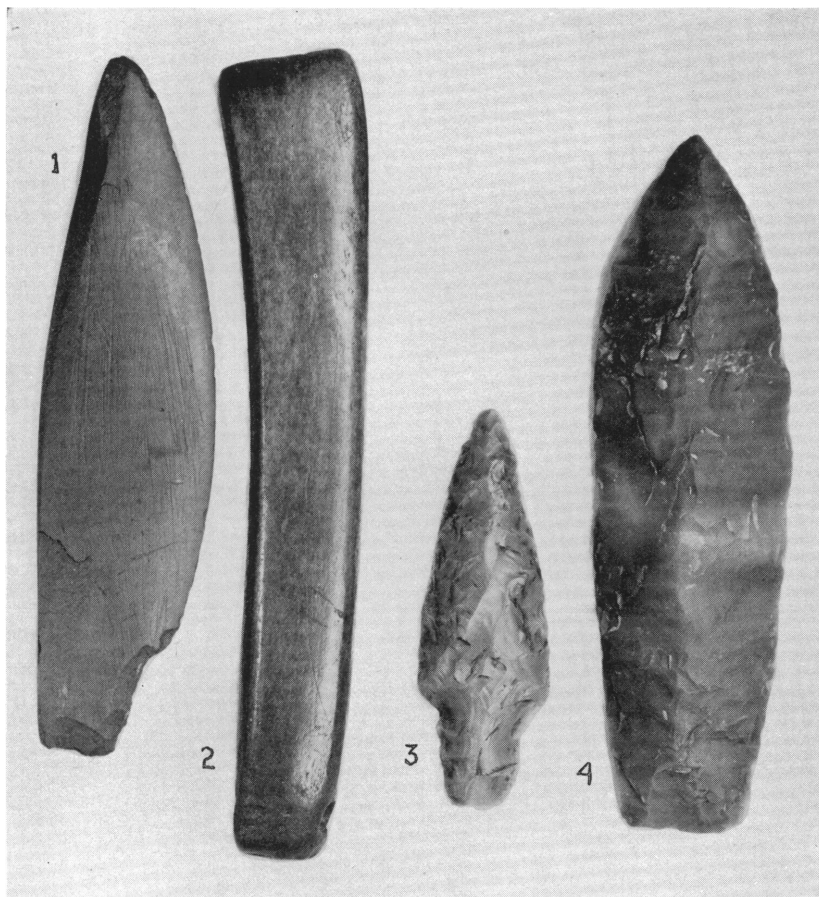


Fig. 10. Artifacts found in the Pleistocene Muck Deposits on Ester Creek, Tanana Valley. 1, Polished slate blade; 2, Socketed bone handle for blade; 3, Stemmed flint point; 4, "Yuma type" point or blade.

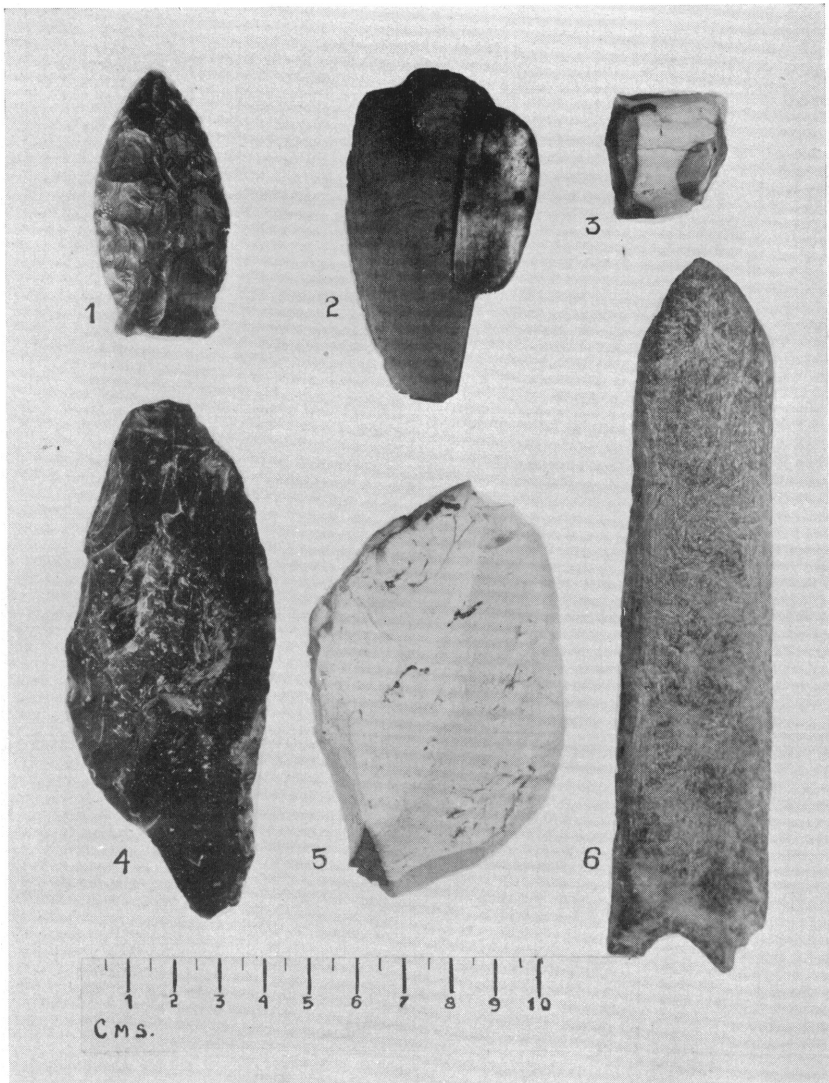


Fig. 11. Artifacts found in the Pleistocene Muck Deposits on Ester, Cripple, Little Eldorado, and Engineer Creeks. 1, Flint point from Cripple Creek; 2, Woman's knife from Ester Creek; 3, End scraper from Ester Creek; 4, Retouched flake from Little Eldorado Creek; 5, Retouched flake from Ester Creek; 6, Bone objects from Engineer Creek.

placed, but since the gravel had been thawed by the action of the water and some previous work had been done in changing the direction of the drain, it is not possible to state definitely that the artifact was found *in situ*.

The blade is diamond-shaped, pointed at both ends, and worked to a sharp edge about its entire margin. Chips have been removed from both surfaces and the implement is symmetrical, thin, and carefully formed, but the facets left by the removal of chips are very irregular. This may be due to the material which is not suitable to the chipping process.

Another implement found in 1936 by Mr. Fenton (Fig. 9, No. 4) is a small stemmed arrowpoint or knife blade made from black, fine-grained hornfels. The report of the discovery states that it was piped out of "virgin gravel" at least twenty-four meters below the surface of the ground.

All of these implements found on Goldstream appeared in the same region (Pits 1G and 2G) and although none was found still frozen in the muck or in the gravel substratum, the circumstances of the discoveries in each case indicate that they came from frozen deposits lying at great depths and from strata which have produced numerous remains of late Pleistocene fauna.

Ester. By far the most impressive discoveries of this kind have been made by Mr. Peter Maas, an employee of the Fairbanks Exploration Company at Ester. During the past two summers, 1936-1937, in the same small area he has found several implements, as well as numerous burned stones, associated with mammoth, mastodon, bison, and horse bones at the base of the muck deposits in Ester Creek, some twenty meters below the original surface. Two of the implements, which are flint blades suggestive of the "Yuma type," were found still frozen in at the base of the muck, and of these, one was in direct association with the maxillary bone of a young mastodon.

Mr. Maas, who is a conscientious collector of fossils, states that he observed the butt of one flint blade (Fig. 10, No. 4) protruding from a frozen pillar left after the over-burden had been removed and that in dislodging it from the ice he noticed that the point seemed to be embedded in bone. The bone, when chopped out of the ice, proved to be a large part of a young mastodon skull, and the blade, apparently, had lain in a depression in the maxillary bone. This part of the bone with the blade was sent to the American Museum to be examined by members of the staff who agreed that there were no cuts, abrasions, or artificial

markings on it.¹ The proof of direct association, therefore, lies in the description of the finder, whose account none of us who know him would doubt. The blade is ten centimeters long, regularly flaked on both surfaces, and slightly depressed at the base in the manner of "Folsom-like" and "Yuma" points. It appears to be approximately the same shape and size as blades found at Clovis, New Mexico, where there are good proofs of association with the mammoth.²

The second blade found *in situ* by Mr. Maas was approximately three meters from the one described above and at the same level. I have not seen this specimen as it has been sent "outside," but Mr. Maas describes it as "exactly the same shape and size."

During the same summer (1936), Mr. Maas found a polished slate knife blade some fifteen meters from the flint blades and at the same level, but not frozen *in situ*. Two or three meters from the slate blade, he found a bone knife handle which is unquestionably a part of the same implement since the stem of the blade fits snugly in the slot of the handle (Fig. 10, Nos. 1, 2). The blade is rubbed smooth over its entire surface and one curved edge is sharpened as keen as a metal knife. The butt of the bone handle is perforated laterally.

In 1937, a small stemmed arrowpoint made of flint (Fig. 10, No. 3) was also found by Mr. Maas, some fifteen meters from the flint blades and at the same level, but its original position, like that of the slate knife, is not certain.

Another specimen, also discovered in 1937, is a fragment of a mastodon tusk, twenty centimeters long and six centimeters in diameter, cut to a blunt point at one end and beveled in the form of a broad arched bit scraper or wedge at the other. Practically the entire surface shows minute striations made by some tool, probably a rubbing stone used in re-forming the tusk fragment. The specimen was found with numerous burned stones at the same level as the flint blades and approximately forty-five meters from them, but again in thawed deposit and not frozen *in situ*.

¹ The fragmentary jawbone from the muck deposit at Fairbanks, Alaska, has been shown to Messrs. Goodwin, Granger, Simpson, and Colbert. We have compared it with the corresponding bone of the walrus and of a young elephant. The conclusion is that it represents most of the right side maxillary bone (with natural sutures) of a young mastodon.

All are agreed that the bone presents no cuts, abrasions, or other artificial markings such as might be expected if the spearpoint had been driven into it by the supposed hunter. Moreover, it is difficult to imagine how a hunter, attacking the animal, could have lodged the point in its supposed position in the upper jaw. There remains the possibility that the blade might have been left in position by someone who was cutting flesh from the bone, but as there would be next to nothing eatable to be had from this head portion of the animal the suggestion is scarcely worth entertaining.

There remains, therefore, nothing to say about the association of the bone and the flint blade, except that we have to take the finder's word for it, that they were found together as claimed. This, it seems to me, we are entitled to question until such time as additional worked flints are found at the same level in the deposit—N. C. Nelson, March 22, 1937.

² Howard, *ibid.*, Pl. xxxix, Fig. 1.

Late in September, 1937, Mr. Maas discovered a deposit containing over one hundred young mammoth teeth scattered over an area a few meters in diameter. In this section were several burned bone fragments and two objects which appear to be artifacts. One, the splint bone of a horse, is sharpened at one end to form an awl. The other is a fragment of a mammoth tusk, eight centimeters in diameter, formed in the shape of a flat oval scraper. Both of these were found frozen *in situ*.

The section in which all of these specimens were found has produced a large collection of Pleistocene faunal remains including mammoth, mastodon, bison, and horse. According to Mr. Maas, one (Fig. 10, No. 4) was found directly associated with a mastodon skull, and all are quite definitely from the fossil-bearing strata at the base of the muck some twenty meters below the surface.

In the summer of 1938, three more artifacts were found in Ester Creek, but in the drains, not in the muck deposit, so that their original position is entirely unknown. An Eskimo oolak, or woman's knife, found by Mr. Maas (Fig. 11, No. 2) is certainly the most remarkable since it is the only specific Eskimo implement thus far collected in central Alaska. It has a polished slate blade and a walrus ivory handle fixed to the blade with baleen or bone rivets. The other two artifacts are a small end scraper (Fig. 11, No. 3) and a heavy stone flake retouched along one edge (Fig. 11, No. 5), types of stone implements which occur in the excavated sites described above. Both were found by Mr. Otto Wm. Geist who has been collecting mammalian remains for the Frick Laboratories.

Cripple Creek. A flint arrow or spearpoint (Fig. 11, No. 1) was found by Mr. Geist at Cripple Creek during the 1938 season. The artifact was found on a ledge along the wall of the cut now being ground-slued through the Creek Valley. It was not *in situ* and Mr. Geist believes it may have been lodged on the ledge with débris from the surface which was sloughing into the cut excavated by the hydraulic giants.

Little Eldorado Creek. This creek valley in the Fairbanks area which has been opened recently by the Fairbanks Exploration Company is producing an unusually large collection of mammal bones, including mammoth, super-bison, horse, etc. The muck deposits are relatively shallow and some of these bones occur very close to the surface of the soil. An artifact found here by Mr. Ted Loftus in 1938 lay in the muck, apparently *in situ*, at a depth of fifty centimeters. The implement (Fig. 11, No. 4) is an elliptical, crudely flaked flint object which may be a scraper or an unfinished blade.



Fig. 12. Hydraulic Operations on Ester Creek. Photographs by Peter Maas.

Engineer Creek. A single artifact from Engineer Creek, where Mr. Giddings is carrying on his tree-ring studies, was found by Mr. Peter Maas in 1938. The specimen (Fig. 11, No. 6) was found frozen *in situ* at the base of the muck, forty meters below the original surface of the soil. There were no mammal bones in the immediate vicinity. The object is a section of a rib perhaps from a bison, caribou, or moose, with a blunt point and with a series of lateral grooves on both broad surfaces. There is, of course, some question as to whether it is an actual artifact as the grooves may have been made by the teeth of some carnivore, but the well-cut point and the regularity of the grooves argue in favor of its being a true artifact. The great depth at which it was found does not necessarily preclude the possibility of its being man-made since the rate and manner of deposition of the silt are not yet known.

CONCLUSIONS

The object of this paper has been to present all available information bearing upon the possibilities for archaeological research in central Alaska. Since I have been dealing with a large and sparsely settled area in which no major archaeological excavations have been carried out, my chief concern has been to locate cultural deposits producing sufficient artifacts for the purposes of cultural reconstruction.

Most desirable in this field, of course, would be the discovery of ancient deposits bearing upon the problem of early migration from Asia to the American continent, since most American anthropologists assume that such a migration took place via the Bering Sea region during or immediately following the Pleistocene period. However, the discovery of such a deposit in Alaska, as in the rest of America, will depend largely on chance. Fortunately, the gold dredging operations, which are increasing rapidly throughout Alaska, offer a remarkable opportunity for the discovery of cultural deposits in Pleistocene fossil-bearing strata now being removed in many stream valleys. Many of the students in the University of Alaska, who have become familiar with the local problems of archaeology, in the summer operate the giant nozzles used to wash away the muck overlying the gold-bearing stratum, and it is hoped that their interest, affecting all workers so employed, will lead to the discovery of culture refuse *in situ* which can then be excavated by the archaeologist.

The discoveries of Mr. Peter Maas at Ester so far offer the best evidence for ancient man in Alaska, since he has found artifacts actually in position at the base of the muck deposits associated with the mammoth, but the number of artifacts found both at Goldstream and at Ester, apparently washed out of strata containing numerous extinct animal bones, is likewise significant. Furthermore, some of the artifacts are types which occur with the mammoth and other extinct animals in Southwestern United States. As yet, such isolated finds are insufficient evidence for broad conclusions linking Alaska with the high Plains area and Southwestern United States in the range of the Folsom culture, but they are good indications that such evidence will be found in unquestionable relic-bearing deposits.

Another approach to archaeological research in the interior of Alaska lies in the excavation of accidentally discovered sites such as that on the University of Alaska campus. The physical composition of this site offers no indication of its age and the material contained in it may equally

well be Mesolithic as relatively recent. N. C. Nelson has observed that certain implemental types, end scrapers, polyhedral cores, and small prismatic flakes from these cores, are characteristic of pre-Neolithic collections obtained by him in Mongolia, and that the cores and small flakes represent a technique which has not been observed elsewhere in America. These facts suggest a cultural connection between Mongolia and central Alaska during the Mesolithic period. However, these types occur in an old Athapascan campsite at Dixthada in the upper Tanana Valley, where they cannot be more than a few hundred years old at most. Under these circumstances one may argue that the campus site is simply an Athapascan workshop, contemporary with the Dixthada site in the upper valley, and obviously not Mesolithic in age. But the significant cores and flakes are very rare at Dixthada; copper, bone, and horn implements, which are common at Dixthada, do not occur in the campus site and various other implemental types do not correspond. This makes a direct correlation of the campus and Dixthada sites very uncertain. At present it would appear that they are not of the same age, but that the campus site, as well as other accidentally discovered deposits, is older and may be even contemporary with the Mesolithic sites in Mongolia rather than with the Athapascan site at Dixthada.

In this connection it may be well to repeat that considerable antiquity for man in Alaska is implied by the apparent association of artifacts with the bones of late Pleistocene or early post-Glacial fauna, and thus we might expect to find the later, Mesolithic remains in Alaska. The relation between northeastern Asia and central Alaska, like the relation between the Folsom culture of the Southwestern United States and the Pleistocene or early post-Glacial culture represented by artifacts found in the gold dredging operations in Alaska, remains obscure, but these isolated discoveries lay the framework for constructive research in the future.

In this area the archaeological approach to the problem of aboriginal culture development immediately preceding white contact is, of course, a distinctly different matter. During the past summer we have located prehistoric dwelling sites of sufficient size to contain material bearing significantly upon this relatively recent development, and in one of these there is some indication of a change in material culture. Research concerned with relatively recent cultural development will be continued through the excavation of these dwelling sites.

In his most recent paper concerned with anthropological research in

Alaska, Doctor Ales Hrdlicka¹ concludes that in all probability the American aborigines entered this continent via the Bering Sea region in a series of disconnected migrations extending over a long period of time, and that the route of migration was most probably along the western and southern coasts of Alaska rather than across the interior. Following his survey of the Yukon and Kuskokwim rivers, he assumes that the inland route, presumably up the Yukon Valley, is not impossible, but improbable, and points to the fact that no evidence of such migrations has been found. Furthermore he states that,

It is now only too evident that all expectation of finding in Alaska, through systematic work, the remains of the early migrants to America across Alaska must practically be abandoned.²

After a survey of the Tanana and a part of the Yukon, I agree in the belief that the great rivers are not likely routes of travel for primitive man because they are muddy, swift in many sections, and do not supply ample food under primitive conditions. I have emphasized the fact that modern fish wheels and trading posts along the rivers have occasioned a modern concentration of natives along these main river courses, at least in the region with which I am familiar, and that the older semi-permanent villages are located on clear water tributaries where fish can be taken most easily. Recent routes of travel between these settlements have been largely overland and not on the rivers. It is probable that the Palaeolithic and early Neolithic migrants who presumably first entered this continent possessed a material culture similar, if not inferior, to that of the Athapascan tribes, and that the food quest of these peoples would present the same problems. In this case, evidence of early migrations must be sought, not on the major rivers, but inland, at sites similar to those occupied in relatively recent times. Whether the migrations proceeded inland or along the coast seems to depend largely upon the culture of the immigrants. If they were originally coastal people they would undoubtedly proceed by the ocean route, but, if they were inland dwellers, migration would probably be by land. Inland people from northeastern Asia would find familiar conditions in central Alaska.

If such migrations through central Alaska did take place we should not necessarily expect to find sites containing the evidence along the banks of the Yukon itself. It is hardly justifiable to conclude, after a survey essentially limited to this water course, that systematic research concerned with early migrations must be abandoned. I have outlined

¹ Hrdlicka, Ales, *The Coming of Man from Asia in the Light of Recent Discoveries* (*Annual Report, The Smithsonian Institution*, 1935, pp. 463-470, Washington, 1936).

² Hrdlicka, *ibid.*, 465.

here three methods of approach to the problems of this region. Two methods deal with evidence of early migration and, although depending largely upon chance discovery through cultivation and gold dredging, they have brought to light at least some significant information. The third method is concerned with recent cultural developments which must be understood thoroughly before chance discoveries bearing upon early migrations can be made clear.

