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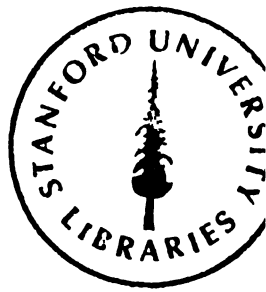
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TO THE

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1887-'88

BY

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REPORT OF THE DIRECTOR.

LETTER OF TRANSMITTAL.

SMITHSONIAN INSTITUTION, BUREAU OF ETHNOLOGY,

Washington, D. C., October 1, 1888.

SIR: I have the honor to submit herewith my ninth annual report as Director of the Bureau of Ethnology.

The first part of the report presents an exposition of the operations of the Bureau during the fiscal year 1887-'88; the second part consists of papers on anthropologic subjects, prepared mainly by my collaborators, which illustrate the methods and results of the work of the Bureau.

I desire to express my thanks for your earnest support and your wise counsel in relation to the work under my charge.

I am, with respect, your obedient servant,

A handwritten signature in black ink, appearing to read "J. M. Powell". The signature is written in a cursive style with a large, sweeping initial "J" and a long, trailing flourish at the end.

Prof. S. P. LANGLEY,

Secretary of the Smithsonian Institution.

NINTH ANNUAL REPORT
OF THE
BUREAU OF ETHNOLOGY.

By J. W. POWELL, DIRECTOR.

INTRODUCTION.

The prosecution of research among the North American Indians, as directed by acts of Congress, was continued during the fiscal year 1887-'88.

The general plan upon which the duties of the Bureau have been performed from year to year has been fully explained in former reports. As it has seemed to be successful, it remains unchanged. The lines of investigation regarded from time to time as the most important or useful have been confided to persons specially trained in or adapted to their pursuits. The results of their labors, when properly prepared, are presented in the publications of the Bureau, constituting the series of reports, of monographs, and of bulletins whose publication has been authorized by Congress. A brief statement of the work upon which each one of the special students was actively engaged during the fiscal year is furnished below; but it should be noted that this statement does not specify all the studies made or services rendered by them, since in this, as in former years, particular lines of research have been suspended in order to prosecute work regarded as of pressing importance.

Explorers, writers, and students who are not officially connected with the Bureau are again invited to render assistance in the prosecution of its work. Their contributions, whether of suggestions or of extended communications, will be grate-

fully acknowledged, will always receive proper credit, and, when practicable, will be published in the manner provided by law. The present volume contains two valuable papers by collaborators who are not directly connected with the Bureau.

The report now submitted consists of three principal divisions. The first relates to the publications made during the fiscal year, the second to the work prosecuted in the field, and the third to the office work, which consists largely of the preparation for publication of the results of field work, with the corrections and additions obtained from the literature on the subjects discussed and by correspondence relating to them.

PUBLICATIONS.

The publications actually issued and distributed during the year were as follows:

The Fifth Annual Report of the Bureau of Ethnology to the Smithsonian Institution, 1883-'84. It is an imperial octavo volume of liii+560 pages, illustrated by 23 plates (of which 10 are colored) and 77 figures in the text. The official report of the Director, occupying 37 pages (pp. xvii-liii), is accompanied by the following papers:

Burial Mounds of the Northern Section of the United States, by Cyrus Thomas; pp. 3-119, Pls. I-VI, Figs. 1-49.

The Cherokee Nation of Indians: A Narrative of their Official Relations with the Colonial and Federal Governments, by Charles C. Royce; pp. 121-378, Pls. VII-IX, of which VIII and IX are folding maps in a pocket at the end of the volume.

The Mountain Chant: A Navajo Ceremony, by Dr. Washington Matthews, U. S. Army; pp. 379-467, Pls. X-XVIII, Figs. 50-59.

The Seminole Indians of Florida, by Clay MacCauley; pp. 469-531, Pl. XIX, Figs. 60-77.

The Religious Life of the Zuñi Child, by Mrs. Tilly E. Stevenson; pp. 533-555, Pls. XX-XXIII.

Also the following bulletins, all 8vo:

Bibliography of the Eskimo Language, by James C. Pilling; 1887, pp. v+1-116, with facsimile, on page 73, of first syllabary

used in printing Eskimo texts, and one on page 97 of Veniaminoff's Guide Road.

Perforated Stones from California, by Henry W. Henshaw; 1887, pp. 34, Figs. 1-16.

The Use of Gold and other Metals among the Ancient Inhabitants of Chiriqui, Isthmus of Darien, by William H. Holmes; 1887, pp. 27, Figs. 1-22.

Work in Mound Exploration of the Bureau of Ethnology, by Cyrus Thomas; 1887, pp. 15, Fig. 1.

Bibliography of the Siouan Languages, by James C. Pilling; 1887, pp. v+1-87.

FIELD WORK.

The field work of the year divides into (1) mound explorations and (2) general field studies, the latter being chiefly directed to archeology, linguistics, and pictography.

MOUND EXPLORATIONS.

WORK OF MR. CYRUS THOMAS.

The work of exploring the mounds of the eastern United States was, as in former years, under the superintendence of Mr. Cyrus Thomas. During the year his assistants were Messrs. James D. Middleton, Gerard Fowke and Henry L. Reynolds. Much of his attention and that of his assistants was directed to the preparation for publication of his reports on the work of the mound division during previous years.

As the work of unfolding and systematizing the field notes, examining the collections and preparing the plats and illustrations proceeded, it was found that there were some omissions in the original examinations which left the details of certain sections incomplete, and it became important to obtain as far as possible the missing information. The most serious hiatus was filled by an examination of the lake border of the United States from Detroit westward to the head of Lake Superior, for the purpose of ascertaining whether the historic Indian localities along that line were marked by mounds or other ancient works.

Another undertaking, which had been begun during the last month of the preceding year, was a survey of several inclosures and other ancient remains of Ohio, to test the accuracy of the surveys by Squier and Davis and others. This was continued during a portion of the year. A third item consisted in completing the list of mound localities to be used in preparing the maps.

On July 15 Messrs. Middleton and Fowke went to Ohio, where they were engaged about one month in surveying the ancient works of that region. During the same time Mr. Reynolds was employed in the same State in collecting data for the archeologic maps. From Ohio Mr. Fowke went to Michigan, making the tour of the lake border of the United States from Detroit westward to Duluth, at the head of Lake Superior. He made careful examinations of ancient works and aboriginal remains, especially at the following-named points: Detroit, Port Huron, Saginaw, Ogemaw County, about Traverse Bay, Beaver Island, Mackinac Island, and the mainland on both sides, Sault Ste. Marie, Marquette, Munissing, the copper region, Ontonagon, Ashland, Bayfield, La Pointe (the old Chiquamagon), and Duluth. Returning by way of Prairie du Chien, Wis., and Davenport, Iowa, he stopped at Carbondale, Ill., the point selected as headquarters for the season. After writing a preliminary report of his trip he went to Kentucky to examine certain works in the northern part of that State, and thence to Washington. During May and June, 1888, he was engaged in exploring mounds in Pike County, Ohio.

From Ohio, Mr. Middleton went to Wisconsin to survey certain groups of works in the southern and southwestern part of that State, which occupied him until autumn. Most of the winter he was engaged in working up the plats and other results of his surveys. Before spring he made a survey of certain groups in southeastern Missouri and of the Seltzertown group in Mississippi. During April, May, and June, he was engaged in surveying and examining groups in southern Ohio and northern Kentucky.

Mr. Reynolds, after leaving Ohio, was engaged during the remainder of the summer, and until he went to Carbondale,

in the autumn, in collecting map material in Michigan and Wisconsin. He remained at Carbondale until the last of December.

GENERAL FIELD STUDIES.

WORK OF THE DIRECTOR.

While engaged in making a geological reconnaissance of the Tewan Mountains, the Director was enabled to study on the ground a large field of archeology. This is an extensive district of country drained by the Chama and Jemez and other tributaries of the Rio Grande del Norte. In prehistoric and early historic times the region was mainly occupied by tribes of the Tañean stock. The people lived in villages, or pueblos, many of which were built of the rude stone that abounds in forms and sizes adapted to such structures. The cliffs of the canyons carved by the many streams that drain the mountain area are often composed of volcanic tufa so soft that it can be easily worked with rude stone tools, and many of the people had learned to hew it into shapes convenient for architectural purposes.

Some of the tribes at different periods in their history left their stone pueblos and constructed homes for themselves by excavating chambers in the tufa cliffs. These cavate dwellings, now abandoned and in ruins, and the ruins of many other ancient dwellings are scattered throughout this entire country.

On the northern flank of the Tewan Mountains, near the River Chama and about 3 miles below Abiquiu, an extensive ruin was visited, the walls of which were constructed of clay built up in a mass. The mechanical devices by which they were built were not discovered, but it is evident that the clay was not made into adobes. During the study of all these ruins interesting archeologic collections were made, especially of articles in stone and clay.

WORK OF MR. JAMES STEVENSON.

Mr. James Stevenson, who had accompanied the Director in the above mentioned explorations, proceeded, at the beginning of October, 1887, to the Pueblo of Sia, about 8 miles south

of Jemez, and spent six remarkably successful weeks in making a collection and studying the customs, sociology, and mythology of the people.

The Sia retain their ancient religion in great purity in spite of the efforts of Christian priests, which have been continued for centuries. Their ceremonial chambers contain brightly colored altars of wood, before which many idols and other sacred objects are placed, while the walls are hung with various mythologic emblems of great delicacy and beauty. Mr. Stevenson was invited to inspect all these freely. The fact was disclosed that these people have a finer variety of fetiches than even the Zuñi. Their stone fetiches in human form present a special feature, the carving being of a higher type than any before seen in the region.

From one of the large ceremonial chambers he was passed through a concealed opening into a much smaller room literally filled with masks made in imitation of their fetiches, all of which he was permitted to examine at leisure, a most unusual privilege, as these people have a superstitious dread of their masks being seen when off the person. The collection of masks made at this place is not only large, but is especially interesting by reason of the variety in its articles. Sketches were made of many of them.

The Sia, like the other Pueblos, have shrines scattered around the village, both near and at a considerable distance from it, which Mr. Stevenson was invited to visit and inspect. Some of them are guarded by colossal stone animals crudely formed. Having unexpectedly discovered, while studying the mythology of these people, that, like the Tusayan Indians, they hold ceremonials with live snakes, including the rattlesnake, he asked to be shown the exact place where the snake ceremonials were held. This proved to be 5 or 6 miles distant from the pueblo, in a desolate spot among the arid hills, where there is a small square log structure in which the Snake Order hold ceremonies before the dance, the snakes being contained in two large pottery vases. The cave, when found, was closed and completely concealed by a stone slab, upon the removal of which two admirable specimens of ancient vases were

disclosed, decorated with pictures of the rattlesnake, mountain lion, and bear. One of these vases is now deposited in the National Museum as a part of the collection of the season.

This collection, consisting of 864 specimens, is in many respects the most valuable secured by Mr. Stevenson, as it not only exhibits a great variety of form and decoration in pottery (some of the pieces being very old), but it embraces the largest and most interesting collection of fetiches yet made. Many of the stone images are in human form and different from anything possessed by the Zuñi or Tusayan Indians, those of the latter being, with few exceptions, carved in wood, while the Sia possessed a large number of well carved stone images in human form. The stone animal fetiches are also superior in workmanship to and larger than any heretofore collected. One of the features of the collection is an unusual variety of beautiful plumed fetiches.

Mr. Stevenson made copious notes on the mythology and sociology of the Sia and obtained their cosmogony with completeness. He closed his field season by obtaining from the Zuñi priest-doctors additional detailed accounts of their secret "Medicine Order."

WORK OF MR. W. H. HOLMES.

During the months of August and September Mr. W. H. Holmes was engaged in studying the antiquities of Jemez Valley, New Mexico. This valley is tributary to the Rio Grande on the west, and its middle portion is about 50 miles west of Santa Fe.

Fifteen important ruined pueblos and village sites were examined. They correspond closely in type to those of the north and bear evidence in most cases of pre-Spanish occupation. Besides the larger ruins there are a multitude of minor ones, small houses and lodges of stone, scattered through the forests. Mr. Holmes carried his investigations of the ruins of Colorado and New Mexico as far south as Abiquiu, which village lies at the northern end of the group of mountains in which the Rio Jemez takes its rise. His work of the year, therefore, enabled him to connect his studies of the northern localities with those

of the south, in which the numerous modern pueblos are situated. The chain of observations thus secured is of value in the study of the art products of the vast region formerly occupied by town-building tribes.

Particular attention was given to an examination of the ceramic remains. These constitute one of the means of developing the history of the pre-Columbian inhabitants. A large series of specimens was forwarded to the National Museum.

WORK OF MESSRS. V. AND C. MINDELEFF.

Mr. Victor Mindeleff, with Mr. Cosmos Mindeleff as his assistant, left Washington for the field September 1, 1887, and returned March 18, 1888. A group of cave lodges, excavated in the top and sides of a cinder cone at the base of San Francisco Mountain, and situated about 18 miles northeast of Flagstaff, Arizona, was visited and sketches and diagrams were made. The cliff dwellings of Walnut Canyon, about 12 miles southeast of Flagstaff, were also examined.

Later the work of the field party was among the ruined pueblos near Keam Canyon, which connect traditionally with the present Tusayan villages. These ruins, six in number, are distributed on the north border of the Jeditoh Valley and are scattered along for a distance of 12 miles.

The party afterwards camped in the vicinity of Oraibi, the largest of the present villages of Tusayan. Here a study was made of the primitive constructional devices still in use. Two interesting ruins were discovered in this neighborhood and their ground plans secured. In the northern ruin a cave or underground apartment was found containing vestiges of stone walls and timber supports. The small village of Moen-kopi was surveyed. This is an outlying farming pueblo, occupied mainly during the planting and harvesting seasons. An extensive system of irrigation was in operation in this vicinity.

Subsequently the party spent six weeks at the Chaco ruins in New Mexico. An accurate architectural survey of the more important ruins was made, and the plans obtained reveal many points of interest. The degree of mechanical knowledge displayed by the builders of these pueblos and also the quality

of the masonry have been greatly exaggerated by earlier explorers. Close examination reveals ignorance on the part of the builders of some of the simplest principles of construction. Several ruins not previously known were surveyed and others were visited. Late in the season the party platted the pueblo of Jemez, situated upon the river of the same name.

At various times during the progress of the field work studies were made of the more primitive Navajo architecture, and many sketches and diagrams were prepared illustrating the Navajo system of framing their "hogans," or conical wood and earth houses. Several photographs of typical examples were taken.

Mr. Cosmos Mindeleff left Washington for the field September 1 and returned February 23. He rendered general assistance to the party under the direction of Mr. Victor Mindeleff and was in immediate charge of the surveying. Ground plans of thirteen important ruins, in addition to sketch plans of a number of others of less importance, and of two inhabited pueblos were added to those already in the possession of the Bureau. The methods of surveying followed in previous years were continued. The plans, as a rule, are drawn to a scale of 20 feet to 1 inch, and the drawing is finished in the field. The topography is in all cases indicated by contour lines of 5-foot intervals, sketched upon a basis of a number of points determined with the level. The ground plan is usually drawn over a number of points and lines located with an instrument, and the direction of all the walls is determined by a compass, in order to detect any irregularities. It was found that the regularity and symmetry of plan which characterize many published ground plans of ruins in the Southwest—notably those of the Chaco ruins—are not justified by the facts as disclosed by a careful survey of the ruins themselves, though upon cursory examination, and even upon preliminary survey, the ground plans of many of them are apparently symmetric. The plans obtained will be published in articles now in preparation.

WORK OF MR. A. M. STEPHEN.

Mr. A. M. Stephen was engaged during half of the fiscal year in collecting traditions and other matter from the Tusayan villages and among the Navajo. He has transmitted a number of valuable short papers on these topics and also on the house-lore of the Tusayan Indians, and has furnished descriptions and drawings of the "kisis" or rude temporary shelters of the Tusayan, comparing these with the primitive structures of the Navajo.

WORK OF MR. JAMES MOONEY.

Mr. James Mooney spent the earlier months of the fiscal year in making an examination of the northern division of the Cherokee tribe with reference to the dialectic difference between its vocabulary and that of the main body of the same tribe in the Indian Territory, from which it has long been separated, and also in studying for a like comparison their religious practices, traditions, social customs, and arts. The northern Cherokees are found to have been less affected by civilization than those of the south, and they can therefore be studied with manifest advantage. Mr. Mooney procured a large amount of valuable material from them, some of which has been published in the Seventh Annual Report of this Bureau.

PICTOGRAPHY.

The publications of Henry R. Schoolcraft, issued in 1853, upon the pictographs of the Ojibwa give the impression that they were nearly as far advanced in hieroglyphic writing as the Egyptians were immediately before their pictorial representations had become syllabic. Doubts had been entertained of the accuracy of this account, and it was considered to be the duty of the Bureau of Ethnology to resolve them. At the beginning of the fiscal year, therefore, Col. Garrick Mallery and Mr. W. J. Hoffman, his assistant, were directed to proceed to Indian reservations in Minnesota and Wisconsin and study what might remain accessible on the subject.

WORK OF MR. W. J. HOFFMAN.

Mr. Hoffman proceeded to the White Earth and Red Lake reservations, Minnesota, and remained for three months, making researches among the Ojibwa. He found that the most important birch-bark records are those relating to the Ojibwa cosmogony, the institution of the Midéwiwin or Grand Medicine Society, and the songs used in connection with the ritual and ceremony pertaining to the initiation of candidates into that society.

The pictographic charts are, as a rule, in the possession of the Midé or Grand Medicine men, though records relating to hunting and personal exploits, as well as directions for killing game, gathering fruits, and making journeys, and even personal letters, are made by other members of the tribe who possess more than the average intelligence.

The great mass of charts consists of mnemonic songs pertaining to incantations, exorcism, and other ceremonies, and a considerable number of them were obtained, together with their interpretations. Sketches of tattooed Indians were also made, but the custom of tattooing is almost extinct, the only modern markings being those applied to various portions of the face for the exorcism of evil spirits which are supposed to cause neuralgia, headache, and other pains. Hasty sketches were obtained also of an old Grand Medicine chart at Red Lake, a protracted examination of it not being permitted by the keeper of the record.

In addition to the pictographic material, a quantity of mythologic data was collected, all or nearly all of which was intimately connected with the rites of the secret society of the Midéwiwin, or Grand Medicine.

WORK OF COL. GARRICK MALLERY.

Col. Mallery at first directed his attention to the examination of the Ojibwa on the La Pointe and Red Cliff reservations in Wisconsin, and, although that proved to be a less favorable field for ethnologic research than those in Minnesota, above mentioned, owing to the stronger local influence

of civilization, he obtained evidence complementing the observations and conclusions of Mr. Hoffman. As a general result it is found that there still exists among the Ojibwa a remarkable degree of pictographic skill, which is employed in ordinary affairs of life as well as in religious and ceremonial rites. The statements of Schoolcraft, however, are found to be exaggerated and erroneous, especially in their attribution of mystic symbolism to devices purely ideographic or mnemonic. In particular the apparently significant coloration of his published figures is deceptive. Among the large number of genuine ancient records obtained, no colors appear to have been used, either symbolically or even in ornamentation, except that the more recent shamanistic rolls show paintings in red for the hearts of animals. Indeed the mechanical work of the birch-bark pictographs was wholly by indented outlines, and the artists of former generations were not able to fix colors on the bark surface.

In August, Col. Mallery proceeded to the islands of Cape Breton and Prince Edward, and thence to Nova Scotia and Maine, to investigate the bark records and petroglyphs of the Micmac and the Abnaki. Special study was made as to the probability of an aboriginal source of many or any of the characters supposed to have been first used by French missionaries in 1652, and printed at Vienna, Austria, in 1862, with additions and changes, under the direction of Rev. Christian Kauder, and now generally styled the "Micmac Hieroglyphs." The result of this study was that very few of the characters could be traced to Indian invention. The pictography of the Indian tribes was mainly confined to the representation of ideas or concepts, but the attempt of Father Kauder was to represent words and grammatic devices by special signs. His invention, therefore, was an artificial alphabet not naturally evolved from picture-writing, as has been the course of alphabets in general use over the world.

A most interesting and unique body of rock etchings was discovered at and near Kejimkoojik Lake, Nova Scotia, and accurate copies of many of them were secured. On account of their number, their intrinsic interest, and the evidences of

their antiquity, these etchings form a highly important addition to the collections before made, especially as they are in a region from which no representation of that nature had been reported. A petroglyph of interest near Machias, Maine, not before known, was also copied. A valuable collection was for the first time obtained of birch-bark pictographs which formerly were in general use and still are made by the Passamaquoddy and Penobscot tribes of the Abnaki in Maine, showing a similarity in the use of picture-writing between the members of the extensive Algonquian stock in the regions adjacent to and west of the Great Lakes and those in the northeast part of America and on the Atlantic coast. The correlation of the pictographic practice in manner and extent was before inferentially asserted, but no satisfactory evidence of it had been presented until the researches of this year brought into direct comparison the pictography of the Ojibwa with that of the Micmacs and Abnaki. Col. Mallery returned to Washington in October.

OFFICE WORK.

THE DIRECTOR was frequently engaged during the year in examining undetermined problems pertaining to his work upon the classification of the Indian linguistic stocks, the scope of which has been explained in his former reports. It was found necessary to defer decision respecting some of the stocks until after obtaining the result of additional field-work planned for the ensuing year.

COL. MALLERY, after his field-work before mentioned, was engaged in study of important and novel points developed thereby, and in continued research and correspondence on sign language and pictography.

MR. HOFFMAN, while assisting in the work last mentioned, prepared a topographic chart showing all the petroglyphs within the limits of the United States so far recorded by the Bureau, with the particulars of their workmanship, coloration, position, and other characteristics.

MR. HENSHAW was chiefly employed in a solution of problems relating to the geographic distribution of the linguistic

families of the North American Indians in the territory north of Mexico. When not engaged in this work or in executive duties he continued the preparation of a dictionary of the nature of a synonymy of tribal names of North American Indians, the general character and object of which have been set forth in a former report. While in general charge of that division of the office work, he specially attended to the Sahapinian, Salishan, Chemakuman, Chinookan, and several other linguistic stocks of the Pacific slope.

Mr. ALBERT S. GATSCHET was engaged during the first five months of the year in digesting the results of his recent trip to Louisiana, Texas, and Mexico, and utilizing them in the compilation of the Indian tribal synonymy in course of preparation by the Bureau. His designated share in that work comprised the families of the southern Indians from the Rio Grande to the Atlantic seaboard of Florida, namely, the stocks of the Natchez, Atákapa, Shetimasha, Tonkawè, Pakawá (otherwise known under the vague designation of "Coahuilteco or Tejano"), Tonica, Yuchi, Timucua, and—most important of them all—the Maskóki. His work of correlating for the synonymy the information gained concerning these tribes was completed, though some important tribes can not be classified linguistically, e. g., the extinct Koroas and Pascagoulas, on account of the absence, in the documents of early chroniclers, of all information relating to them. The Adá-i, classed by Gallatin as a distinct family, is believed by Mr. Gatschet to be affiliated with the Caddoan stock as a dialect distantly related to Yátassi and Caddo proper.

After concluding his labors on the tribal synonymy, Mr. Gatschet resumed work on the grammar of the Klamath language of southwestern Oregon. He combined all the results of his recent studies of both dialects, the northern and the southern, with the facts previously acquired by him and composed a treatise on the morphology of the language. This was rewritten by him three times in order to secure completeness and accuracy. The "phonetics" and the chapters on radicals and on prefixion were stereotyped.

Mr. J. OWEN DORSEY was engaged from July to December, 1887, in translating the Teton texts of Mr. George Bushotter, a Dakotan, who was employed under his direction. This collection consists of myths, legends, historical papers, an autobiography, accounts of games, folk-lore, and epistles, amounting to two hundred and fifty-eight textual manuscripts. This joint work was continued until the following December, when Mr. Bushotter's employment ceased, leaving one hundred and twenty-nine texts to be translated. Mr. Dorsey then continued the work alone until April 18, 1888, when another Dakotan, Mr. John Bruyier, of Cheyenne River agency, began to revise and interpret the Teton texts, making many corrections in the originals and supplying important parts omitted by Bushotter. Mr. Bruyier also furnished Mr. Dorsey with many examples of the Teton as spoken at the Cheyenne River reservation, which showed that it differed considerably from that spoken at the Lower Brûlé and Pine Ridge reservations. He also wrote new versions of several myths, continuing his work until June 30, 1888.

During the autumn of 1887, Mr. Dorsey completed his work on the Siouan, Caddoan, Athapascan, Takilman, Kusan, and Yakonan cards for the Indian synonymy. He also prepared nearly four hundred type-written foolscap pages of Çegiha epistles, legends, and other texts, which constitute an important addition to those published in Contributions to North American Ethnology, vol. vi, Part 1. He also transliterated on slips in alphabetic order his Winnebago material, obtained in 1878-'79, collating it with the additional material obtained in 1886. This contains fully four thousand entries. He gave much attention to the Catawba language, collating parts of a recent vocabulary which had been procured by Mr. Gatschet with all others which were accessible.

Mr. JEREMIAH CURTIN contributed to the Indian synonymy with reference to several tribes in Oregon and California and devoted much study to the large number of myths obtained by him from the same tribes; also to those of the Iroquois.

Mr. JAMES C. PILLING continued throughout the year to give a portion of his time to the preparation of the bibliographies

of the more important stocks of North American languages. As stated in the last report, the manuscript for the Siouan bibliography, the second of the series, was sent to the printer late in the fiscal year 1886-'87. The proof was read during the summer months and the work was received from the Public Printer in November. Work was then begun on the Iroquoian stock of languages, and at the close of the fiscal year that bibliography was ready for printing. Some preliminary work was also done on the Muskogean bibliography. Late in December Mr. Pilling made a visit to the library of the Historical Society of Pennsylvania, at Philadelphia, for the purpose of inspecting and taking descriptions of several important manuscripts, temporarily there, written by Moravian missionaries on Indian languages and permanently preserved in the Moravian archives at Bethlehem, Pennsylvania, and Fairfield, Canada.

Mr. JAMES MOONEY, when not in the field, continued to be charged with the synonymy relating to the Iroquoian and Algonquian linguistic stocks, and also worked upon the vocabularies, myths, and notes of information procured by him from the northern Cherokee.

Mr. CYRUS THOMAS during the entire year has been busily engaged upon his report, before mentioned, except at short intervals when he visited the field to make personal observations. The manuscript for the first volume of that report with the illustrations was presented for publication about a month before the close of the fiscal year. Work upon the manuscript, illustrations, and maps for the second volume was continued.

Mr. HENRY L. REYNOLDS was at Washington from December until the close of the fiscal year, occupied in the preparation of maps, plates, and diagrams for the report last mentioned.

Mr. GERARD FOWKE was engaged during the winter and until the 1st of May, 1888, in preparing a paper for a report on the articles of stone in the Bureau collections.

Mr. WILLIAM H. HOLMES has had charge of the illustrations intended for the Bureau publications, as in previous years, and has, so far as possible, continued his studies in aboriginal art and archaeology.

The collections acquired during the summer, although not lacking in interest and value, are not so extensive as those of previous years. Acquisitions are made in three modes: first, through members of the Bureau of Ethnology and of the U. S. Geological Survey, who act as collectors; second, by means of exchange for publications or duplicate specimens from previous collections; and, third, by donation. Dr. Thomas and his assistants, working in the Mississippi Valley and on the Atlantic slope, report but few accessions during the year. Mr. James Stevenson secured important collections from the Pueblo country, as before stated, especially from the villages of Jemez and Sia in the Jemez Valley, New Mexico. These collections include about five hundred specimens of pottery and nearly four hundred of stone, wood and other substances. A large percentage of these specimens are ancient. A considerable number of ancient relics of pottery and stone were obtained from ruin sites in the Jemez and Rio Grande valleys, New Mexico, by the Director and Mr. Holmes. Mr. A. P. Davis collected a number of fragments of ancient pottery from the ruin of Pueblo Alto, New Mexico. A very interesting series of objects illustrating the present condition of the arts among the Cherokee and Catawba Indians was procured by Mr. James Mooney. Mr. DeLancey W. Gill, of the U. S. Geological Survey, has added to the collection many specimens of rude stone implements from the vicinity of Washington. Donations have been received from the following persons: Mr. C. C. Jones, fragments of ancient pottery from Stallings Island, near Augusta, Georgia; Doctor Taylor, fragments of ancient pottery from Baldwin County, Alabama; Gen. G. P. Thruston, fragment of an enormous earthen vase from a suburb of Nashville, Tennessee; Mr. W. W. Adams, articles of stone from Union Springs, New York; Mr. C. L. R. Wheeler, cast of a unique stone knife from Westchester County, New York; and Mr. James Tilton, fragments of pottery from Plum Island, Massachusetts.

By exchange for books and duplicates from the National Museum the following acquisitions have been made: from Mr. H. P. Hamilton, fragments of ancient pottery from Two Rivers,

Wisconsin; and from Mr. H. W. Hakes, fragments of pottery from Broome County, New York.

By purchase or part purchase the Bureau has obtained from Mr. J. A. McNeil one hundred and seventy pieces of ancient pottery from Chiriqui, Panama, besides some very interesting objects of stone. From Mr. Ward Bachelor it has acquired a fine collection of earthen and stone objects from Mexico. From Dr. E. Boban a few fine samples of Mexican pottery were obtained. All these have been catalogued and turned over to the National Museum.

Mr. L. B. Case, of Richmond, Indiana, has presented to the Bureau the records of the State Archeologic Association of Indiana, which fell into his hands as secretary at the discontinuance of the society several years ago.

Valuable photographs of archeologic subjects have been received from Prof. Anastasio Alfaro, secretary of the National Museum of Costa Rica; also, from Mr. C. F. Low, of Cincinnati; from Mr. A. F. Sears, of Portland, Oregon; and from Mr. D. S. Sears, of Cuba, Illinois.

Mr. VICTOR MINDELEFF was engaged during the first two months of the fiscal year upon a report on the architecture of the Cibola and Tusayan groups of pueblos, in New Mexico and Arizona. Subsequent to his return from the field, on March 18, that report was resumed, but it was not completed at the end of the fiscal year. The additional data secured from the Tusayan district during the field season are being prepared for incorporation into the same report.

Mr. COSMOS MINDELEFF was occupied during the early part of the year upon that portion of the report on pueblo architecture which had been assigned to him. On his return from the field, on February 23, he resumed work upon that report, but it was suspended in order to take up the preparation of an exhibit to be made by the Bureau at the Cincinnati Centennial Exposition. An exhibit to cover nearly 2,000 square feet of floor space was prepared, but, as the space was limited, only the field work of the Bureau in one special region, viz, the pueblo country, was illustrated, though a small amount of other material was added for purposes of comparison. This work was not completed at the close of the fiscal year.

The work of the modeling room was continued in his charge throughout the year. No new work was taken up, all available labor being used in preparing a series of duplicates of models previously deposited in the National Museum. This work was continued from last year. The series is not yet completed, but the accumulations on hand at the end of the fiscal year were sufficient to enable the Bureau to make a creditable display at the Cincinnati Exposition without withdrawing, to any large extent, the models deposited in the National Museum. During the year eight models were added to the duplicate series and three other models were commenced.

Dr. WASHINGTON MATTHEWS, Surgeon U. S. Army, continued work upon a grammar and dictionary of the Navajo language.

Mr. W. NELSON was still engaged in the preparation of his paper, mentioned in the last report, upon the Eskimo of northern Alaska, comprising a dictionary with notes upon the grammar of the language and also upon the myths and customs of the people.

Mr. JOHN N. B. HEWITT has continued the study of the Iroquoian languages and the preparation of a Tuscarora-English dictionary. He also worked upon the comparison of words, radicals, and terms in the Iroquoian languages with those in the Cherokee and in determining the prehistoric habitat of the Iroquois.

For several years past it has been part of the work of the Bureau to take advantage of the frequent presence in Washington of parties styled "delegations" from the several Indian tribes, for the purpose of photographing all the individuals composing them. These are generally the prominent men of the tribes represented by them, and their photographs have biographic and historic interest as well as anthropologic importance. Mr. J. K. Hillers has been in charge of this branch of the work, and during the last year has secured ninety-nine photographs of prominent Indians in both full face and profile, in order to exhibit to better advantage all their facial characteristics. The subjects were from the following tribes, viz:

White Mountain Apache, 15 persons; Chiricahua Apache, 20; Jicarilla Apache, 8; Sac and Fox, 7; Utes, 4; Shawnee, 9; Omaha, 20; Dakota, 11; Oto and Missouri, 5.

It has been the practice to note, in connection with the name of each Indian photographed, his age, status in the tribe, and such biographic information as could be obtained.

ACCOMPANYING PAPERS

ETHNOLOGICAL RESULTS OF THE POINT BARROW EXPEDITION, BY JOHN MURDOCH.

Mr. John Murdoch was the naturalist and one of the observers detailed in 1881 by the Chief Signal Officer of the Army with the International Polar Expedition to Point Barrow, Alaska. That point was established as one of the stations in the work of circumpolar observation proposed by the International Conference on that subject. In addition to the specific duties of the expedition, which were connected with meteorology, researches were made by all of its members, during the two years of their stay, on the habits and customs of the Eskimo of the neighborhood, and full notes taken. The ethnological material obtained consisted of those notes and of the objects collected. The notes were so voluminous and the objects which required description and illustration were so many that it was impracticable to publish them in the report of the commanding officer of the expedition, Lieut. P. H. Ray, Eighth Infantry, U. S. Army, which was issued in 1885. In order that the valuable ethnologic results obtained should not be lost, the Chief Signal Officer permitted the continued employment of Mr. Murdoch to complete a special report upon them, and the late Secretary of the Smithsonian Institution furnished him important facilities for the work. It was decided to publish the report with full illustrations, as it now appears, in one of the serial volumes of Annual Reports of this Bureau.

The work of collecting the objects mentioned and of making the ethnological notes was continued for more than two years, and two more years were occupied by Mr. Murdoch in the analytical study of those objects and notes before the present report could be completed. In this report Mr. Murdoch has presented a simple and exhaustive account of the Eskimo of Alaska with commendable absence of theory. At the same time he

makes judicious comparisons between the people observed and the eastern division of the same race, including the Eskimo of Greenland, and also between all the American divisions and those of Siberia. These comparisons were made possible by his extensive reading and by his study of former collections deposited in the United States National Museum.

The ample illustrations of the text, 428 in number, are nearly all sketched or photographed from the articles brought to Washington by the expedition, and show in connection with them the numbers attached to those articles as now deposited and displayed in the National Museum. Thus the opportunity for verification and for further examination is proffered. The topics discussed are so many and varied that they can not be recapitulated here with advantage. An examination of the table of contents will be more satisfactory and useful. Such examination will invite the study of the paper, which will prove to be a compendium of all that is noteworthy about a body of peculiar people who have lately been included among the inhabitants of the United States.

THE MEDICINE-MEN OF THE APACHE, BY JOHN G. BOURKE, CAPTAIN THIRD CAVALRY, U. S. ARMY.

Notwithstanding the length of time, nearly three centuries, during which Europeans have been in contact with the Indian tribes of North America, wholly erroneous ideas of their theology have prevailed and are still entertained. The popular conception of their religious belief, which has been ascribed to all the tribes of the continent, is that it was substantially monotheistic, a grade of theology connected with the higher civilizations and never appearing in the stages of savagery or barbarism, beyond which no Indian tribe had advanced at the European discovery of America. Captain Bourke recognizes this fact, and believes that the misconception has been disastrous in its influence upon the national treatment of the Indian tribes. The special influence to be considered and combated is that of the "medicine-man," a title for which that of shaman might have been substituted with advantage. The form of

belief and practice called shamanism is well known in many parts of the world as a phase in religious evolution. Although at first applied only to the practices observed among some tribes of northern Asia, it has of late been generally used by scholars to express the placation and control by magic and fetichistic rites of spirits or daimons who are supposed to rule all mankind and indeed the whole realm of nature. The shaman is not only a practitioner of sorcery, able to drive off the spirits which bring death, sickness, and misfortune, and to invoke others which confer success and love, but he is a priest, who by communion with the higher powers learns and afterwards teaches to others the articles of a creed. The term shaman means all that Capt. Bourke intends to express by "medicine-man," while that awkward compound, invented by early explorers in North America, must always mislead by conveying some implication of therapeutics.

Capt. Bourke, in twenty-two years of active service in the United States Army, has directed his attention to the observation and study of the Indian tribes of the Great Plains and of the Southwest. During a considerable part of that time he has enjoyed special facilities and opportunities as aid-de-camp to Maj. Gen. Crook. His familiarity with the tribes in general enables him to introduce many comparisons between the Apache, who are the special subjects of his paper, and many other tribes and to note parallels and contrasts in the practices of all. The extensive reading which is indicated by his copious list of authorities consulted has enabled him to supply analogies from foreign lands and remote ages, so that his paper is much more comprehensive than its title.

Among the many topics suggestively treated are those of the rhombus or bull roarer, the scratch stick, and the drinking reed, all considered ceremonially; but in especial the discussions upon hoddentin and the izze-kloth present unsuspected facts and permit curious inferences.

Hoddentin is the pollen of the tule, which is a variety of the cat-tail rush growing in all the ponds of the southwestern parts of the United States. It is a yellow powder with which small buckskin bags are filled and those bags then attached to the

belts of Apache warriors. They are also worn as amulets by other members of the tribe. In dances for the cure of sickness the shaman applies the powder to the forehead of the patient, then to his breast in the figure of a cross; next he sprinkles it in a circle around his couch, then on the heads of the chanters and the assembled friends of the patient, and lastly upon his own head and into his own mouth. It is also used in other ceremonies described. Capt. Bourke points out the similarity between the use of the tule pollen and that of the kunque or sacred corn meal of the Zuni, and dwells upon many analogies to their practices found in both hemispheres.

The izze-kloth is the magic cord of the Apache, which Capt. Bourke describes and illustrates with full details. He does not mention, however, whether the fact stated about the same articles used among the Zuni is true of the Apache cords, i. e., that they must be made of rawhide or sinew taken from a beast of prey or a human enemy. The cords are often decorated with beads and shells strung at intervals with pieces of the sacred green chalchihuitl, often called American turquoise, and of petrified wood, and with rock crystal, eagle down, claws of the hawk or eaglet or of the bear, fragments of abalone shells from the Pacific, circles of buckskin inclosing pieces of twigs and branches of trees which have been struck by lightning, and other objects of shamanistic sanctity. The use of these cords was reserved for the most sacred and important occasions, such as dances for war, for curing disease, and for conjuration, when every important shaman would appear with one of the cords hanging from his right shoulder over his left hip. They are also used as amulets and charms. Capt. Bourke associates these cords with the quipus of the Peruvians and the wampum of the northeastern tribes of America, and then proceeds with enthusiasm to discover analogies among nearly all the races of earth, paying special attention to the rosaries and belt cords of the Roman Catholic Church. Though some readers will hesitate to adopt all his deductions, none will disagree with his concluding remarks upon the necessity of breaking up by the exhibition of true science the sorcery and jugglery practices which both retard the civilization of the

tribes and shorten and destroy the lives of many individuals among them.

FINANCIAL STATEMENT.

Classification of expenditures made from the appropriation for North American Ethnology for the fiscal year ending June 30, 1888.

[Amount of appropriation, 1887-88, \$40,000.]

Expenses.	Amount expended.	Expenses.	Amount expended.
Salaries	\$28,838.33	Goods for distribution to Indians.....	\$511.30
Traveling expenses.....	3,637.66	Office furniture.....	85.00
Transportation of property.....	444.91	Office supplies and repairs	18.62
Field subsistence	242.06	Correspondence.....	6.49
Field supplies and expenses.....	2,431.04	Specimens	844.95
Field material	351.06	Bonded railroad accounts forwarded	
Instruments.....	32.50	to Treasury for settlement.....	74
Laboratory material	42.67	Balance on hand to meet outstanding	
Photographic material.....	116.17	liabilities	1,280.10
Books and maps	181.00	Total	40,000.00
Stationery and drawing material	9.10		
Illustrations for report.....	926.30		

ACCOMPANYING PAPERS.

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MAP OF NORTHWESTERN ALASKA

Showing the region known to the Point Barrow Eskimo

Based on the U.S. Coast & Geodetic Survey map of Alaska, 1884, with additions from the U.S.C. & G.S. "General Chart of Alaska" 1889, and from Eskimo account. Eskimo names given in the form used at Point Barrow. Names of "tribes" underlined thus Kūmūdlū

Compiled by JOHN MURDOCH
1889

155°

150°

C E A N

Trasypūpū
(Great Lake from Eskimo account)

Idūdlū
Colville R.

Kūmūdlū

Kupūmūm

Beechey Pt.

Camden Bay

Manning Pt.

Demarcation Pt.

Herschel Id.

Kūmūdlū

Mackenzie Bay

Kupūmūm

Delta of the Mackenzie

Kupūm

Ft. McPherson

Porcupine R.

Rampart House

Fort Yukon

YUKON RIVER

150°

145°

140°

ETHNOLOGICAL RESULTS
OF THE
POINT BARROW EXPEDITION.

BY

JOHN MURDOCH.

*Naturalist and Observer, International Polar Expedition to
Point Barrow, Alaska, 1881-1883.*

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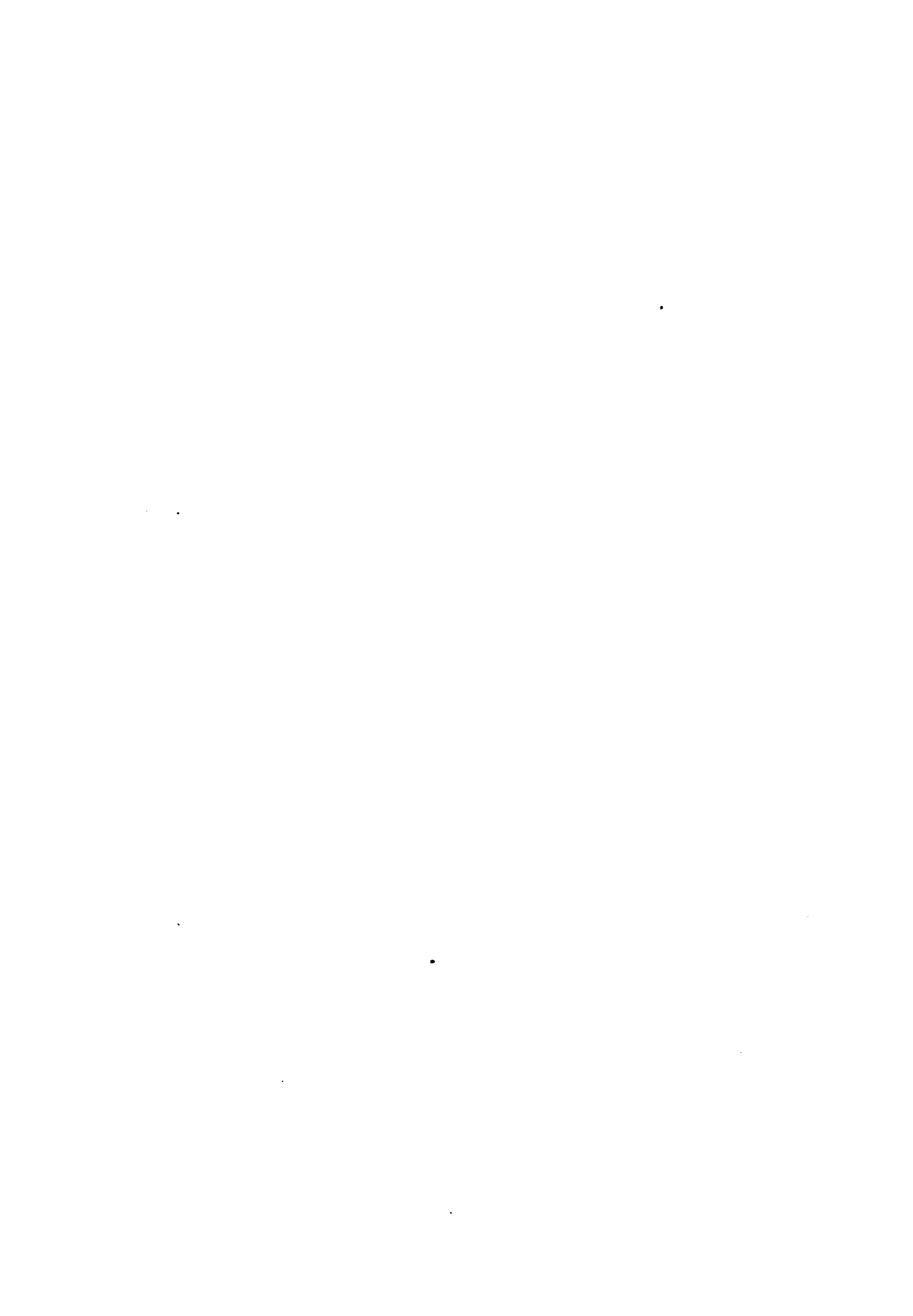
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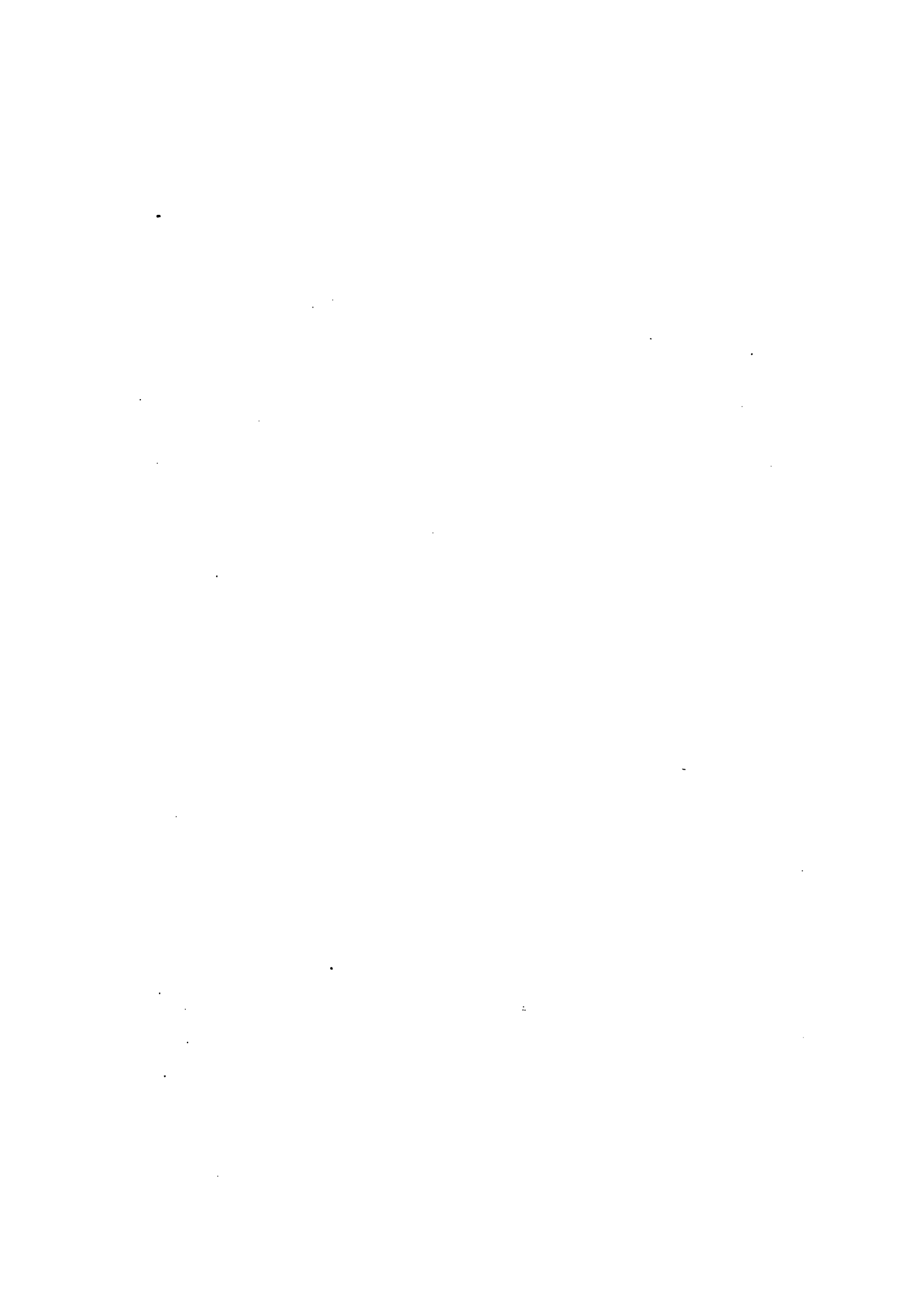
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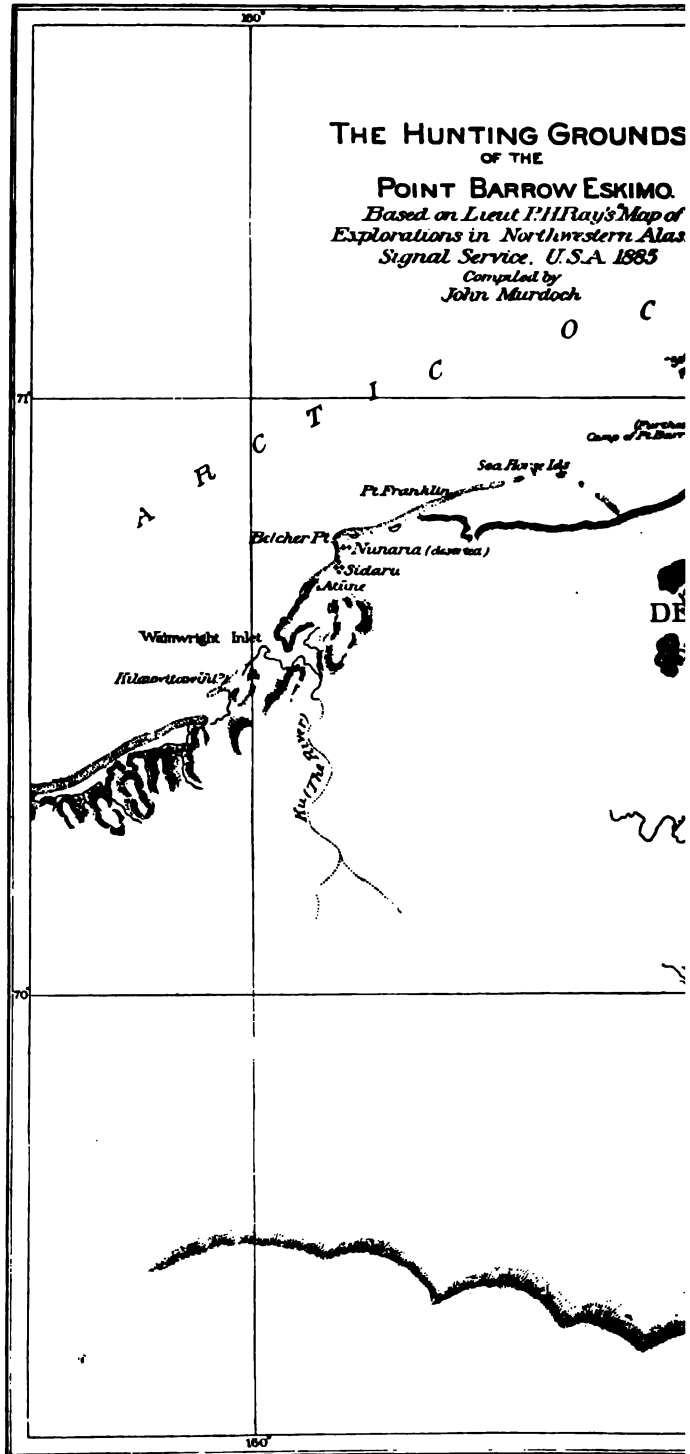
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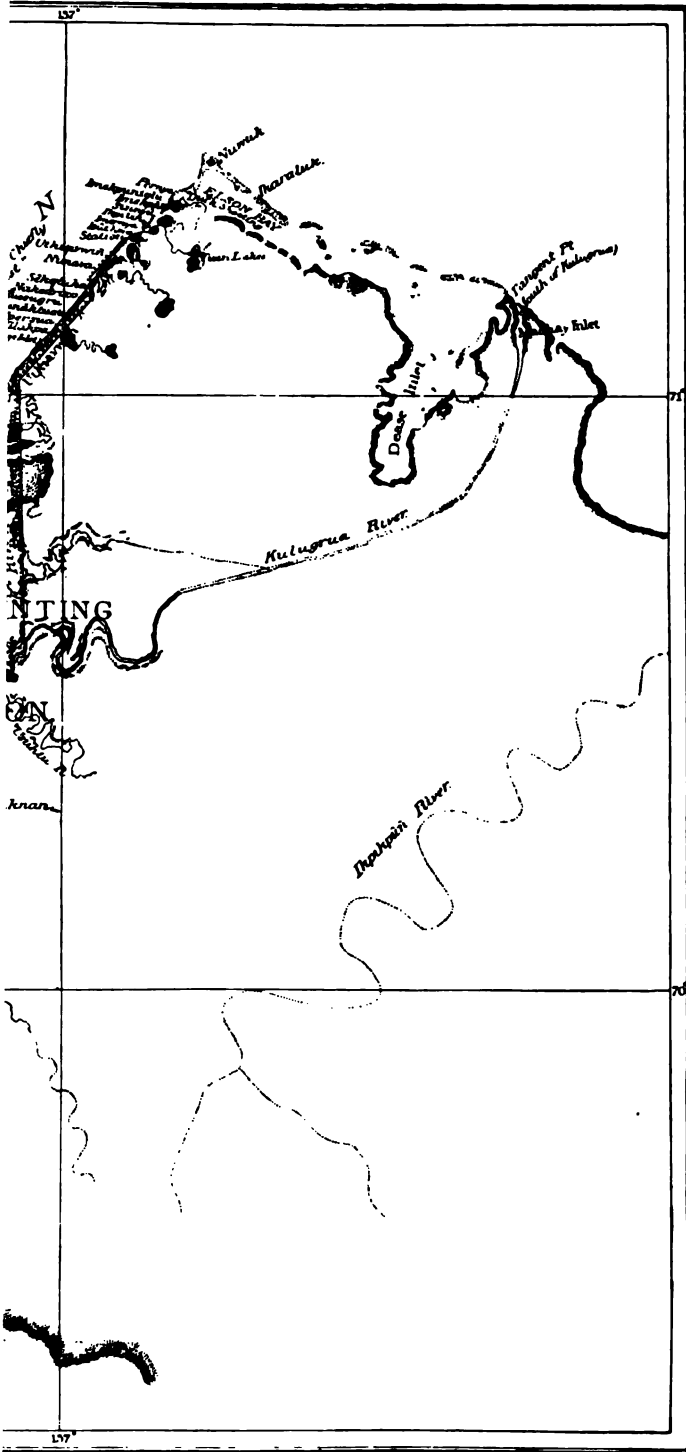
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ETHNOLOGICAL RESULTS OF THE POINT BARROW EXPEDITION.

BY JOHN MURDOCH.

INTRODUCTION.

The International Polar Expedition to Point Barrow, Alaska, was organized in 1881 by the Chief Signal Officer of the Army, for the purpose of cooperating in the work of circumpolar observation proposed by the International Polar Conference. The expedition, which was commanded by Lieut. P. H. Ray, Eighth Infantry, U. S. Army, sailed from San Francisco July 18, 1881, and reached Cape Smyth, 11 miles southwest of Point Barrow, on September 8 of the same year. Here a permanent station was established, where the party remained until August 28, 1883, when the station was abandoned, and the party sailed for San Francisco, arriving there October 7.

Though the main object of the expedition was the prosecution of the observations in terrestrial magnetism and meteorology, it was possible to obtain a large collection of articles illustrating the arts and industries of the Eskimo of the region, with whom the most friendly relations were early established. Nearly all of the collection was made by barter, the natives bringing their weapons, clothing, and other objects to the station for sale. Full notes on the habits and customs of the Eskimo also were collected by the different members of the party, especially by the commanding officer; the interpreter, Capt. E. P. Herendeen; the surgeon, Dr. George Scott Oldmixon, and myself, who served as one of the naturalists and observers of the expedition. It fell to my share to take charge of and catalogue all the collections made by the expedition, and therefore I had especially favorable opportunities for becoming acquainted with the ethnography of the region. Consequently, upon the return of the expedition, when it was found that the ethnological observations would occupy too much space for publication in the official report,¹ all the collections and notes were intrusted to me for the purpose of preparing a special report. The Smithsonian Institution, through the kindness of the late Prof. Spencer F. Baird, then secretary, furnished

¹ Report of the International Polar Expedition to Point Barrow, Alaska, by Lieut. P. H. Ray. Washington, 1885.

a room where the work of studying the collection could be carried on, and allowed me access to its libraries and to the extensive collections of the National Museum for the purposes of comparison. The Director of the Bureau of Ethnology, Maj. J. W. Powell, kindly agreed to furnish the illustrations for the work and to publish it as part of his annual report, while the Chief Signal Officer, with the greatest consideration, permitted me to remain in the employ of his Bureau until the completion of the work.

Two years were spent in a detailed analytical study of the articles in the collection, until all the information that could be gathered from the objects themselves and from the notes of the collectors had been recorded. Careful comparisons were made with the arts and industries of the Eskimo race as illustrated by the collections in the National Museum and the writings of various explorers, and these frequently resulted in the elucidation of obscure points in the history of the Point Barrow Eskimo. In the form in which it is presented this work contains, it is believed, all that is known at the present day of the ethnography of this interesting people.

Much linguistic material was also collected, which I hope some time to be able to prepare for publication.

The observations are arranged according to the plan proposed by Prof. Otis T. Mason in his "Ethnological Directions, etc.," somewhat modified to suit the circumstances. In writing Eskimo words the alphabet given in Powell's "Introduction to the Study of Indian Languages" has been used, with the addition *ɳ* for an obscure *a* (like the final *a* in *soda*), *ɶ* for a similar obscure *e*, and *ö* for the sound of the German *ö* or French *eu*.

I desire to express my gratitude to the late Prof. Spencer F. Baird, Secretary of the Smithsonian Institution, to the late Gen. William B. Hazen, Chief Signal Officer of the Army, and to Maj. J. W. Powell, Director of the Bureau of Ethnology, for their kindness in enabling me to carry on these investigations. Grateful acknowledgment is due for valuable assistance to various members of the scientific staff of the National Museum, especially to the curator of ethnology, Prof. Otis T. Mason, and to Mr. William H. Dall. Valuable suggestions were received from Mr. Lucien M. Turner, Dr. Franz Boas, the late Dr. Emil Bessels, and Dr. H. Rink, of Christiania.

LIST OF WORKS CONSULTED.

The following list is not intended for a complete bibliography of what has been written on the ethnography of the Eskimo, but it is believed that it contains most of the important works by authors who have treated of these people from personal observation. Such of the less important works have been included as contain any references bearing upon the subject of the study.

As it has been my object to go, whenever possible, to the original sources of information, compilations, whether scientific or popular, have

not been referred to or included in this list, which also contains only the editions referred to in the text.

- ARMSTRONG, ALEXANDER.** A personal narrative of the discovery of the Northwest Passage; with numerous incidents of travel and adventure during nearly five years' continuous service in the Arctic regions while in search of the expedition under Sir John Franklin. London, 1857.
- BACK, GEORGE.** Narrative of the Arctic land expedition to the mouth of the Great Fish River and along the shores of the Arctic Ocean, in the years 1833, 1834, and 1835. Philadelphia, 1836.
- BEECHY, FREDERICK WILLIAM.** Narrative of a voyage to the Pacific and Beering's Strait to cooperate with the polar expeditions: performed in His Majesty's ship Blossom, under the command of Capt. F. W. Beechey, etc., etc., etc., in the years 1825, 1826, 1827, and 1828. London, 1831.
- BESSELS, EMIL.** Die amerikanische Nordpol-Expedition. Leipzig, 1878.
- The northernmost inhabitants of the earth. An ethnographic sketch. <American Naturalist, vol. 18, pp. 861-882. 1884.
- Einige Worte über die Inuit (Eskimo) des Smith-Sundes, nebst Bemerkungen über Inuit-Schädel. <Archiv für Anthropologie, vol. 8, pp. 107-122. Braunschweig, 1875.
- BOAS, FRANZ.** The Central Eskimo. In Sixth Annual Report of the Bureau of Ethnology, pp. 393-669. Washington, Government Printing Office, 1888.
- BRODBECK, J.** Nach Osten. Untersuchungsfahrt nach der Ostküste Grönlands, vom 2. bis 12. August 1881. Niesky, 1882.
- CHAPPELL, E. (Lieut., R. N.).** Narrative of a voyage to Hudson's Bay in His Majesty's ship Rosamond, containing some account of the northeastern coast of America, and of the tribes inhabiting that remote region. London, 1817.
- CHORIS, L.** Voyage Pittoresque autour du Monde, avec des portraits des sauvages d'Amérique, d'Asie, d'Afrique, et des îles du Grand Océan; des paysages, des vues maritimes, et plusieurs objets d'histoire naturelle; accompagné de descriptions par M. le Baron Cuvier, et M. A. de Chamisso, et d'observations sur les crânes humains par M. le Docteur Gall. Paris, 1822.
- COOK, JAMES, and KING, JAMES.** A voyage to the Pacific Ocean, undertaken by the command of His Majesty for making discoveries in the northern hemisphere, to determine the position and extent of the west side of North America; its distance from Asia; and the practicability of a northern passage to Europe, in the years 1776, 1777, 1778, 1779, and 1780. London, 1784. 3 vols. (Commonly called "Cook's Third Voyage.")
- "CORWIN." Cruise of the revenue steamer Corwin in Alaska and the N. W. Arctic Ocean in 1881. Notes and memoranda. Medical and anthropological; botanical; ornithological. Washington, Government Printing Office, 1883.
- CRANTZ, DAVID.** The history of Greenland: containing a description of the country and its inhabitants; and particularly a relation of the mission carried on for above these thirty years by the Unitas Fratrum, at New Herrnhuth and Lichtenfels, in that country. 2 volumes. London, 1767.
- DALL, WILLIAM HEALY.** Alaska and its Resources. Boston, 1870.
- On masks, labrets, and certain aboriginal customs, with an inquiry into the bearing of their geographical distribution. <Third Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution. 1881. Washington, Government Printing Office, 1884.
- Tribes of the extreme northwest. <Contributions to North American Ethnology, vol. 1. Washington, Government Printing Office, 1877.
- [**DAVIS, JOHN.**] The first voyage of Master John Davis, undertaken in June 1585: for the discovery of the Northwest Passage. Written by John Janes Marchant, Servant to the worshipfull M. William Sanderson. <Hakluyt, "The principal navigations, voyages, etc.," pp. 776-780. London, 1589.

- [DAVIS, JOHN]. The second voyage attempted by Master John Davis with others for the discoverie of the Northwest passage, in Anno 1586. <Hakluyt, "The principal navigations, voiajes, etc.," pp. 781-786. London, 1589.
- The third voyage Northwestward, made by John Davis, Gentleman, as chiefe Captaine and Pilot generall, for the discoverie of a passage to the Isles of the Molucca, or the coast of China, in the yeere 1587. Written by John Janes, Seruant to the aforesayd M. William Sanderson. <Hakluyt, "The principal navigations, voiajes, etc.," pp. 789-792. London, 1589.
- DEASE, PETER W., and SIMPSON, THOMAS. An account of the recent arctic discoveries by Messrs. Dease and Simpson. <Journal of the Royal Geographical Society of London, vol. 8, pp. 213-225. London, 1838.
- EGEDE, HANS. A description of Greenland. Showing the natural history, situation, boundaries, and face of the country; the nature of the soil; the rise and progress of the old *Norwegian* colonies; the ancient and modern inhabitants; their genius and way of life, and produce of the soil; their plants, beasts, fishes, etc. Translated from the Danish. London, 1745.
- ELLIS, H. A voyage to Hudson's Bay, by the Dobbs Galley and California, in the years 1746 and 1747, for discovering a northwest passage. London, 1748.
- FRANKLIN, SIR JOHN. Narrative of a journey to the shores of the Polar Sea in the years 1819-20-21-22. Third edition, 2 vols. London, 1824.
- Narrative of a second expedition to the shores of the Polar Sea in the years 1825, 1826, and 1827. Including an account of the progress of a detachment to the eastward, by John Richardson. London, 1828.
- [FROBISHER, MARTIN]. The first voyage of M. Martine Frobisher to the Northwest for the search of the straight or passage to China, written by Christopher Hall, and made in the yeere of our Lord 1576. <Hakluyt, "The principal navigations, voiajes, etc.," pp. 615-622. London, 1589.
- The second voyage of Master Martin Frobisher, made to the West and Northwest Regions, in the yeere 1577. With a description of the Countrey and people. Written by Dionise Settle. <Hakluyt, "The principal navigations, voiajes, etc.," pp. 622-630. London, 1589.
- The third and last voyage into *Meta Incognita*, made by M. Martin Frobisher, in the year 1578. Written by Thomas Ellis. <Hakluyt, "The principal navigations, voiajes, etc.," pp. 630-635. London, 1589.
- GILDER, W. H. Schwatka's search. Sledging in the arctic in quest of the Franklin records. New York, 1881.
- GRAAH, W. A. (Capt.). Narrative of an expedition to the east coast of Greenland, sent by order of the King of Denmark, in search of the lost colonies. Translated from the Danish. London, 1837.
- HAKLUYT, RICHARD. The principall navigations, voiajes and discoveries of the English nation, made by Sea or over Land, to the most remote and farthest distant Quarters of the earth at any time within the compasse of these 100 yeeres. London, 1589.
- HALL, CHARLES FRANCIS. Arctic researches and life among the Esquimaux: being the narrative of an expedition in search of Sir John Franklin, in the years 1860, 1861, and 1862. New York, 1865.
- Narrative of the second arctic expedition made by Charles F. Hall: his voyage to Repulse Bay, sledge journeys to the Straits of Fury and Hecla and to King William's Land, and residence among the Eskimos during the years 1864-'69. Washington, Government Printing Office, 1879.
- HEALY, M. A. Report of the cruise of the revenue marine steamer *Corwin* in the Arctic Ocean in the year 1885. Washington, Government Printing Office, 1887.
- HOLM, G. Konebaads-Expeditionen til Grønlands Østkyst 1883-'85. <Geografisk Tidsskrift, vol. 8, pp. 79-98. Copenhagen, 1886.

- HOLM, G. and GARDE, V. Den danske Konebaads-Expeditionen til Grønlands Østkyst, populært beskrevet. Copenhagen, 1887.
- HOOPER, C. L. (Capt.). Report of the cruise of the U. S. revenue steamer Thomas Corwin, in the Arctic Ocean, 1881. Washington, Government Printing Office, 1884.
- HOOPER, WILLIAM HULME (Lieut.). Ten months among the tents of the Tuski, with incidents of an arctic boat expedition in search of Sir John Franklin, as far as the Mackenzie River and Cape Bathurst. London, 1853.
- KANE, ELISHA KENT (Dr.). Arctic explorations in the years 1853, '54, '55. Two vols. Philadelphia, 1856.
- The U. S. Grinnell expedition in search of Sir John Franklin. A personal narrative. New York, 1853.
- KIRKBY, W. W. (Archdeacon). A journey to the Youcan, Russian America. <Annual Report of the Board of Regents of the Smithsonian Institution for the year 1864, pp. 416-420. Washington, 1865.
- KLUTSCHAK, HEINRICH W. Als Eskimo unter den Eskimos. Eine Schilderung der Erlebnisse der Schwatka'schen Franklin-aufsuchungs-expedition in den Jahren 1878-'80. Wien, Pest, Leipzig, 1881.
- KOTZEBUE, O. VON. A voyage of discovery into the South Sea and Beering's Straits, for the purpose of exploring a northeast passage, undertaken in the years 1815-1818. Three volumes. London, 1821.
- KRAUSE, AUREL (Dr.). Die Bevölkerungsverhältnisse der Tschuktscher-Halbinsel. <Deutsche geographische Blätter, vol. 6, pp. 248-278. Bremen, 1883.
- and ARTHUR. Die Expedition der Bremer geographischen Gesellschaft nach der Tschuktscher-Halbinsel. <Deutsche geographische Blätter, vol. 5, pp. 1-35, 111-133. Bremen, 1882.
- Die wissenschaftliche Expedition der Bremer geographischen Gesellschaft nach dem Küstengebiete an der Beringsstrasse. <Deutsche geographische Blätter, vol. 4, pp. 245-281. Bremen, 1881.
- KUMLIEN, LUDWIG. Contributions to the natural history of Arctic America, made in connection with the Howgate polar expedition, 1877-78. Bulletin of the U. S. National Museum, No. 15. Washington, Government Printing Office, 1879.
- LISIANSKY, UREY. A voyage round the world, in the years 1803, '4, '5, and '6, performed by order of His Imperial Majesty Alexander the First, Emperor of Russia, in the ship Neva. London, 1814.
- LYON, G. F. (Capt.). The private journal of Captain G. F. Lyon, of H. M. S. Hecla, during the recent voyage of discovery under Captain Parry. Boston, 1824.
- M'CLURE, ROBERT LE MESURIER (Capt.). See Osborn, Sherard (editor).
- MACKENZIE, ALEXANDER. Voyages from Montreal, on the river St. Lawrence, through the continent of North America, to the Frozen and Pacific Oceans, in the years 1789 and 1793. London, 1802.
- MAGUIRE, ROCHFORD (Commander). Proceedings of Commander Maguire, H. M. discovery ship "Plover." <Parliamentary Reports, 1854, XLII, pp. 165-185. London, 1854.
- Proceedings of Commander Maguire, Her Majesty's discovery ship "Plover." <Further papers relative to the recent arctic expedition in search of Sir John Franklin, etc., p. 905 (second year). Presented to both houses of Parliament, January, 1855. London.
- MORGAN, HENRY. The relation of the course which the Sunshine, a bark of fiftie tunnes, and the Northstarre, a small pinnesse, being two vessels of the fleet of M. John Davis, held after he had sent them from him to discover the passage between Groenland and Island. Written by Henry Morgan, servant to M. William Sanderson, of London. <Hakluyt, "The principall navigations, voiajes, etc.," pp. 787-9. London, 1589.
- MURDOCH, JOHN. The retrieving harpoon; an undescribed type of Eskimo weapon <American Naturalist, vol. 19, 1885, pp. 423-425.

- MURDOCH, JOHN. On the Siberian origin of some customs of the western Eskimos. < American Anthropologist, vol. 1, pp. 325-336. Washington, 1888.
- A study of the Eskimo bows in the U. S. National Museum. < Smithsonian Report for 1884, pt. II, pp. 307-316. Washington, Government Printing Office, 1885.
- NORDENSKIÖLD, ADOLF ERIC. The voyage of the Vega round Asia and Europe. Translated by Alexander Leslie. 2 vols. London, 1881.
- OSBORN, SHERARD (editor). The discovery of the northwest passage by H. M. S. Investigator, Capt. R. M'Clure, 1850, 1851, 1852, 1853, 1854. Edited by Commander Sherard Osborn, from the logs and journals of Capt. Robert Le M. M'Clure. Appendix: Narrative of Commander Maguire, wintering at Point Barrow. London, 1856.
- PARRY, WILLIAM EDWARD (Sir). Journal of a voyage for the discovery of a northwest passage from the Atlantic to the Pacific; performed in the years 1819-'20, in His Majesty's ships Hecla and Griper. Second edition. London, 1821.
- Journal of a second voyage for the discovery of a northwest passage from the Atlantic to the Pacific; performed in the years 1821-'22-'23, in His Majesty's ships Fury and Hecla. London, 1824.
- PETITOT, EMILE FORTUNÉ STANISLAS JOSEPH, (Rev.). Géographie de l'Athabascaw-Mackenzie. < Bulletin de la Société de Géographie, [6] vol. 10, pp. 5-12, 126-183, 242-290. Paris, 1875.
- Vocabulaire Français-Esquimaux, dialecte des Tchiglit des bouches du Mackenzie et de l'Anderson, précédé d'une monographie de cette tribu et de notes grammaticales. Vol. 3 of Pinart's "Bibliothèque de Linguistique et d'Ethnographie Américaines."
- PETROFF, IVAN. Report on the population, industries, and resources of Alaska. < Tenth Census of the U. S. Washington, Government Printing Office, 1884.
- POWELL, JOSEPH S. (Lieut.). Report of Lieut. Joseph S. Powell: Relief expedition to Point Barrow, Alaska. < Signal Service Notes, No. V, pp. 13-23. Washington, Office of the Chief Signal Officer, 1883.
- RAE, JOHN (Dr.). Narrative of an expedition to the shores of the Arctic Sea in 1846 and 1847. London, 1850.
- RAY, PATRICK HENRY (Lieut.). Report of the International Polar Expedition to Point Barrow, Alaska. Washington, Government Printing Office, 1885.
- Report of Lieut. P. Henry Ray: Work at Point Barrow, Alaska, from September 16, 1881, to August 25, 1882. < Signal Service Notes, No. V, pp. 35-40. Washington, Office of the Chief Signal Officer, 1883.
- RICHARDSON, JOHN (Sir.). Arctic searching expedition: A journal of a boat voyage through Rupert's Land and the Arctic Sea, in search of the discovery ships under command of Sir John Franklin. 2 volumes. London, 1851.
- Eskimos, their geographical distribution. < Edinburgh New Philosophical Journal, vol. 52, pp. 322-323. Edinburgh, 1852.
- The polar regions. Edinburgh, 1861.
- RINK, HENRIK [Johan] (Dr.). Die dänische Expedition nach der Ostküste Grönlands, 1883-1885. < Deutsche geographische Blätter, vol. 8, pp. 341-353. Bremen, 1885.
- Danish Greenland, its people and its products. London, 1877.
- The Eskimo tribes. Their distribution and characteristics, especially in regard to language. Meddelelser om Grønland, vol. 11. Copenhagen, 1887.
- Die Ostgrönländer in ihrem Verhältnisse zu den übrigen Eskimostämmen. < Deutsche geographische Blätter, vol. 9, pp. 228-239. Bremen, 1886.
- Østgrönländerne i deres Forhold til Vestgrönländerne og de øvrige Eskimostammer. < Geografisk Tidsskrift, vol. 8, pp. 139-145. Copenhagen, 1886. (Nearly the same as the above.)

- RLIN, HENRIK** [Johan]. Tales and Traditions of the Eskimo, with a sketch of their habits, language, and other peculiarities. Translated from the Danish. Edinburgh, 1875.
- ROSS, JOHN.** Appendix to the narrative of a second voyage in search of a Northwest passage, and of a residence in the arctic regions during the years 1829, 1830, 1831, 1832, 1833. London, 1835.
- Narrative of a second voyage in search of a northwest passage, and of a residence in the arctic regions during the years 1829, 1830, 1831, 1832, 1833. Philadelphia, 1835.
- A voyage of discovery, made under the orders of the admiralty in His Majesty's ships *Isabella* and *Alexander*, for the purpose of exploring Baffin's Bay, and inquiring into the probability of a northwest passage. London, 1819.
- SCHWATKA, FREDERICK.** The Netschilluk Inuit. <Science, vol. 4, pp. 543-5. New York, 1884.
- Nimrod in the North, or hunting and fishing adventures in the arctic regions. New York, 1885.
- SCORESBY, WILLIAM, JR.** (Captain). Journal of a voyage to the northern whale-fishery; including researches and discoveries on the eastern coast of Greenland, made in the summer of 1822, in the ship *Baffin*, of Liverpool. Edinburgh, 1823.
- SEEMANN, BERTHOLD.** Narrative of the voyage of H. M. S. *Herald*, during the years 1845-51, under the command of Captain Henry Kellett, R. N., C. B.; being a circumnavigation of the globe and three cruises to the arctic regions in search of Sir John Franklin. Two vols. London, 1853.
- SIMPSON, JOHN** (Dr.). Observations on the western Eskimo, and the country they inhabit; from notes taken during two years at Point Barrow. <A selection of papers on arctic geography and ethnology. Reprinted and presented to the arctic expedition of 1875 by the Royal Geographical Society ("Arctic Blue Book"), pp. 233-275. London, 1875. (Reprinted from "Further papers," etc., Parl. Rep., 1855.)
- SIMPSON, THOMAS.** Narrative of the discoveries on the north coast of America, effected by the officers of the Hudson's Bay Company during the years 1836-39. London, 1843.
- SOLLAS, W. J.** On some Eskimos' bone implements from the east coast of Greenland. <Journal of the Anthropological Institute of Great Britain and Ireland, vol. 9, pp. 329-336. London, 1880.
- SUTHERLAND, P. C.** (Dr.). On the Esquimaux. <Journal of the Ethnological Society of London, vol. 4, pp. 193-214. London, 1856.
- WRANGELL, FERDINAND VON.** Narrative of an expedition to the Polar Sea in the years 1820, 1821, 1822, and 1823. Edited by Maj. Edward Sabine. London, 1840.

SITUATION AND SURROUNDINGS.

The people whose arts and industries are represented by the collection to be described are the Eskimo of the northwestern extremity of the continent of North America, who make permanent homes at the two villages of Nuwūk and Utkiavwñ. Small contributions to the collection were obtained from natives of Wainwright Inlet and from people of the Inland River (Nunatañmiun) who visited the northern villages.

Nuwūk, "the Point," is situated on a slightly elevated knoll at the extremity of Point Barrow, in lat. 71° 23' N., long. 156° 17' W., and Utkiavwñ, "the Cliffs," at the beginning of the high land at Cape Smyth, 11 miles southwest from Nuwūk. The name Utkiavwñ was explained as meaning "the high place, whence one can look out," and was said to be equivalent to Ikpik, a cliff. This name appears on the various maps of this region under several corrupted forms, due to carelessness or inability to catch the finer distinctions of sound. It first appears on Capt. Maguire's map¹ as "Ot-ki-a-wing," a form of the word very near the Eskimo pronunciation. On Dr. Simpson's map² it is changed to "Ot-ke-a-vik," which on the admiralty chart is misprinted "Otkiovik." Petroff on his map³ calls it "Ootiwakh," while he gives an imaginary village "Ootkaiowik, Arctic Ocean," of 55 inhabitants, in his census of the Arctic Division (op. cit., p. 4), which does not appear upon his map.

Our party, I regret to say, is responsible for the name "Ooglaamie" or "Uglaamie," which has appeared on many maps since our return. Strictly speaking this name should be used only as the official name of the United States signal station. It arose from a misunderstanding of the name as heard the day after we arrived, and was even adopted by the natives in talking with us. It was not until the second year that we learned the correct form of the word, which has been carefully verified.

The inhabitants of these two villages are so widely separated from their neighbors—the nearest permanent villages are at Point Belcher and Wainwright Inlet, 75 miles southwest, and Demarcation Point, 350 miles east⁴—and so closely connected with each other by intermarriage and common interests, that they may be considered as a single people. In their hunting and trading expeditions they habitually range from the neighborhood of Refuge Inlet along the coast to Barter Island, going inland to the upper waters of the large rivers which flow northward into the Arctic Ocean east of Point Barrow. Small parties occasionally travel as far as Wainwright Inlet and more rarely to Point Hope, and

¹Parl. Reports, 1854, vol. 42, p. 186.

²Further Papers, &c., Parl. Rep. (1855).

³Report on the population, etc., of Alaska.

⁴Capt. E. E. Smith, who in command of a steam whaler penetrated as far east as Return Reef in the summer of 1885, says that the natives told him there was no permanent village west of Herschel Island.

some times as far as the Mackenzie River. The extent of their wanderings will be treated of more fully in connection with their relations to the other natives of the Northwest. They appear to be unacquainted with the interior except for about 100 miles south of Point Barrow.

The coast from Refuge Inlet runs nearly straight in a generally north-east direction to Point Barrow, and consists of steep banks of clay, gravel, and pebbles, in appearance closely resembling glacial drift, bordered by a narrow, steep beach of pebbles and gravel, and broken at intervals by steep gulleys which are the channels of temporary streams running only during the period of melting snow, and by long, narrow, and shallow lagoons, to whose edges the cliffs slope gradually down, sometimes ending in low, steep banks. The mouths of these lagoons are generally rather wide, and closed by a bar of gravel thrown up by the waves during the season of open water. In the spring, the snow and ice on the land melt months before the sea opens and flood the ice on the lagoons, which also melts gradually around the edges until there is a sufficient head of water in the lagoon to break through the bar at the lowest point. This stream soon cuts itself a channel, usually about 20 or 30 yards wide, through which the lagoon is rapidly drained, soon cutting out an open space of greater or less extent in the sea ice. Before the sea opens the lagoon is drained down to its level, and the tide ebbs and flows through the channel, which is usually from knee-deep to waist-deep, so that the lagoon becomes more or less brackish. When the sea gets sufficiently open for waves to break upon the beach, they in a short time bring in enough gravel to close the outlet. The cliffs gradually decrease in height till they reach Cape Smyth, where they are about 25 feet high, and terminate in low knolls sloping down to the banks of the broad lagoon *Isútkwæ*, which is made by the confluence of two narrow, sinuous gulleys, and is only 10 feet deep in the deepest part.

Rising from the beach beyond the mouth of this lagoon is a slight elevation, 12 feet above the sea level, which was anciently the site of a small village, called by the same name as the lagoon. On this elevation was situated the United States signal station of *Ooglaamie*. Beyond this the land is level with the top of the beach, which is broad and nearly flat, raised into a slight ridge on the outer edge. About half a mile from the station, just at the edge of the beach, is the small lagoon *Imérnyæ*, about 200 yards in diameter, and nearly filled up with marsh. From this point the land slopes down to Elson Bay, a shallow body of water inclosed by the sandspit which forms Point Barrow. This is a continuation of the line of the beach, varying in breadth from 200 to 600 yards and running northeast for 5 miles, then turning sharply to the east-southeast and running out in a narrow gravel spit, 2 miles long, which is continued eastward by a chain of narrow, low, sandy islands, which extend as far as Point Tangent. At the angle of the point the land is slightly elevated into irregular turf-covered knolls, on which the

village of Nuwūk is situated. At various points along the beach are heaps of gravel, sometimes 5 or 6 feet in height, which are raised by the ice. Masses of old ice, bearing large quantities of gravel, are pushed up on the beach during severe storms and melt rapidly in the summer, depositing their load of gravel and pebbles in a heap. These masses are often pushed up out of reach of the waves, so that the heaps of gravel are left thenceforth undisturbed.

Between Imernya and Elson Bay (Tä'syūk) is a series of large shallow lagoons, nearly circular and close to the beach, which rises in a regular sea-wall. All have low steep banks on the land side, bordered with a narrow beach. The first of these, I'kpīllū ("that which has high banks"), breaks out in the spring through a narrow channel in the beach in the manner already described, and is salt or brackish. The next is fresh and connected with Ikpīllū by a small stream running along behind the beach. It is called Si'n-nyū, and receives a rivulet from a small fresh-water lake 3 or 4 miles inland. The third, Imé'kpūtū ("great water"), is also fresh, and has neither tributary nor outlet. The fourth, Imé'kpū'niglu, is brackish, and empties into Elson Bay by a small stream. Between this stream and the beach is a little fresh-water pond close to the bend of Elson Bay, which is called Kikyūktā'ktoṛo, from one or two little islands (kikyū'ktḁ) near one end of it.

Back from the shore the land is but slightly elevated, and is marshy and interspersed with many small lakes and ponds, sometimes connected by inconsiderable streams. This marsh passes gradually into a somewhat higher and drier rolling plain, stretching back inland from the cliffs and growing gradually higher to the south. Dr. Simpson, on the authority of the Point Barrow natives, describes the country as "uniformly low, and full of small lakes or pools of fresh water to a distance of about 50 miles from the north shore, where the surface becomes undulating and hilly, and, farther south, mountainous."¹ This description has been substantially verified by Lieut. Ray's explorations. South of the usual deer-hunting ground of the natives he found the land decidedly broken and hilly, and rising gradually to a considerable range of mountains, running approximately east and west, which could be seen from the farthest point he reached.²

The natives also speak of high rocky land "a long way off to the east," which some of them have visited for the purpose of hunting the mountain sheep. The low rolling plain in the immediate vicinity of Point Barrow, which is all of the country that could be visited by our party when the land was clear of snow, presents the general appearance of a country overspread with glacial drift. The landscape is strikingly like the rolling drift hills of Cape Cod, and this resemblance is increased by the absence of trees and the occurrence of ponds in all the depressions. There are no rocks in situ visible in this region, and

¹ Arctic papers, p. 233.

² Report U. S. International Polar Expedition to Point Barrow, p. 28.

large boulders are absent, while pebbles larger than the fist are rare. The surface of the ground is covered with a thin soil, supporting a rather sparse vegetation of grass, flowering plants, creeping willows, and mosses, which is thicker on the higher hillsides and forms a layer of turf about a foot thick. Large tracts of comparatively level ground are almost bare of grass, and consist of irregular hummocks of black, muddy soil, scantily covered with light-colored lichens and full of small pools. The lowlands, especially those back of the beach lagoons, are marshes, thickly covered with grass and sphagnum. The whole surface of the land is exceedingly wet in summer, except the higher knolls and hillsides, and for about 100 yards back from the edge of the cliffs. The thawing, however, extends down only about a foot or eighteen inches. Beyond this depth the ground is perpetually frozen for an unknown distance. There are no streams of any importance in the immediate neighborhood of Point Barrow. On the other hand, three of the rivers emptying into the Arctic Ocean between Point Barrow and the Colville, which Dr. Simpson speaks of as "small and hardly known except to persons who have visited them,"¹ have been found to be considerable streams. Two of these were visited by Lieut. Ray in his exploring trips in 1882 and 1883. The first, Kua'ru, is reached after traveling about 50 miles from Point Barrow in a southerly direction. It has been traced only for a small part of its course, and there is reason to believe, from what the natives say, that it is a tributary of the second named river. Lieut. Ray visited the upper part of the second river, Kulugrua (named by him "Meade River"), in March, 1882, when he went out to join the native deer hunters encamped on its banks, just on the edge of the hilly country. On his return he visited what the natives assured him was the mouth of this river, and obtained observations for its geographical position. Early in April, 1883, he again visited the upper portion of the stream, and traced it back some distance into the hilly country. The intermediate portion has never been surveyed. At the time of each of his visits the river was, of course, frozen and the ground covered with snow, but he was able to see that the river was of considerable size, upwards of 200 yards wide where he first reached it, about 60 miles from its mouth, and showing evidences of a large volume of water in the spring. It receives several tributaries. (See maps, Pls. I and II.)

The third river is known only by hearsay from the natives. It is called I'kplkpûñ (Great Cliff), and is about 40 miles (estimated from day's journeys) east of Kulu'grua. It is described as being a larger and more rapid stream than the other two, and so deep that it does not freeze down to the bottom on the shallow bars, as they say Kulu'grua does. Not far from its mouth it is said to receive a tributary from the east flowing out of a great lake of fresh water, called Tã'syûkpûñ (Great Lake.) This lake is separated from the sea by a comparatively

¹Op. cit., p. 235.

narrow strip of land, and is so large that a man standing on the northern shore can not see the "very high" land on the southern. It takes an umiak a day to travel the length of the lake under sail with a fair wind, and when the Nunatañmiun coming from the south first saw the lake they said "Taxaio!" (the sea).

On Capt. Maguire's map¹ this lake is laid down by the name "Taso'kpoh" "from native report." It is represented as lying between Smith Bay and Harrison Bay, and connected with each by a stream. Maguire seems to have heard nothing of Ikpikpūñ. This lake is not mentioned in the body of the report. Dr. Simpson, however,² speaks of it in the following words: "They [i. e., the trading parties when they reach Smith Bay] enter a river which conducts them to a lake, or rather series of lakes, and descend another stream which joins the sea in Harrison Bay." They are well acquainted with the Colville River, which in their intercourse with us they usually called "the river at NI'galĕk," NI'galĕk being the well known name of the trading camp at the mouth. It was also sometimes spoken of as the "river of the Nunatañmiun." The Mackenzie River is known as "Kupūñ" (great river). We found them also acquainted with the large unexplored river called "Kok" on the maps, which flows into Wainwright Inlet. They called it "Ku" (the river). The river "Cogrua," which is laid down on the charts as emptying into Peard Bay, was never mentioned by the Point Barrow natives, but we were informed by Capt. Gifford, of the whaler *Daniel Webster*, who traveled along the coast from Point Barrow to Cape Lisburne after the loss of his vessel in 1881, that it is quite a considerable stream. He had to ascend it for about a day's journey—20 miles, according to Capt. Hooper³—before he found it shallow enough to ford.

CLIMATE.

The climate of this region is thoroughly arctic in character, the mean annual temperature being 8° F., ranging from 65° to -52° F. Such temperatures as the last mentioned are, however, rare, the ordinary winter temperature being between -20° and -30° F., rarely rising during December, January, February, and March as high as zero, and still more rarely passing beyond it. The winter merges insensibly by slow degrees into summer, with occasional "cold snaps," and frosty nights begin again by the 1st of September.

The sun is entirely below the horizon at Point Barrow for 72 days in the winter, beginning November 15, though visible by refraction a day or two later at the beginning of this period and a day or two earlier at the end. The midday darkness is never complete even at the winter solstice, as the sun is such a short distance below the horizon, but the time suitable for outdoor employments is limited to a short twilight from 9 a. m. to 3 p. m. There is, of course, an equal time in the summer

¹Parl. Rep., 1854, vol. 42, opp. p. 186.

²Op. cit., p. 265.

³Corwin Report, p. 72.

when the sun is continually above the horizon, and for about a month before and after this period the twilight is so bright all night that no stars are visible.

The snowfall during the winter is comparatively small. There is probably not more than a foot of snow on a level anywhere on the land, though it is extremely difficult to measure or estimate, as it is so fine and dry that it is easily moved by the wind and is constantly in motion, forming deep, heavy, hard drifts under all the banks, while many exposed places, especially the top of the sand beach, are swept entirely clean. The snow begins to soften and melt about the first week in April, but goes off very slowly, so that the ground is not wholly bare before the middle or end of June. The grass, however, begins to turn green early in June, and a few flowers are seen in blossom as early as June 7 or 8.

Rain begins to fall as early as April, but cold, snowy days are not uncommon later than that date. There is a good deal of clear, calm weather during the winter, and extremely low temperatures are seldom accompanied by high wind. Violent storms are not uncommon, however, especially in November, during the latter part of January, and in February. One gale from the south and southwest, which occurred January 22, 1882, reached a velocity of 100 miles an hour. The most agreeable season of the year is between the middle of May and the end of July, when the sea opens. After this there is much foggy and cloudy weather.

Fresh-water ponds begin to freeze about the last week in September, and by the first or second week in October everything is sufficiently frozen for the natives to travel with sledges to fish through the ice of the inland rivers. Melting begins with the thawing of the snow, but the larger ponds are not clear of ice till the middle or end of July. The sea in most seasons is permanently closed by freezing and the moving in of heavy ice fields from about the middle of October to the end of July. The heavy ice in ordinary seasons does not move very far from the shore, while the sea is more or less encumbered with floating masses all summer. These usually ground on a bar which runs from the Seahorse Islands along the shore parallel to it and about 1,000 yards distant, forming a "barrier" or "land-floe" of high, broken hummocks, inshore of which the sea freezes over smooth and undisturbed by the pressure of the outer pack.

Sometimes, however, the heavy pack, under the pressure of violent and long-continued westerly winds, pushes across the bar and is forced up on the beach. The ice sometimes comes in with great rapidity. The natives informed us that a year or two before the station was established the heavy ice came in against the village cliffs, tearing away part of the bank and destroying a house on the edge of the cliff so suddenly that one of the inmates, a large, stout man, was unable to escape through the trap-door and was crushed to death. Outside of the land-floe the ice is a broken pack, consisting of hummocks of fragmentary old and new ice, interspersed with comparatively level fields of the former. During the

early part of the winter this pack is most of the time in motion, sometimes moving northeastward with the prevailing current and grinding along the edge of the barrier, sometimes moving off to sea before an off-shore wind, leaving "leads" of open water, which in calm weather are immediately covered with new ice (at the rate of 6 inches in 24 hours), and again coming in with greater or less violence against the edges of this new ice, crushing and crumpling it up against the barrier. Portions of the land-floe even float off and move away with the pack at this season.

The westerly gales of the later winter, however, bring in great quantities of ice, which, pressing against the land-floe, are pushed up into hummocks and ground firmly in deeper water, thus increasing the breadth of the fixed land-floe until the line of separation between the land-floe and the moving pack is 4 or 5 or sometimes even 8 miles from land. The hummocks of the land-floe show a tendency to arrange themselves in lines parallel to the shore, and if the pressure has not been too great there are often fields of ice of the season not over 4 feet thick between the ranges of hummocks, as was the case in the winter of 1881-82. In the following year, however, the pressure was so great that there were no such fields, and even the level ice inside of the barrier was crushed into hummocks in many places.

After the gales are over there is generally less motion in the pack, until about the middle of April, when easterly winds usually cause leads to open at the edge of the land-floe. These leads now continue to open and shut, varying in size with the direction and force of the wind. As the season advances, especially in July, the melting of the ice on the surface loosens portions of the land-floe, which float off and join the pack, bringing the leads nearer to the shore. In the meantime the level shore ice has been cut away from the beach by the warm water running down from the land and has grown "rotten" and full of holes from the heat of the sun. By the time the outside ice has moved away so as to leave only the floes grounded on the bar the inside ice breaks up into loose masses, moving up and down with wind and current and ready to move off through the first break in the barrier. Portions of the remaining barrier gradually break off and at last the whole finally floats and moves out with the pack, sometimes, as in 1881—a very remarkable season—moving out of sight from the land.

This final departure of the ice may take place at any time between the middle of July and the middle of August. East of Point Barrow we had opportunities only for hasty and superficial observations of the state of the ice. The land floe appears to form some distance outside of the sandy islands, and from the account of the natives there is much open water along shore early in the season, caused by the breaking up of the rivers. Dr. Simpson¹ learned from the natives that the trading parties which left the Point about the 1st of July found open water at Dease Inlet. This is more definite information than we were able to obtain. We only learned that they counted on finding open water a few days' journey east.

THE PEOPLE.

PHYSICAL CHARACTERISTICS.

In stature these people are of a medium height, robust and muscular, "inclining rather to spareness than corpulence,"² though the fullness of the face and the thick fur clothing often gives the impression of the latter. There is, however, considerable individual variation among them in this respect. The women are as a rule shorter than the men, occasionally almost dwarfish, though some women are taller than many of the men. The tallest man observed measured 5 feet 9½ inches, and the shortest 4 feet 11 inches. The tallest woman was 5 feet 3 inches in height, and the shortest 4 feet ½ inch. The heaviest man weighed 204 pounds and the lightest 126 pounds. One woman weighed 192 pounds and the shortest woman was also the lightest, weighing only 100 pounds.³ The hands and feet are small and well shaped, though the former soon become distorted and roughened by work. We did not observe the peculiar breadth of hands noticed by Dr. Simpson, nor is the shortness of the thumb which he mentions sufficient to attract attention.⁴ Their feet are so small that only one of our party, who is much below the ordinary size, was able to wear the boots made by the natives for themselves. Small and delicate hands and feet appear to be a universal characteristic of the Eskimo race and have been mentioned by most observers from Greenland to Alaska.⁵

The features of these people have been described by Dr. Simpson,⁶ and are distinctively Eskimo in type, as will be seen by comparing the accompanying portraits (Figs. 1, 2, 3, and 4, from photographs by Lieut. Ray) with the many pictures brought from the eastern Arctic

¹ Op. cit., p. 264.

² Simpson, op. cit., p. 238.

³ See Report of Point Barrow Expedition, p. 50, for a table of measurements of a number of individuals selected at random from the natives of both villages and their visitors.

⁴ Op. cit., p. 238.

⁵ Davis (1586) speaks of the "small, slender hands and feet" of the Greenlanders. Hakluyt's Voyages, etc. (1589), p. 782.

"Their hands and feet are little and soft." Crantz, vol. 1, p. 133 (Greenland).

Hands and feet "extremely diminutive," Parry 1st Voy., p. 282 (Baffin Land).

"Their hands and feet are small and well formed." Kunlén Contrib., p. 15 (Cumberland Gulf).

"Feet extraordinarily small." Ellis, Voyage, etc., p. 132 (Hudson Strait).

Franklin (1st Exp., vol. 2, p. 180) mentions the small hands and feet of the two old Eskimo that he met at the Bloody Fall of the Coppermine River.

" . . . boots purchased on the coast were seldom large enough for our people." Richardson Searching Exp., i, p. 344 (Cape Bathurst).

"Their hands and feet are small." Petroff, Report, etc., p. 134 (Kuskoquim River).

Chappell (Hudson Bay, pp. 59, 60) has a remarkable theory to account for the smallness of the extremities among the people of Hudson Strait. He believes that "the same intense cold which restricts vegetation to the form of creeping shrubs has also its effect upon the growth of mankind, preventing the extremities from attaining their due proportion"!

⁶ Op. cit., p. 238.



FIG. 1.—Unalina, a man of Nuuk.

regions by various explorers, some of which might easily pass for portraits of persons of our acquaintance at Point Barrow.¹

The face is broad, flat, and round, with high cheek bones and rather low forehead, broad across the brow and narrowing above, while the head is somewhat pointed toward the crown. The peculiar shape of the



FIG. 2.—Múmúñina, a woman of Nuwúk.

head is somewhat masked by the way of wearing the hair, and is best seen in the skull. The nose is short, with little or no bridge (few Eskimo were able to wear our spring eye-glasses), and broad, especially across the *alæ nasæ*, with a peculiar rounded, somewhat bulbous tip,

¹One young man at Point Barrow looks remarkably like the well known "Eskimo Joe," as I remember him in Boston in the winter of 1862-'63.

and large nostrils. The eyes are horizontal,¹ with rather full lids, and are but slightly sunken below the level of the face.

The mouth is large and the lips full, especially the under one. The teeth are naturally large, and in youth are white and generally regular, but by middle age they are generally worn down to flat-crowned stumps, as is usual among the Eskimo. The color of the skin is a light yellowish



FIG. 3.—Akabiana, a youth of Utkiavwif.

brown, with often considerable ruddy color on the cheeks and lips. There appears to be much natural variation in the complexion, some women being nearly as fair as Europeans, while other individuals seem to have naturally a coppery color.² In most cases the complexion appears darker than it really is from the effects of exposure to the weather. All sunburn very easily, especially in the spring when there is a strong reflection from the snow.

¹ The expression of obliquity in the eyes, mentioned by Dr. Simpson (*op. cit.*, p. 239), seems to me to have arisen from the shape of the cheek bones. I may be mistaken, however, as no careful comparisons were made on the spot.

² Frobisher says of the people of Baffin Land: "Their colour is not much unlike the sunburnt country man." Hakluyt's *Voyages, etc.* (1589), p. 627.

The old are much wrinkled, and they frequently suffer from watery eyes, with large sacks under them, which begin to form at a comparatively early age. There is considerable variation in features, as well as complexion, among them, even in cases where there seems to be no suspicion of mixed blood. There were several men among them with decided aquiline noses and something of a Hebrew cast of countenance.



FIG. 4.—Puka, a young man of Utkiavwif.

The eyes are of various shades of dark brown—two pairs of light hazel eyes were observed—and are often handsome. The hair is black, perfectly straight, and very thick. With the men it is generally coarser than with the women, who sometimes have very long and silky hair, though it generally does not reach much below the shoulders. The eyebrows are thin and the beard scanty, growing mostly upon the upper lip and chin, and seldom appearing under the age of 20. In this they resemble most Eskimo. Back,¹ however, speaks of the “luxuriant

¹ *Journey, etc.*, p. 289.

beards and flowing mustaches" of the Eskimo of the Great Fish River. Some of the older men have rather heavy black mustaches, but there is much variation in this respect. The upper part of the body (as much is commonly exposed in the house) is remarkably free from hair. The general expression is good humored and attractive.

The males, even when very young, are remarkable for their graceful and dignified carriage. The body is held erect, with the shoulders square and chest well thrown out, the knees straight, and the feet firmly planted on the ground. In walking they move with long swinging elastic strides, the toes well turned out and the arms swinging.

I can not agree with Dr. Simpson that the turning out of the toes gives "a certain peculiarity to their gait difficult to describe."¹ I should say that they walked like well built athletic white men. The women, on the other hand, although possessing good physiques, are singularly ungraceful in their movements. They walk at a sort of shuffling half-trot, with the toes turned in, the body leaning forward, and the arms hanging awkwardly.²

A noticeable thing about the women is the remarkable flexibility of the body and limbs, and the great length of time they can stand in a stooping posture. (See Fig. 5 for a posture often assumed in working.)



FIG. 5.—Woman stretching skins.

Both men and women have a very fair share of muscular strength. Some of the women, especially, showed a power of carrying heavy loads superior to most white men. We were able to make no other comparisons of their strength with ours. Their power of endurance is very great, and both sexes are capable of making long distances on foot. Two men sometimes spend 24 hours tramping through the rough ice in search of seals, and we knew of instances where small parties made journeys of 50 or 75 miles on foot without stopping to sleep.

The women are not prolific. Although all the adults are or have been married, many of them are childless, and few have more than two children. One woman was known to have at least four, but investigations of this sort were rendered extremely difficult by the universal custom

¹Op. cit., p. 238.

²Cf. Simpson, op. cit., p. 240.

of adoption. Dr. Simpson heard of a "rare case" where one woman had borne seven children.¹ We heard of no twins at either village, though we obtained the Eskimo word for twins. It was impossible to learn with certainty the age at which the women first bear children, from the impossibility of learning the age of any individuals in the absence of any fixed method of reckoning time. Dr. Simpson states that they do not commonly bear children before the age of 20,² and we certainly saw no mothers who appeared younger than this. We knew of but five cases of pregnancy in the two villages during the 2 years of our stay. Of these, one suffered miscarriage, and of the other four, only two of the infants lived more than a short time. It is exceedingly difficult, for the reasons stated above, to form any estimate of the age to which these people live, though it is natural to suppose that the arduous and often precarious existence which they lead must prevent any great longevity. Men and women who appeared to be 60 or over were rare. Yûks'ñā, the so-called "chief" of Nuwûk, who was old enough to be a man of considerable influence at the time the *Plover* wintered at Point Barrow (1852-54), was in 1881 a feeble, bowed, tottering old man, very deaf and almost blind, but with his mental faculties apparently unimpaired. Gray hair appears uncommon. Even the oldest are, as a rule, but slightly gray.

PATHOLOGY.

Diseases of the respiratory and digestive organs are the most frequent and serious ailments from which they suffer. The former are most prevalent toward the end of summer and early in winter, and are due to the natives sleeping on the damp ground and to their extreme carelessness in exposing themselves to drafts of wind when overheated. Nearly everyone suffers from coughs and colds in the latter part of August, and many deaths occur at this season and the beginning of winter from a disease which appears to be pneumonia. A few cases, one fatal, of hemorrhage of the lungs were observed, which were probably aggravated by the universal habit of inhaling tobacco smoke. The people suffer from diarrhea, indigestion, and especially from constipation.

Gonorrhœa appears common in both sexes, but syphilis seems to be unknown in spite of the promiscuous intercourse of the women with the whalers. One case of uterine hemorrhage was observed. Cutaneous diseases are rare. A severe ulcer on the leg, of long standing, was cured by our surgeon, to whose observations I am chiefly indebted for what I have to say about the diseases of these people; and one man had lost the cartilage of his nose and was marked all over the body with hideous scars from what appeared to be some form of scrofulous disease. A single case of tumor on the deltoid muscle was observed. Rheumatism is rather frequent. All are subject to snow blindness in the spring, and

¹Op. cit., p. 254.

²Op. cit. p. 254.

sores on the face from neglected frost bites are common. Many are blind in one eye from what appears to be cataract or leucoma, but only one case of complete blindness was noticed. Dr. Sutherland states that he does not recollect a single instance of total blindness among the Eskimo that he saw in Baffin Land, and expresses the opinion that "An individual in such a state would be quite unfit for the life of toil and hardship to which the hardy Esquimaux is exposed. The neglect consequent upon this helpless condition most probably cuts off its afflicted objects."¹

This seems quite reasonable on a priori grounds, but nevertheless the blind man at Cape Smyth had lived to middle age in very comfortable circumstances, and though supported to a great extent by his relatives he was nevertheless able to do a certain share of work, and had the reputation of being a good paddler for a whaling umiak.

Injuries are rare. One man had lost both feet at the ankle and moved about with great ease and rapidity on his knees. All are subject to bleeding at the nose and usually plug the bleeding nostril with a bunch of deer hair.²

This habit, as it has been termed; of vicarious hemorrhage seems to be characteristic of the Eskimo race wherever they have been met with, and has been supposed to be a process of nature for relieving the fullness of the circulatory system caused by their exclusively animal diet.³

Natural deformities and abnormalities of structure are uncommon, except strabismus, which is common and often, at least, congenital. One boy in Utkiavwñ had his forehead twisted to one side, probably from some accident or difficulty during delivery. His intelligence did not seem to be impaired. The people are, as a rule, right handed, but that left-handed persons occasionally occur is shown by their having a word for a left-handed man. We also collected a "crooked knife," fitted for use with the left hand.⁴

PSYCHICAL CHARACTERISTICS.

As a rule they are quick-witted and intelligent, and show a great capacity for appreciating and learning useful things, especially mechanical arts. In disposition they are light-hearted and cheerful, not easily cast down by sorrow or misfortune, and though sometimes quick-tempered, their anger seldom lasts long.⁵ They have a very keen sense of humor, and are fond of practical jokes, which they take in good part,

¹Journ. Ethnol. Soc., vol. 4, p. 206.

²Compare what Davis wrote in 1586 of the Greenlanders: "These people are much given to bleed, and, therefore, stoppe theyr noses with deere hayre or the hayre of an clan." Hakluyt, Voyages, etc., 1589, p. 782.

³Egede, Greenland, p. 120; Crantz, vol. 1, p. 234 (Greenland); Southerland, Journ. Ethnol. Soc., vol. iv, p. 207 (Baffin Land); Chappell, "Hudson Bay," p. 74 (North Shore of Hudson Strait); Lyon, Journal, p. 18 (Hudson Strait); Franklin, 1st Exp., 1, p. 29 (Hudson Strait); Parry, 2d Voy., p. 544 (Ighulik); Hooper, Tents of the Tuski, p. 185 (Plover Bay, Siberia).

⁴I have an indistinct recollection of having once seen a left-handed person from Nuwák.

⁵Holm calls the East Greenlanders "et meget livligt Folkefærd" Geogr. Tidskrift, vol. 8, p. 96.

even when practiced on themselves. They are generally peaceable. We did not witness a single quarrel among the men during the two years of our stay, though they told us stories of fatal quarrels in former years, in which firearms were used. Liquor may have been the cause of these fights, as it is said to have been of the only suicide I ever heard of among them, which I am informed by Capt. E. E. Smith, the whaling master already referred to, occurred in 1885 at Nuwük. Disagreements between man and wife, however, sometimes lead to blows, in which the man does not always get the best of it.

When the station was first established many of the natives began pilfering from our stores, but they soon learned that by so doing they cut themselves off from the privilege of visiting the station and enjoying the opportunity for trading which it afforded, and were glad to promise to refrain from the practice. This promise was very well observed, though I think wholly from feelings of self-interest, as the thieves when detected seemed to have no feeling of shame. Some, I believe, never yielded to the temptation. There was seldom any difficulty in obtaining restitution of stolen articles, as the thief's comrades would not attempt to shield him, but often voluntarily betrayed him. They acknowledged that there was considerable thieving on board of the ships, but the men of Utkiavwñ tried to lay the blame on the Nuwük people, and we may suppose that the charge was reciprocated, as was the case regarding the theft of the *Plorer's* sails.¹ We also heard of occasional thefts among themselves, especially of seals left on the ice or venison buried in the snow, but men who were said to be thieves did not appear to lose any social consideration.

Robbery with violence appears to be unknown. We never saw or heard of the "burglar-alarm" described by Dr. Simpson,² which I am inclined to believe was really a "demon trap" like that described by Lieut. Ray (see below, under Religion).

They are in the main truthful, though a detected lie is hardly considered more than a good joke, and considerable trickery is practiced in trading. For instance, soon after the station was established they brought over the carcass of a dog, with the skin, head, feet, and tail removed, and attempted to sell it for a young reindeer; and when we began to purchase seal-oil for the lamps one woman brought over a tin can nearly filled with ice, with merely a layer of oil on top.

Clothing and other articles made especially for sale to us were often very carelessly and hastily made, while their own things were always carefully finished.³

Their affection for each other, especially for their children, is strong,

¹ Simpson, *op. cit.*, p. 248.

² *Op. cit.*, p. 247.

³ Compare Nordenskiöld's experience in Siberia. The "Chukches" sold him skinned foxes with the head and feet cut off for hares. (*Vega*, vol. 1, p. 448), young ivory gulls for ptarmigan, and a dog's skull for a seal's (vol. 2, p. 137). Besides, "While their own things were always made with the greatest care, all that they did especially for us was done with extreme carelessness" (*ibid.*). The Eskimos at Hotham Inlet also tried to sell Capt. Beechey fishskins sewed together to represent fish. (*Voyage*, p. 285.)

though they make little show of grief for bereavement, and their minds are easily diverted by amusements. I am inclined to believe, however, from some cases I have observed, that grief is deeper and more permanent than superficial appearances would indicate.

Their curiosity is unbounded, and they have no hesitation in gratifying it by unlimited questioning. All who have read the accounts of the Eskimo character given by explorers in other parts of the Arctic regions will recognize this as a familiar trait. We also found the habit of begging at first quite as offensive among some of these people as other travelers have found it, but as they grew better acquainted with us they ceased to beg except for trifling things, such as a chew of tobacco or a match. Some of the better class never begged at all. Some of them seemed to feel truly grateful for the benefits and gifts received, and endeavored by their general behavior, as well as in more substantial ways, to make some adequate return. Others appeared to think only of what they might receive.

Hospitality is a universal virtue. Many of them, from the beginning of our acquaintance with them, showed the greatest friendliness and willingness to assist us in every way, while others, especially if there were many of them together, were inclined to be insolent, and knives were occasionally drawn in sudden fits of passion. These "roughs," however, soon learned that behavior of this sort was punished by prompt ostracism and threats of severer discipline, and before the first nine months were past we had established the most friendly relations with the whole village at Cape Smyth. Some of those who were at first most insolent became afterwards our best friends. Living as these people do at peace with their neighbors, they would not be expected to exhibit the fierce martial courage of many other savages, but bold whalers and venturesome ice-hunters can not be said to lack bravery.

In their dealings with white men the richer and more influential among them at least consider themselves their equals if not their superiors, and they do not appreciate the attitude of arrogant superiority adopted by many white men in their intercourse with so-called savages. Many of them show a grace of manner and a natural delicacy and politeness which is quite surprising. I have known a young Eskimo so polite that in conversing with Lieut. Ray he would take pains to mispronounce his words in the same way as the latter did, so as not to hurt his feelings by correcting him bluntly.¹

TRIBAL PHENOMENA.

We were unable to discover among these people the slightest trace of tribal organization or of division into gentes, and in this our observations agree with those of all who have studied the Eskimos elsewhere. They call themselves as a race "In'un," a term corresponding to the

¹Compare Vega, vol. 1, p. 489. The Chukches were "so courteous as not to correct but to adopt the mistakes in the pronunciation or meaning of words that were made on the *Vega*."

"Inuit" of other dialects, and meaning "people," or "human beings." Under this name they include white men and Indians as well as Eskimo, as is the case in Greenland and the Mackenzie River district, and probably also everywhere else, though many writers have supposed it to be applied by them only to their own race.

They have however special names for the former two races. The people of any village are known as "the inhabitants of such and such a place;" for instance, Nuwŭ'ŭmiun, "the inhabitants of the point;" Utkiavwŭmiun, "the inhabitants of Utkiavwŭn;" Kuŭmiun (in Greenlandic "Kungmiut"), "the people who live on the river." The people about Norton Sound speak of the northern Eskimo, especially those of Point Barrow and Cape Smyth, as "Kŭnmŭ'dlŭ," which is not a name derived from a location, but a sort of nickname, the meaning of which was not ascertained. The Point Barrow natives do not call themselves by this name, but apply it to those people whose winter village is at Demarcation Point (or Herschel Island, see above, p. 26). This word appears in the corrupted form "Kokmullit," as the name of the village at Nuwŭk on Petroff's map. Petroff derived his information regarding the northern coast at second-hand from people who had obtained their knowledge of names, etc., from the natives of Norton Sound.

The people of the two villages under consideration frequently go backward and forward, sometimes removing permanently from one village to the other, while strangers from distant villages sometimes winter here, so that it was not until the end of the second year, when we were intimately acquainted with everybody at Utkiavwŭn, that we could form anything like a correct estimate of the population of this village.¹ This we found to be about 140 souls. As well as we could judge, there were about 150 or 160 at Nuwŭk. These figures show a great decrease in numbers since the end of 1853, when Dr. Simpson² reckoned the population of Nuwŭk at 309. During the 2 years from September, 1881, to August, 1883, there were fifteen deaths that we heard of in the village of Utkiavwŭn alone, and only two children born in that period survived. With this ratio between the number of births and deaths, even in a period of comparative plenty, it is difficult to see how the race can escape speedy extinction, unless by accessions from without, which in their isolated situation they are not likely to receive.³

SOCIAL SURROUNDINGS.

CONTACT WITH UNCIVILIZED PEOPLE.

Other Eskimo.—The nearest neighbors of these people, as has been stated above, are the Eskimo living at Demarcation Point (or Herschel

¹See "Approximate Census, etc.," Report of Point Barrow Exp., p. 49.

²Op. cit., p. 237.

³Petroff's estimate (Report, etc., p. 4) of the number of natives on this part of the Arctic coast is much too large. He gives the population of "Ootiwakh" (Utkiavwŭn) as 225. Refuge Inlet (where there is merely a summer camp of Utkiavwŭmiun), 40, and "Kokmullit," 200. The supposed settlement of 50 inhabitants at the Colville River is also a mere summer camp, not existing in the winter.

Island), eastward, and those who inhabit the small villages between Point Belcher and Wainwright Inlet. These villages are three in number. The nearest to Point Belcher, Nuna'ria, is now deserted, and its inhabitants have established the new village of Sida'ru nearer the inlet. The third village consists of a few houses only, and is called A'túně. The people of these villages are so closely connected that they are sometimes spoken of collectively as Sida'ruñmiun. At a distance up the river, which flows into Wainwright Inlet, live the Ku'ñmiun, "the people who live on the river." These appear to be closely related to the people of the first village below Wainwright Inlet, which is named Kilauwitawñ. At any rate, a party of them who came to Cape Smyth in the spring of 1883 were spoken of indifferently as Kuñmiun or Kilauwitaw'ñmiun.

Small parties from all the villages occasionally visit Point Barrow during the winter for the purpose of trade and amusement, traveling with sledges along the land ice where it is smooth, otherwise along the edge of the cliffs; and similar parties from the two northern villages return these visits. No special article of trade appears to be sought at either village, though perhaps the southern villages have a greater supply of skins of the bearded seal, fit for making umiak covers, as I knew of a load of these brought up for sale, and in the spring of 1883 a party went down to the inlet in search of such skins. Single families and small parties like that from Kilauwitawñ, mentioned above, sometimes spend the whaling season at Point Barrow, joining some of the whaling crews at the northern villages. The people that we saw from these settlements were very like the northern Eskimos but many of them spoke a perceptibly harsher dialect, sounding the final consonants distinctly.

The people at Point Hope are known as Tikera'ñmiun "inhabitants of the forefinger (Point Hope)," and their settlement is occasionally visited by straggling parties. No natives from Point Hope came north during the 2 years of our stay, but a party of them visited the *Plover* in 1853.¹ We found some people acquainted by name with the Kuwú'ñmiun and Silaw'ñmiun of the Kuwúk (Kowak or "Putnam") and Silawik Rivers emptying into Hotham Inlet, and one man was familiar with the name of Sisualñ, the great trading camp at Kotzebue Sound. We were unable to find that they had any knowledge of Asia ("Kokhlitnuna,") or the Siberian Eskimo, but this was probably due to lack of properly directed inquiries, as they seem to have been well informed on the subject in the *Plover's* time.²

With the people of the Nu'naták (Inland) River, the Nunatañmiun, they are well acquainted, as they meet them every summer for purposes of trading, and a family or two of Nunatañmiun sometimes spend the

¹Maguire, NW. Passage, p. 384.

²It is to be regretted that the expedition was not supplied with a copy of Dr. Simpson's excellent paper, as much valuable information was missed for lack of suggestions as to the direction of inquiries.

winter at the northern villages. One family wintered at Nuwük in 1881-'82, and another at Utkiavwñ the following winter, while a widower of this "tribe" was also settled there for the same winter, having married a widow in the village. We obtained very little definite information about these people except that they came from the south and descended the Colville River. Our investigations were rendered difficult by the engrossing nature of the work of the station, and the trouble we experienced, at first, in learning enough of the language to make ourselves clearly understood. Dr. Simpson was able to learn definitely that the homes of these people are on the Nunatäk and that some of them visit Kotzebue Sound in the summer, while trading parties make a portage between the Nunatäk and Colville, descending the latter river to the Arctic Ocean.¹ I have been informed by the captain of one of the American whalers that he has, in different seasons, met the same people at Kotzebue Sound and the mouth of the Colville. We also received articles of Siberian tame reindeer skin from the east, which must have come across the country from Kotzebue Sound.

These people differ from the northern natives in some habits, which will be described later, and speak a harsher dialect. We were informed that in traveling east after passing the mouth of the Colville they came to the Kûñmû'dllñ ("Kangmali enyuin" of Dr. Simpson and other authors) and still further off "a great distance" to the Kupûñ or "Great River"—the Mackenzie—near the mouth of which is the village of the Kupûñmiun, whence it is but a short distance inland to the "great house" (iglu'kpük) of the white men on the great river (probably Fort Macpherson). Beyond this we only heard confused stories of people without posteriors and of sledges that run by themselves without dogs to draw them. We heard nothing of the country of Kitiga'ru² or of the stone-lamp country mentioned by Dr. Simpson.³ The Kûñmû'dllñ are probably, as Dr. Simpson believes, the people whose winter houses were seen by Franklin at Demarcation Point,⁴ near which, at Icy Reef, Hooper also saw a few houses.⁵

As already stated, Capt. E. E. Smith was informed by the natives that there is now no village farther west than Herschel Island, where there is one of considerable size. If he was correctly informed, this must be a new village, since the older explorers who passed along the coast found only a summer camp at this point. He also states that he found large numbers of ruined iglus on the outlying sandy islands along the coast, especially near Anxiety Point. We have scarcely any information about these people, as the only white men who have seen them had little intercourse with them in passing along the coast.⁶ The

¹ Op. cit., pp. 234 and 236.

² This was the name of a girl at Nuwük.

³ Op. cit., p. 269.

⁴ Second Exp., p. 142.

⁵ Tents of the Tuski, p. 255.

⁶ All the published information there is about them from personal observation can be found in Franklin, Second Exp., p. 142; T. Simpson, Narrative, pp. 118-123; and Hooper, Tents, etc., pp. 255-257 and 260.

Point Barrow people have but slight acquaintance with them, as they see them only a short time each summer. Captain Smith, however, informs me that in the summer of 1885 one boat load of them came back with the Point Barrow traders to Point Barrow, where he saw them on board of his ship. There was a man at Utkiavwñ who was called "the Kûñmû'dlñ." He came there when a child, probably, by adoption, and was in no way distinguishable from the other people.

Father Petitot appears to include these people in the "Tapèømeut" division of his "Tchiglit" Eskimo, whom he loosely describes as inhabiting the coast from Herschel Island to Liverpool Bay, including the delta of the Mackenzie,¹ without locating their permanent villages. In another place, however, he excludes the "Tapèømeut" from the "Tchiglit," saying, "Dans l'ouest, les Tchiglit communiquaient avec leurs plus proches voisins les Tapèømeut,"² while in a third place³ he gives the country of the "Tchiglit" as extending from the Coppermine River to the Colville, and on his map in the same volume, the "Tareor-meut" are laid down in the Mackenzie delta only. According to his own account, however, he had no personal knowledge of any Eskimo west of the Mackenzie delta. These people undoubtedly have a local name derived from that of their winter village, but it is yet to be learned.

It is possible that they do consider themselves the same people with the Eskimo of the Mackenzie delta, and call themselves by the general name of "Tapèømeut" (= Taxaiomiun in the Point Barrow dialect), "those who live by the sea." That they do not call themselves "Kûñmû'dlñ" or "Kanmali-enyuin" or "Kangmaligmeut" is to my mind quite certain. The word "Kûñmû'dlñ," as already stated, is used at Norton Sound to designate the people of Point Barrow (I was called a "Kûñmû'dlñ" by some Eskimo at St. Michaels because I spoke the Point Barrow dialect), who do not recognize the name as belonging to themselves, but have transferred it to the people under consideration. Now, "Kûñmû'dlñ" is a word formed after the analogy of many Eskimo words from a noun kûñmæ and the affix lñ or dlñ (in Greenlandic lik), "one who has a —." The radical noun, the meaning of which I can not ascertain, would become in the Mackenzie dialect kpagmapk (using Petitot's orthography), which with -lik in the plural would make kpagmalit. (According to Petitot's "Grammaire" the plural of -lik in the Mackenzie dialect is -lit, and not -gdlit, as in Greenlandic). This is the name given by Petitot on his map to the people of the Anderson River,⁴ while he calls the Anderson River itself Kpagmalik.⁵ The father, however, had but little personal knowledge of the natives of the Anderson, having made but two, apparently brief, visits to their village in 1865, when he first made the acquaintance of the Eskimo. He afterwards became fairly intimate with the Eskimo of the Mackenzie

¹ Monographie, p. xi.

² Ibid, p. xvi.

³ Bull. de la Société de Géographie, 6^e sér., vol. 10, p. 256.

⁴ See also Monographie, etc., p. xi, where the name is spelled Kpagmalit

⁵ Vocabulaire, etc., p. 76.

delta, parties of whom spent the summers of 1869 and 1870 with him. From these parties he appears to have obtained the greater part of the information embodied in his *Monographie* and *Vocabulaire*, as he explicitly states that he brought the last party to Fort Good Hope "autant pour les instruire à loisir que pour apprendre d'eux leur idiome."¹ Nothing seems to me more probable than that he learned from these Mackenzie people the names of their neighbors of the Anderson, which he had failed to obtain in his flying visits 5 years before, and that it is the same name, "Kûñmû'dlîñ," which we have followed from Norton Sound and found always applied to the people just beyond us. Could we learn the meaning of this word the question might be settled, but the only possible derivation I can see for it is from the Greenlandic *karmaK*, a wall, which throws no light upon the subject. Petitot calls the people of Cape Bathurst *Kp̄agmaliveit*, which appears to mean "the real Kûñmû'dlîñ" ("Kûñmû'dlîñ" and the affix *-vik*, "the real").

The Kupûñmiun appear to inhabit the permanent villages which have been seen near the western mouth of the Mackenzie, at Shingle Point² and Point Sabine,³ with an outlying village, supposed to be deserted, at Point Kay.⁴ They are the natives described by Petitot in his *Monographie* as the *Tap̄ōp̄ment* division of the Tchiglit, to whom, from the reasons already stated, most of his account seems to apply. There appears to me no reasonable doubt, considering his opportunities for observing these people, that *Tap̄ōp̄ment*, "those who dwell by the sea," is the name that they actually apply to themselves, and that Kupûñmiun, or Kopagmut, "those who live on the Great River," is a name bestowed upon them by their neighbors, perhaps their western neighbors alone, since all the references to this name seem to be traceable to the authority of Dr. Simpson. Should they apply to themselves a name of similar meaning, it would probably be of a different form, as, according to Petitot,⁵ they call the Mackenzie *Kup̄vik*, instead of *Kup̄k* or *Kup̄ñ*.

These are the people who visit Fort Macpherson every spring and summer,⁶ and are well known to the Hudson Bay traders as the Mackenzie River Eskimo. They are the Eskimo encountered between Herschel Island and the mouth of the Mackenzie by Franklin, by Dease and Simpson, and by Hooper and Pullen, all of whom have published brief notes concerning them.⁷

We are still somewhat at a loss for the proper local names of the last

¹ Bull. Soc. de Géog., 6^e sér., vol. 10, p. 39.

² T. Simpson, *Narrative*, p. 112.

³ Hooper, *Tents, etc.*, p. 264.

⁴ *Ibid.*, p. 263.

⁵ Bull. Soc. de Géog., 6^e sér., vol. 10, p. 182.

⁶ Petitot, *Monographie, etc.*, pp. xvi and xx.

⁷ Franklin, *2d Exp.*, pp. 99-101, 105-110, 114-119 and 123; T. Simpson, *Narrative*, pp. 104-112; Hooper, *Tents, etc.*, pp. 263-264. There is also a brief note by the Rev. W. W. Kirkby, in a "Journey to the Youcan." *Smithsonian Report for 1864*. These, with Petitot's in many respects admirable *Monographie*, comprise all the information regarding these people from actual observation that has been published. Richardson has described them at second hand in his "Searching Expedition" and "Polar Regions." The "Kopagmute" of Petroff (*Report, etc.*, p. 125) are a purely hypothetical people invented to fill the space between "the coast people in the north and the Athabascans in the south."

labret-wearing Eskimo, those, namely, of the Anderson River and Cape Bathurst. That they are not considered by the *Tapèøment* as belonging to the same "tribe" with themselves is evident from the names *Kpāgmalit* and *Kpāgmalivēit*, applied to them by Petitot. Sir John Richardson, the first white man to encounter them (in 1826), says that they called themselves "*Kitte-garrø-oot*,"¹ and the Point Barrow people told Dr. Simpson of country called "*Kit-te-ga'-ru*" beyond the Mackenzie.² These people, as well as the *Tapèøment*, whom they closely resemble, are described in Petitot's *Monographie*, and brief notices of them are given by Sir John Richardson,³ McClure,⁴ Armstrong,⁵ and Hooper.⁶ The arts and industries of these people from the Mackenzie to the Anderson, especially the latter region, are well represented in the National Museum by the collections of Messrs. Kennicott, Ross, and MacFarlane. The Point Barrow people say that the *Kupūñmiun* are "bad;"⁷ but notwithstanding this small parties from the two villages occasionally travel east to the Mackenzie, and spend the winter at the *Kupūñmiun* village, whence they visit the "great house," returning the following season. Such a party left Point Barrow June 15, 1882, declaring their intention of going all the way to the Mackenzie. They returned August 25 or 26, 1883, when we were in the midst of the confusion of closing the station, so that we learned no details of their journey. A letter with which they were intrusted to be forwarded to the United States through the Mackenzie River posts reached the Chief Signal Officer in the summer of 1883 by way of the Rampart House, on the Porcupine River, whence we received an answer by the bearer from the factor in charge. The Eskimo probably sent the letter to the Rampart House by the Indians who visit that post.

The intercourse between these people is purely commercial. Dr. Simpson, in the paper so often quoted, gives an excellent detailed description of the course of this trade, which agrees in the main with our observations, though we did not learn the particulars of time and distance as accurately as he did. There have been some important changes, however, since his time. A small party, perhaps five or six families, of "*Nunatañmiun*" now come every summer to Point Barrow about the end of July, or as soon as the shallow bays along shore are open. They establish themselves at the summer camping ground at *Pérnyø*, at the southwest corner of Elson Bay, and stay two or three weeks, trading with the natives and the ships, dancing, and shooting ducks. The eastward-bound parties seem to start a little earlier than formerly (July 7, 1853, July 3, 1854,⁸ June 18, 1882, and June 29, 1883). From all accounts their rela-

¹ Franklin, 2d Exp., p. 203.

² *Ibid.*, p. 269.

³ Franklin, 2d Exp., pp. 193, 203 and 230; *Searching Exp.*, and *Polar Regions*, p. 300.

⁴ N. W. Passage, pp. 84-98.

⁵ *Personal Narrative*, p. 176.

⁶ *Tents, etc.*, pp. 343-348.

⁷ Compare what Petitot has to say—*Monographie, etc.*, p. xiii and *passim*—about the turbulent and revengeful character of the "*Tchigliit*."

⁸ Dr. Simpson, *op. cit.*, p. 264.

tions with the eastern people are now perfectly friendly. We heard nothing of the precautionary measures described by Dr. Simpson,¹ and the women talked frequently of their trading with the Kûnmû'dlîñ and even with the Kupûñmiun.² We did not learn definitely whether they met the latter at Barter Point or whether they went still farther east.

Some of the Point Barrow parties do not go east of the Colville. The articles of trade have changed somewhat in the last 30 years, from the fact that the western natives can now buy directly from the whalers iron articles, arms, and ammunition, beads, tobacco, etc. The Nunatañmiun now sell chiefly furs, deerskins, and clothing ready made from them, woodenware (buckets and tubs), willow poles for setting nets, and sometimes fossil ivory. The double-edged Siberian knives are no longer in the market and appear to be going out of fashion, though a few of them are still in use. Ready-made stone articles, like the whetstones mentioned by Dr. Simpson,³ are rarely, if ever, in the market. We did not hear of the purchase of stone lamps from the eastern natives. This is probably due to a cessation of the demand for them at Point Barrow, owing to the falling off in the population.

The Kûnmû'dlîñ no longer furnish guns and ammunition, as the western natives prefer the breech-loading arms they obtain from the whalers to the flintlock guns sold by the Hudson Bay Company. The trade with these people seems to be almost entirely for furs and skins, notably black and red fox skins and wolverine skins. Skins of the narwhal or beluga are no longer mentioned as important articles of trade.

In return for these things the western natives give sealskins, etc., especially oil, as formerly, though I believe that very little, if any, whalebone is now carried east, since the natives prefer to save it for trading with the ships in the hope of getting liquor, or arms and ammunition, and various articles of American manufacture, beads, kettles, etc. I was told by an intelligent native of Utkiavwîñ that brass kettles were highly prized by the Kupûñmiun, and that a large one would bring three wolverine skins,⁴ three black foxskins, or five red ones. One woman was anxious to get all the empty tin cans she could, saying that she could sell them to the Kûnmû'dlîñ for a foxskin apiece. We were told that the eastern natives were glad to buy gun flints and bright-colored handkerchiefs, and that the Nunatañmiun wanted blankets and playing-cards.

Indians.—They informed us that east of the Colville they sometimes met "Itkû'dlîñ," people with whom they could not converse, but who were friendly and traded with them, buying oil for fox skins. They were said to live back of the coast between the Colville and the Mackenzie, and were described as wearing no labrets, but rings in their ears and noses. They wear their hair long, do not tonsure the crown, and are dressed in jackets of skin with the hair removed, without hoods, and

¹Op. cit., p. 265.

²In the Plover's time they were left a day's journey in the rear.

³Op. cit., p. 266.

⁴T. Simpson saw iron kettles at Camden Bay which had been purchased from the western natives at two wolverine skins apiece. Narrative, p. 171.

ornamented with beads and fringe. We saw one or two such jackets in Utkiavwīū apparently made of moose skin, and a few pouches of the same material, highly ornamented with beads. They have long flint-lock guns, white man's wooden pipes, which they value highly, and axes—not adzes—with which they "break many trees." We easily understood from this description that Indians were meant, and since our return I have been able to identify one or two of the tribes with tolerable certainty.

They seem better acquainted with these people than in Dr. Simpson's time, and know the word "kūtchin," people, in which many of the tribal names end. We did not hear the names Ko'yukan or Itkalya'ruin which Dr. Simpson learned, apparently from the Nunatañmiun.¹ I heard one man speak of the Kūtcha Kutchin, who inhabit the "Yukon from the Birch River to the Kotlo River on the east and the Porcupine River on the north, ascending the latter a short distance."²

One of the tribes with which they have dealings is the "Rat Indians" of the Hudson Bay men, probably the Vunta'-Kūtchin,³ from the fact that they visit Fort Yukon. These are the people whom Capt. Maguire met on his unsuccessful sledge journey to the eastward to communicate with Collinson. The Point Barrow people told us that "Magwa" went east to see "Colli'k-sina," but did not see him, only saw the Itkūdlīū. Collinson,⁴ speaking of Maguire's second winter at Point Barrow, says: "In attempting to prosecute the search easterly, an armed body of Indians of the Koyukun tribe were met with, and were so hostile that he was compelled to return." Maguire himself, in his official report,⁵ speaks of meeting *four* Indians who had followed his party for several days. He says nothing of any hostile demonstration; in fact, says they showed signs of disappointment at his having nothing to trade with them, but his Eskimo, he says, called them Koyukun, which he knew was the tribe that had so barbarously murdered Lieut. Barnard at Nulato in 1851. Moreover, each Indian had a musket, and he had only two with a party of eight men, so he thought it safer to turn back. However, he seems to have distributed among them printed "information slips," which they immediately carried to Fort Yukon, and returning to the coast with a letter from the clerk in charge, delivered it to Capt. Collinson on board of the *Enterprise* at Barter Island, July 18, 1854. The letter is as follows:

FORT YUCCON, June 27, 1854.

The printed slips of paper delivered by the officers of H. M. S. *Plover* on the 25th of April, 1854, to the Rat Indians were received on the 27th of June, 1854, at the Hudson Bay Company's establishment, Fort Yuccon. The Rat Indians are in the

¹ The inland Eskimo also call them Ko'yu-kan, and divide them into three sections or tribes. * * * One is called It-ka-lyi [apparently the plural of Itkūdlīū]. * * * the second It-ka-lyi'ruin [different or other Itkūdlīū], op. cit., p. 269.

² Dall, *Cont. to N. A. Ethn.*, vol. 1, p. 30, where they are identified with Itkalyaruin of Simpson.

³ *Ibid.*, p. 31.

⁴ *Arctic Papers*, p. 119.

⁵ *Further papers, etc.*, pp. 905 et seq.

habit of making periodical trading excursions to the Esquimaux along the coast. They are a harmless, inoffensive set of Indians, ever ready and willing to render any assistance they can to the whites.

WM. LUCAS HARDISTY,
Clerk in charge.¹

Capt. Collinson evidently never dreamed of identifying this "harmless, inoffensive set of Indians" with "an armed body of Indians of the Koyukun tribe." It is important that his statement, quoted above, should be corrected lest it serve as authority for extending the range of the Koyukun Indians² to the Arctic Ocean. The Point Barrow people also know the name of the U'na-kho-tānā,³ or En'akotina, as they pronounce it. Their intercourse with all these Indians appears to be rather slight and purely commercial. Friendly relations existed between the Rat Indians and the "Eskimos who live somewhere near the Colville" as early as 1849,⁴ while it was still "war to the knife" between the Peel River Indians and the Kupūmiun.⁵

The name Itkū'dllū, of which I't-ka-lyi of Dr. Simpson appears to be the plural, is a generic word for an Indian, and is undoubtedly the same as the Greenland word erkilek—plural erkigdlit—which means a fabulous "inlander" with a face like a dog. "They are martial spirits and inhuman foes to mankind; however, they only inhabit the east side of the land."⁶ Dr. Rink⁷ has already pointed out that this name is in use as far as the Mackenzie River—for instance, the Indians are called "eert-kai-lee" (Parry), or "it-kagh-lie" (Lyon), at Fury and Hecla Strait; ik-kil-lin (Gilder), at the west shore of Hudson Bay, and "itkpe'le'it" (Petitot) at the Mackenzie. Petitot also gives this word as itkpe'lit in his vocabulary (p. 42.) These words, including the term Ingalik, or In-ka-lik, applied by the natives of Norton Sound to the Indians,⁸ and which Mr. Dall was informed meant "children of a louse's egg," all appear to be compounds of the word erkeK, a louse egg, and the affix lik. (I suspect erkilek, from the form of its plural, to be a corruption of "erkilik," since there is no recognized affix -lek in Greenlandic.)

Petitot⁹ gives an interesting tradition in regard to the origin of this name: "La tradition Innok dédaigne de parler ici des Peaux-Rouges. L'ayant fait observer à mon narrateur *Arviuna*: 'Oh!' me répondait-il, 'il ne vaut pas la peine d'en parler. Ils naquirent aussi dans l'ouest, sur l'île du Castor, des larves de nos poux. C'est pourquoi nous les nommons Itkpe'le'it.'"

CONTACT WITH CIVILIZED PEOPLE.

Until the visit of the *Blossom's* barge in 1826 these people had never seen a white man, although they were already in possession of tobacco and articles of Russian manufacture, such as copper kettles, which they

¹ Arctic Papers, p. 144.

² Koyū'ku'kh-otā'nā, Dall, Cont. to N. A. Eth., p. 27.

³ Ibid., p. 28.

⁴ Hooper, Tents, etc., p. 276.

⁵ Ibid., p. 273.

⁶ Crantz, vol. 1, p. 208.

⁷ Journ. Anthropol. Inst., 1885, p. 244.

⁸ Dall, Alaska, p. 28, and Contrib., vol. 1, p. 25.

⁹ Monographie, p. xxiv.

had obtained from Siberia by way of the Diomedes. Mr. Elson's party landed only at Refuge Inlet, and had but little intercourse with the natives. His visit seemed to have been forgotten by the time of the *Plover's* stay at Point Barrow, though Dr. Simpson found people who recollected the visit of Thomas Simpson in 1837.¹ The latter, after he had left the boats and was proceeding on foot with his party, first met the Nuwūñmiun at Point Tangent, where there was a small party encamped, from whom he purchased the umiak in which he went on to Point Barrow. He landed there early in the morning of August 4, and went down to the summer camp at Pernyæ, where he stayed till 1 o'clock in the afternoon, trading with the natives and watching them dance. On his return to Point Tangent some of the natives accompanied him to Boat Extreme, where he parted from them August 6, so that his whole intercourse with them was confined to less than a week.²

The next white men who landed at Point Barrow were the party in the *Plover's* boats, under Lieuts. Pullen and Hooper, on their way to the Mackenzie, and the crew of Mr. Sheddon's yacht, the *Nancy Dawson*, in the summer of 1849. The boats were from July 29 to August 3 getting from Cape Smyth past Point Barrow, when the crews were ashore for a couple of days and did a little trading with the natives, whom they found very friendly. They afterwards had one or two skirmishes with evil-disposed parties of Nuwūñmiun returning from the east in the neighborhood of Return Reef. The exploring ships *Enterprise* and *Investigator* also had casual meetings with the natives, who received tobacco, etc., from the ships.

The depot ship *Plover*, Commander Maguire, spent the winters of 1852-'53 and 1853-'54 at Point Barrow, and the officers and crew, after some misunderstandings and skirmishes, established very friendly and sociable relations with the natives. The only published accounts of the *Plover's* stay at Point Barrow are Commander Maguire's official reports, published in the Parliamentary Reports (Blue Books) for 1854, pp. 165-185, and 1855, pp. 905 et seq., and Dr. Simpson's paper, already mentioned. Maguire's report of the first winter's proceedings is also published as an appendix to Sherard Osborne's "Discovery of the North-west Passage."

We found that the elder natives remembered Maguire, whom they called "Magwa," very well. They gave us the names of many of his people and a very correct account of the most important proceedings, though they did not make it clear that the death of the man mentioned in his report was accidental. They described "Magwa" as short and fat, with a very thick neck, and all seemed very much impressed with the height of his first lieutenant, "Epi'ana" (*Vernon*), who had "lots of guns."

It was difficult to see that the *Plover's* visit had exerted any permanent influence on these people. In fact, Dr. Simpson's account of their habits and customs would serve very well for the present time, except

¹ Op. cit., p. 264.

² Narrative, pp. 146-168.

in regard to the use of firearms. They certainly remembered no English. Indeed, Dr. Simpson says¹ that they learned hardly any. The *Plover's* people probably found it very easy to do as we did and adopt a sort of jargon of Eskimo words and "pigeon English" grammar for general intercourse. Although, according to the account of the natives, there was considerable intercourse between the sailors and the Eskimo women, there are now no people living at either village who we could be sure were born from such intercourse, though one woman was suspected of being half English. She was remarkable only for her large build, and was not lighter than many pure-blooded women.

Since 1854, when the first whalers came as far north as the Point, there has hardly been a season in which ships have not visited this region, and for a couple of months every year the natives have had considerable intercourse with the whites, going off to the ships to trade, while the sailors come ashore occasionally. We found that they usually spoke of white men as "kabluna;" but they informed us that they had another word, "tû'n-nyln," which they used to employ among themselves when they saw a ship. Dr. Simpson² says that they learned the word "kabluna" from the eastern natives, but that the latter (he gives it Tan'-ning or Tan'-gin) came from the Nunata/ñmiun. He supposes it to apply to the Russians, who had regular bath days at their posts, and says it is derived from tan-nikh-lu-go, to wash or cleanse the person.

The chief change resulting from their intercourse with the whites has been the introduction of firearms. Nearly all the natives are now provided with guns, some of them of the best modern patterns of breech-loaders, and they usually succeed in procuring a supply of ammunition. This is in some respects a disadvantage, as the reindeer have become so wild that the natives would no longer be able to procure a sufficient number of them for food and clothing with their former appliances, and they are thus rendered dependent on the ships. On the other hand, with a plentiful supply of ammunition it is easier for them to procure abundance of food, both deer and seals, and they are less liable to famine than in former times.

There is no reason to fear, as has been suggested, that they will lose the art of making any of their own weapons except in the case of the bow. With firearms alone they would be unable to obtain any seals, a much more important source of food than the reindeer, and their own appliances for sealing are much better than any civilized contrivances. Although they have plenty of the most improved modern whaling gear, they are not likely to forget the manufacture of their own implements for this purpose, as this important fishery is ruled by tradition and superstition, which insists that at least one harpoon of the ancient pattern must be used in taking every whale. All are now rich in iron, civilized tools, canvas and wreck wood, and in this respect their condition is improved.

¹ Op. cit., p. 251.

² Op. cit., p. 271.

They have, however, adopted very few civilized habits. They have contracted a taste for civilized food, especially hard bread and flour, but this they are unable to obtain for 10 months of the year, and they are thus obliged to adhere to their former habits. In fact, except in regard to the use of firearms and mechanics' tools, they struck me as essentially a conservative people.

Petroff¹ makes the assertion that in late years their movements have been guided chiefly by those of the whalers. As far as we could observe they have not changed the course or time of their journeys since Dr. Simpson's time, except that they have given up the autumn whaling, possibly on account of the presence of the ships at that season. Of course, men who are rich in whalebone now stay to trade with the ships, while those who have plenty of oil go east. They are not absolutely dependent on the ships for anything except ammunition, and even during the short time the ships are with them they hardly neglect their own pursuits.

The one unmitigated evil of their intercourse with the whites has been the introduction of spirits. Apart from the direct injury which liquor does to their health, their passionate fondness for it leads them to barter away valuable articles which should have served to procure ammunition or other things of permanent use. It is to be hoped, however, that the liquor traffic is decreasing. The vigilance of the revenue cutter prevents regular whisky traders from reaching the Arctic Ocean, and public opinion among the whaling captains seems to be growing in the right direction.

Another serious evil, which it would be almost impossible to check, is the unlimited intercourse of the sailors with the Eskimo women. The whites can hardly be said to have introduced laxity of sexual morals, but they have encouraged a natural savage tendency, and have taught them prostitution for gain, which has brought about great excesses, fortunately confined to a short season. This may have something to do with the want of fertility among the women.

Our two years of friendly relations with these people were greatly to their advantage. Not only were our house and our doings a constant source of amusement to them, but they learned to respect and trust the whites. Without becoming dependent on us or receiving any favors without some adequate return either in work or goods, they were able to obtain tobacco, hard bread, and many other things of use to them, all through the year. Our presence prevented their procuring more than trifling quantities of spirits, and though the supply of breech-loading ammunition was pretty well cut off, they could get plenty of powder and shot for their muzzle loaders. The abundance of civilized food was undoubtedly good for them, and our surgeon was able to give them a great deal of help in sickness.

In all their intercourse with the whites they have learned very little

¹Report, etc., p. 125.

English, chiefly a few oaths and exclamations like "Get out of here," and the words of such songs as "Little Brown Jug" and "Shoo Fly," curiously distorted. They have as a rule invented genuine Eskimo words for civilized articles which are new to them.¹ Even in their intimate relations with us they learned but few more phrases and in most cases without a knowledge of their meaning.

There are a few Hawaiian words introduced by the Kanaka sailors on the whaleships, which are universally employed between whites and Eskimo along the whole of the Arctic coast, and occasionally at least among the Eskimo themselves. These are *kau-kau*,² food, or to eat; *hana-hana*, work; *pūnī-pūnī*, coitus, and *pau*, not. *Wahīne*, woman, is also used, but is less common. Another foreign word now universally employed among them in their intercourse with the whites, and even, I believe, among themselves, is "kuniŭ" for woman or wife. They themselves told us that it was not an Eskimo word—"When there were no white men, there was no *kuniŭ*"—and some of the whalers who had been at Hudson Bay said it was the "Greenland" word for woman. It was not until our return to this country that we discovered it to be the Danish word *kone*, woman, which in the corrupted form "coony" is in common use among the eastern Eskimo generally in the jargon they employ in dealing with the whites. *Kuniŭ* is "coony" with the suffix of the third person, and therefore means "his wife." It is sometimes used at Point Barrow for either of a married couple in the sense of our word "spouse."

NATURAL RESOURCES.

ANIMALS.

These people are acquainted with the following animals, all of which are more or less hunted, and serve some useful purpose.

Mammals.—The wolf, amáxo (*Canis lupus griseo-albus*), is not uncommon in the interior, but rarely if ever reaches the coast. Red and black foxes, kaiā'ktāk (*Vulpes fulvus fulvus* and *argentatus*), are chiefly known from their skins, which are common articles in the trade with the eastern natives, and the same is true of the wolverine, ka'vwīŭ (*Gulo luscus*), and the marten, kabweatyia (*Mustela americana*). The arctic fox, tēŕīgūniē (*Vulpes lagopus*), is very abundant along the coast, while the ermine (*Putorius erminea*) and Parry's spermophile (*Spermophilus empetra empetra*) are not rare. The last is called siksīŭ. Lemmings, a'vwīŭē, of two species (*Cuniculus torquatus* and *Myodes obensis*) are

¹ See list of "New Words," Rep. Point Barrow Exp., p. 57.

² The history of this word, which also appears as a Chuckch word in some of the vocabularies collected by Nordenskiöld's expedition, is rather curious. Chamisso (*Kotzebue's Voyage*, vol. 2, p. 392, foot-note) says that this is a Hawaiian corruption of the well-known "Pigeon-English" (he calls it Chinese) word "chow-chow" recently (in 1816-17) adopted by the Sandwich Islanders from the people with whom they trade. I am informed that the word is not of Chinese origin, but probably came from India, like many other words in "Pigeon-English." Chamisso also calls *pūnī-pūnī* a Chinese word, but I have been able to learn nothing of its origin.

very abundant some years, and they recognize a tiny shrewmouse (*Sorex forsteri*). This little animal is called *ugrúnæ*, a word corresponding to the name *ugssunguak* given to the same animal in Labrador, which, according to Kleinschmidt,¹ is an ironical application of the name of the largest seal, *ugssuk* (*ugru* at Point Barrow), to the smallest mammal known to the Eskimo. The same name is also applied at Point Barrow to the fossil ox, whose bones are sometimes found. The most abundant land animal, however, is the reindeer, *tū'ktu* (*Rangifer tarandus grœnlandicus*), which is found in winter in great herds along the upper waters of the rivers, occasionally coming down to the coast, and affords a very important supply of food.

The moose, *tū'ktuwūñ*, or "big reindeer" (*Alce machlis*), is well known from the accounts of the *Nunatañmiun*, who bring moose skins to trade. Some of the natives have been east to hunt the mountain sheep, *i'mnæ* (*Ovis canadensis dalli*), and all are familiar with its skin, horns, and teeth, which they buy of the eastern natives. The musk ox, *umñmau* (*Ovibos moschatus*), is known only from its bones, which are sometimes found on the tundra. Inland, near the rivers, they also find a large brown bear, *ā'kqlak*, which is probably the barren ground bear, while on the ice-pack, the polar bear, *nā'nu* (*Thalassarctos maritimus*), is not uncommon, sometimes making raids on the provision storehouses in the villages.

The most important sea animal is the little rough seal, *nētyik* (*Phoca fœtida*), which is very abundant at all seasons. Its flesh is the great staple of food, while its blubber supplies the Eskimo lamps, and its skin serves countless useful purposes. The great bearded seal, *úgru* (*Erignathus barbatus*), is less common. It is especially valued for its hide, which serves for covering the large boats and making stout harpoon lines. Two other species of seal, the harbor seal, *kasigia* (*Phoca vitulina*), and the beautiful ribbon seal, *kaixóllñ* (*Phoca fasciata*), are known, but both are uncommon, the latter very rare.

Herds of walrus, *ai'bwék* (*Odobænus obesus*), pass along the coast in the open season, generally resting on cakes of floating ice, and are pursued for their hides and ivory as well as their flesh and blubber. Whales, *akbwék*, of the species *Balæna mysticetus*, most pursued for its oil and whalebone, travel along the coast in the leads of open water above described from the middle of April to the latter part of June in large numbers, and return in the autumn, appearing about the end of August. White whales, *klélua* (*Delphinapterus* sp.), are not uncommon in the summer, and they say the narwhal, *tugállñ* (*Monodon monoceros*), is occasionally seen. They are also acquainted with another cetacean, which they call *áxlo*, and which appears from their description to be a species of *Orea*.

Birds.—In the spring, that is during May and the early part of June, vast flocks of migrating ducks pass to the northeast, close to the shore,

¹ Grœnlandsk Ordbog, p. 386.

a few only remaining to breed, and return at the end of the summer from the latter part of July to the end of September. Nearly all the returning birds cross the isthmus of Point Barrow at Pernyæ where the natives assemble in large numbers for the purpose of taking them. These migrating birds are mostly king ducks, *kĩñalĩñ* (*Somateria spectabilis*), Pacific eiders, *amau'liñ* (*S. v-nigra*), and long-tailed ducks, *a'dyigi'a*, *a'hadliñ* (*Clangula hyemalis*), with smaller numbers of the spectacled eider, *ka'waso* (*Arctonetta fischeri*), and Steller's ducks, *Ignikau'kto* (*Eniconetta stelleri*). At the rivers they also find numbers of pintails, *i'vwũgæ* (*Dafla acuta*), which visit the coast in small numbers during the migrations. Geese of three species, the American white-fronted goose, *nũ'glũgruæ* (*Anser albifrons gambeli*), the lesser snow-goose, *kũ'ño* (*Chen hyperborea*), and the black brant, *nũglũ'gnæ* (*Branta nigricans*), are not uncommon on the coast both during the migrations and the breeding season, but the natives find them in much greater abundance at the rivers, where they also find a species of swan, *ku'gru*, probably *Olor columbianus*, which rarely visits the coast.

Next in importance to the natives are the gulls, of which the Point Barrow gull, *nau'yæ* (*Larus barrovianus*), is the most abundant all through the season, though the rare rosy gull, *kã'ũmaxlu* (*Rhodostethes rosea*), appears in multitudes late in the autumn. The ivory gull (*Gavia alba*), *nariyalbwũñ*, and Sabine's gull, *yũkũ'drĩgũgi'æ* (*Xema Sabinii*), are uncommon, while the Arctic tern, *utyuta'kĩn* (*Sterna paradisea*), is rather abundant, especially about the sandspits of Nuwũk. All these species, particularly the larger ones, are taken for food.

Three species of loons are common: the great white-billed loon, *tu'dliñ* (*Urinator adamsi*), and the Pacific and red-throated divers (*U. pacificus* and *lumme*), which are not distinguished from each other but are both called *kã'ksau*. They also occasionally see the thick-billed guillemot *a'kpa* (*Uria lomvia arra*), and more often the sea-pigeon, *sẽkbwæk* (*Cephus mandtii*). The three species of jaegers (*Stercorarius pomarinus*, *parasiticus*, and *longicaudus*) are not distinguished from one another but are all called *isũñæ*. They pay but little attention to the numerous species of wading birds which appear in considerable abundance in the migrations and breeding season, but they recognize among them the turnstone, *tũl'gwa* (*Arenaria interpres*), the gray plover, *ki'raio'n* (*Charadrius squatarola*), the American golden plover, *tu'dliñ* (*C. dominicus*), the knot, *tu'awi'a* (*Tringa canutus*), the pectoral and Baird's sandpipers, (*T. maculata* and *bairdii*), both called *ai'bwũkiæ*, the red-backed sandpiper, *mẽkapĩñ* (*T. alpina pacifica*), the semipalmated sandpiper, *nĩwl-ĩwĩ'lũk* (*Ereunetes pusillus*), the buff-breasted sandpiper, *nu'dluayu* (*Tryngites subruficollis*), the red phalarope, *sabrañ* (*Chrymophilus fulicarius*), and the northern phalarope, *sabrañæ* (*Phalaropus lobatus*). The last is rare at Point Barrow, but they see many of them near the Colville. The little brown crane, *tut'drĩgæ* (*Grus canadensis*), is also rare at the Point, but they say they find many of them at the mouth of Kulu'grua.

Of land birds, the most familiar are the little snow bunting, *amaulige* (*Plectrophenax nivalis*), the first bird to arrive in the spring, the Lapland longspur, *néssau'dlige* (*Calcarius lapponicus*), and two species of grouse, the willow grouse (*Lagopus lagopus*) and the rock ptarmigan (*L. rupestris*), which are both called *akú'digín*. These two birds do not migrate, but are to be seen all winter, as is also the well known snowy owl, *u'kpík* (*Nyctea nyctea*). A gerfalcon, *kí'drígúmíñ* (*Falco rusticolus*), is also sometimes seen, and skins and feathers of the golden eagle, *tí'ñ-miákpák*, "the great bird" (*Aquila chrysaetos*), are brought from the east for charms and ornaments. The raven, *tulúe* (*Corvus corax sinuatus*), was not seen at Point Barrow, but the natives are familiar with it and have many of its skins for amulets. Several species of small land birds also occur in small numbers, but the natives are not familiar with them and call them all "*sú'ksaxíe*." This name appears to mean "wanderer" or "flutterer," and probably belongs, I believe, to the different species of redpolls (*Aegiothus*).

Fishes.—A few species only of fish are found in the salt water. Of these the most abundant are the little polar cod (*Boreogadus saida*), which is plentiful through the greater part of the year, and is often an important source of food, and the capelin, *añmú'grúñ* (*Mallotus villosus*), which is found in large schools close to the beach in the middle of summer. There are also caught sometimes two species of sculpins, *kú'naio* (*Cottus quadricornis* and *decastrensis*), and two species of *Lycodes*, *kú-graune* (*L. turnerii* and *coccineus*). In the gill nets at Elson Bay they also catch two species of salmon (*Onchorhynchus gorbuscha* and *nerka*) and a whitefish (*Coregonus laurettæ*) in small numbers, and occasionally a large trout (*Salvelinus malma*). The last-named fish they find sometimes in great numbers, near the mouth of the Colville.

The greatest quantities of fish are taken in the rivers, especially *Kuaru* and *Kulugrua*, by fishing through the ice in the winter. They say there are no fish taken in *Ikpikpúñ*, and account for this by explaining that the former two rivers freeze down to the bottom on the shallow bars inclosing deep pools in which the fish are held, while in the latter the ice never touches the bottom, so that the fish are free to run down to the sea. The species caught are the small *Coregonus laurettæ*, two large whitefish (*C. kennicottii* and *nelsoni*), and the burbot, *tita'liñ* (*Lota maculosa*). They speak of a fish, *sulukpatu'ga* (which appears to mean "wing-fn" and is applied in Greenland to a species of *Sebastes*), that is caught with the hook in *Kulugrua* apparently only in summer, and seems from the description to be Back's grayling (*Thymallus signifer*). In the river *Ku* is caught a smelt, *íthoa'nfñ* (*Osmerus dentex*). In the great lake, *Tá'syúkpúñ* (see above, p. 29), they tell of an enormous fish "as big as a *kaiak*." They gave it no name, but describe it as having a red belly and white flesh. One man said he had seen one 18 feet long, but another was more moderate, giving about 3 feet as the length of the longest he had seen.

Insects and other invertebrates.—Of insects, they recognize the troublesome mosquito, kiktoria (Culex spp.), flies, humblebees, and gadflies (Æestrus tarandi), both of which they seem much afraid of, and call i'gutyai, and the universal louse, ku'mæk. All the large winged insects, including the rare butterflies and moths and crane flies, are called tûkîlû'kica, or tûkîlûkîdja'ksûn, which is also the name of the yellow poppy (Papaver nudicaule). We were told that "by and by" the poppies would turn into "little birds" and fly away, which led us to suppose that there was some yellow butterfly which we should find abundant in the later summer, but we saw none either season. A small spider is sometimes found in the Eskimo houses, and is called pidrairu'ru, "the little braider." They pay but little attention to other invertebrates, but are familiar with worms, kupidro, a species of crab, kinau'ru, (Hyas latifrons), and the little branchipus, iritu'na (Greenlandic issitôrak, "the little one with big eyes"), of the fresh water-pools. Cockles (Buccinum, etc.) are called siu'tigo (Gr. sinterok, from siut, ear), and clams have a name which we failed to obtain. Jellyfish are called ipiaru'ru, "like bags." They say the "Kûñmudlñ" eat them!

PLANTS.

Few plants that are of any service to man grow in this region. The willows, ũ'kplk, of various species, which near the coast are nothing but creeping vines, are sometimes used as fuel, especially along the rivers, where they grow into shrubs 5 or 6 feet high. Their catkins are used for tinder and the moss, mû'nîk, furnishes wicks for the lamps. We could find no fruit that could be eaten. A cranberry (Vaccinium vitis-idaea) occurs, but produced no fruit either season. No use is made of the different species of grass, which are especially luxuriant around the houses at Utkiavwñ, where the ground is richly manured with various sorts of refuse,¹ though the species of mosses and lichens furnish the reindeer with food easily reached in the winter through the light covering of snow. Little attention is paid to the numerous, and sometimes showy, flowering plants. We learned but two names of flowers, the one mentioned above, tûkîlû'kica, tûkîlûkîdja'ksûn, which seemed to be applied to all striking yellow or white flowers, such as Papaver, Ranunculus, and Draba, and mai'sun, the bright pink Pedicularis. All the wood used in this region, except the ready-made woodenware and the willow poles obtained from the Nunatañmiun, comes from the drift on the beach. Most of this on the beach west of Point Barrow appears to come from the southwest, as the prevailing current along this shore is to the northeast, and may be derived from the large rivers flowing into Kotzebue Sound, since it shows signs of having been long in the water. The driftwood, which is reported to be abundant east of Point Barrow, probably comes from the great rivers emptying into the Arctic

¹ "The oil had acted as a manure on the soil, and produced a luxuriant crop of grass from 1 to 2 feet high" (village at Point Atkinson, east of the Mackenzie). Richardson Searching Exp., vol. 1. p. 254.

Ocean. This wood is sufficiently abundant to furnish the natives with all they need for fuel and other purposes, and consists chiefly of pine, spruce, and cottonwood, mostly in the form of water-worn logs, often of large size. Of late years, also, much wood of the different kinds used in shipbuilding has drifted ashore from wrecks.

MINERALS.

The people of this region are acquainted with few mineral substances, excluding the metals which they obtain from the whites. The most important are flint, slate, soapstone, jade, and a peculiar form of massive pectolite, first described by Prof. F. W. Clarke¹ from specimens brought home by our party. Flint, *ánma*, was formerly in great demand for arrow and spear heads and other implements, and according to Dr. Simpson² was obtained from the Nunatañmiun. It is generally black or a slightly translucent gray, but we collected a number of arrowheads, etc., made of jasper, red or variegated. A few crystals of transparent quartz, sometimes smoky, were also seen, and appeared to be used as amulets. Slate, *ulu'kse*, "material for a round knife," was used, as its name imports, for making the woman's round knife, and for harpoon blades, etc. It is a smooth clay slate, varying in hardness, and light green, red, purple, dark gray, or black in color. All the pieces of soft gray soapstone, *tuná'kte*, which are so common at both villages, are probably fragments of the lamps and kettles obtained in former years from the eastern natives. The jade is often very beautiful, varying from a pale or bright translucent green to a dark olive, almost black, and was formerly used for making adzes, whetstones, and occasionally other implements. The pectolite, generally of a pale greenish or bluish color, was only found in the form of oblong, more or less cylindrical masses, used as hammerheads. Both of these minerals were called *kau'dlo*, and were said to come "from the east, a long way off," from high rocky ground, but all that we could learn was very indefinite. Dr. Simpson was informed³ that the stones for making whetstones were brought from the Kuwük River, so that this jade is probably the same as that which is said to form Jade Mountain, in that region.

Bits of porphyry, syenite, and similar rocks are used for making labrets, and large pebbles are used as hammers and net sinkers. They have also a little iron pyrites, both massive and in the form of spherical concretions. The latter were said to come from the mouth of the Colville, and are believed by the natives to have fallen from the sky. Two other kinds of stone are brought from the neighborhood of Nu'ésüknan, partly, it appears, as curiosities, and partly with some ill defined mystical notions. The first are botryoidal masses of brown limonite, resembling bog iron ore, and the other sort curious concretions, looking like the familiar "clay stones," but very heavy, and apparently containing a

¹ U. S. Geol. Surv., Bull. 9, p. 9, 1884.

² Op. cit., p. 266.

³ Op. cit., p. 266.

great deal of iron pyrites. White gypsum, used for rubbing the flesh side of deerskins, is obtained on the seashore at a place called Tû'tyë, "one sleep" east from Point Barrow.

Bituminous coal, alu'a, is well known, though not used for fuel. Many small fragments, which come perhaps from the vein at Cape Beaufort,¹ are picked up on the beach. Shaly, very bituminous coal, broken into small square fragments, is rather abundant on the bars of Kulugrua, whence specimens were brought by Capt. Herendeen. A native of Wainwright Inlet gave us to understand that coal existed in a regular vein near that place, and told a story of a burning hill in that region. This may be a coal bed on fire, or possibly "smoking cliffs," like those seen by the *Investigator* in Franklin Bay.² We also heard a story of a lake of tar or bitumen, ádnung, said to be situated on an island a day's sail east of the point. Blacklead, mí'ñun, and red ocher are abundant and used as pigments, but we did not learn where they were obtained. Pieces of amber are sometimes found on the beach and are carried as amulets or (rarely) made into beads. Amber is called aúmæ, a word that in other Eskimo dialects, and probably in this also, means "a live coal." Its application to a lump of amber is quite a striking figure of speech.

CULTURE.

MEANS OF SUBSISTENCE.

FOOD.

Substances used for food.—The food of these people consists almost entirely of animal substances. The staple article of food is the flesh of the rough seal, of which they obtain more than of any other meat. Next in importance is the venison of the reindeer, though this is looked upon as a kind of dainty.³ Many well developed fœtal reindeer are brought home from the spring deer hunt and are said to be excellent eating, though we never saw them eaten. They also eat the flesh of the other three species of seal, the walrus, the polar bear, the "bowhead" whale, the white whale, and all the larger kinds of birds, geese, ducks, gulls, and grouse. All the different kinds of fish appear to be eaten, with the possible exception of the two species of *Lycodes* (only a few of these were caught, and all were purchased for our collection) and very little of a fish is wasted except the hardest parts. Walrus hide is sometimes cooked and eaten in times of scarcity. Mollusks of any kind are rarely eaten, as it is difficult to procure them. After a heavy gale in the autumn of 1881, when the beach was covered with marine animals, mostly lamellibranch mollusks with their shells and softer parts broken off by

¹Hooper found coal on the beach at Nuwûk in 1849, showing that this coal has not necessarily been thrown over from ships. *Tents of the Tuski*, p. 221.

²Discovery of the Northwest Passage, p. 100.

³The Eskimo of Iglulik "prefer venison to any kind of meat." Parry, *2d Voyage*, p. 510.

the violence of the surf, we saw one woman collect a lapful of these "clam-heads," which she said she was going to eat. The "blackskin" (epidermis) of the whale is considered a great delicacy by them, as by all the other Eskimo who are able to procure it, and they are also very fond of the tough white skin or gum round the roots of the whalebone.¹

We saw and heard nothing of the habit so generally noticed among other Eskimo and in Siberia of eating the half-digested contents of the stomach of the reindeer, but we found that they were fond of the fæces taken from the rectum of the deer. I find that this curious habit has been noticed among Eskimo only in two other places—Greenland in former times and Boothia Felix. The Greenlanders ate "the Dung of the Rein-deer, taken out of the Guts when they clean them; the Entrails of Partridges and the like Out-cast, pass for Dainties with them."² The dung of the musk ox and reindeer when fresh were considered a delicacy by the Boothians, according to J. C. Ross.³ The entrails of fowls are also considered a great delicacy and are carefully cooked as a separate dish.⁴

As far as our observations go these people eat little, if any, more fat than civilized man, and, as a rule, not by itself. Fat may occasionally be eaten (they are fond of the fat on the inside of duck skins), but they do not habitually eat the great quantities of blubber spoken of in some other places⁵ or drink oil, as the Hudson Bay Eskimo are said to do by Hall, or use it as a sauce for dry food, like the natives of Norton Sound. It is usually supposed and generally stated in the popular accounts of the Eskimo that it is a physiological necessity for them to eat enormous quantities of blubber in order to obtain a sufficient amount of carbon to enable them to maintain their animal heat in the cold climate which they inhabit. A careful comparison, however, of the reports of actual observers⁶ shows that an excessive eating of fat is not the rule, and is perhaps confined to the territory near Boothia Felix.

Eggs of all kinds, except, of course, the smallest, are eagerly sought for, but the smaller birds are seldom eaten, as it is a waste of time and ammunition to pursue them. We saw this people eat no vegetable substances, though they informed us that the buds of the willow were sometimes eaten. Of late years they have acquired a fondness for many kinds of civilized food, especially bread of any kind, flour, sugar, and molasses, and some of them are learning to like salt. They were very

¹Compare Hooper, *Tents, etc.* "This, which the Tuski call their sugar." p. 174; and Hall, *Arctic Researches*, p. 132 (Baffin Land).

²Egede, *Greenland*, p. 136.

³Appendix to Ross's 2d Voyage, p. xix.

⁴Compare the passage from Egede, just quoted, and also Kumlien, *Contributions, etc.*, p. 20, at Cumberland Gulf.

⁵For instance, Schwatka says that the Nētclik of King William Land devour enormous quantities of seal blubber, "noticeably more in summer than the other tribes," viz, those of the western shores of Hudson's Bay (*Science*, vol. 4, p. 544). Parry speaks of the natives of the Savage Islands, Hudson's Strait, eating raw blubber and sucking the oil remaining on the skins they had emptied (2d Voyage, p. 14).

⁶See for example Egede's *Greenland*, p. 134; Crantz, *History of Greenland*, vol. 1, p. 144; Dall, *Alaska, passim*; Hooper, *Tents of the Tuski*, p. 170; Nordenskiöld, *Vega*, p. 110.

glad to purchase from us corn-meal "mush" and the broken victuals from the table. These were, however, considered as special dainties and eaten as luncheons or as a dessert after the regular meal. The children and even some of the women were always on the watch for the cook's slop bucket to be brought out, and vied with the ubiquitous dogs in searching for scraps of food. Meat which epicures would call rather "high" is eaten with relish, but they seem to prefer fresh meat when they can get it.

Means of preparing food.—Food is generally cooked, except, perhaps, whale-skin and whale-gum, which usually seem to be eaten as soon as obtained, without waiting for a fire. Meat of all kinds is generally boiled in abundance of water over a fire of driftwood, and the broth thus made is drunk hot before eating the meat. Fowls are prepared for boiling by skinning them. Fish are also boiled, but are often eaten raw, especially in winter at the deer-hunting camps, when they are frozen hard. Meat is sometimes eaten raw or frozen. Lieut. Ray found one family in camp on Kulugrua who had no fire of any kind, and were eating everything raw. They had run out of oil some time before and did not like to spend time in going to the coast for more while deer were plentiful.

When traveling in winter, according to Lieut. Ray, they prefer frozen fish or a sort of pemmican made as follows: The marrow is extracted from reindeer bones by boiling, and to a quantity of this is added 2 or 3 pounds of crushed seal or whale blubber, and the whole beaten up with the hands in a large wooden bowl to the consistency of frozen cream. Into this they stir bits of boiled venison, generally the poorer portions of the meat scraped off the bone, and chewed up small by all the women and children of the family, "each using some cabalistic word as they cast in their mouthful."¹ The mass is made up into 2-pound balls and carried in little sealskin bags. Flour, when obtained, is made into a sort of porridge, of which they are very fond. Cooking is mostly done outside of the dwelling, in the open air in summer, or in kitchens opening out of the passageway in winter. Little messes only, like an occasional dish of soup or porridge, are cooked over the lamps in the house. This habit, of course, comes from the abundant supply of firewood, while the Eskimo most frequently described live in a country where wood is very scarce, and are obliged to depend on oil for fuel.

Time and frequency of eating.—When these people are living in the winter houses they do not, as far as we could learn, have any regular time for meals, but eat whenever they are hungry and have leisure. The women seem to keep a supply of cooked food on hand ready for any one to eat. When the men are working in the *kû'dyîgi*, or "club house," or when a number of them are encamped together in tents, as at the whaling camp in 1883, or the regular summer camp at *Pe'rnyû*, the women at intervals through the day prepare dishes of meat, which the

¹ Lieut. Ray's MS. notes.

men eat by themselves. When in the deer-hunting camps, according to Lieut. Ray, they eat but little in the morning, and can really be said to take no more than one full meal a day, which is eaten at night when the day's work is done.¹ When on the march they usually take a few mouthfuls of the pemmican above described before they start out in the morning, and rarely touch food again till they go into camp at night.

When a family returns from the spring deer hunt with plenty of venison they usually keep open house for a day or two. The women of the household, with sometimes the assistance of a neighbor or two, keep the pot continually boiling, sending in dishes of meat at intervals, while the house is full of guests who stay for a short time, eating, smoking, and chatting, and then retire to make room for others. Messes are sometimes sent out to invalids who can not come to the feast. One household in the spring of 1883 consumed in this way two whole reindeer in 24 hours. They use only their hands and a knife in eating meat, usually filling the mouth and cutting or biting off the mouthful. They are large eaters, some of them, especially the women, eating all the time when they have plenty, but we never saw them gorge themselves in the manner described by Dr. Kane (2d Grinnell Exp., *passim*) and other writers.

Their habits of hospitality prevent their laying up any large supply of meat, though blubber is carefully saved for commercial use, and they depend for subsistence, almost from day to day, on their success in hunting. When encamped, however, in small parties in the summer they often take more seals than they can consume. The carcasses of these, stripped of their skins and blubber, are buried in the gravel close to the camp, and dug up and brought home when meat becomes scarce in the winter.

DRINKS.

The habitual drink is water, which these people consume in great quantities when they can obtain it, and like to have very cold. In the winter there is always a lump of clean snow on a rack close to the lamp, with a tub under it to catch the water that drips from it. This is replaced in the summer by a bucket of fresh water from some pond or lake. When the men are sitting in their open air clubs at the summer camps there is always a bucket of fresh water in the middle of the circle, with a dipper to drink from. Hardly a native ever passed the station without stopping for a drink of water, often drinking a quart of cold water at a time. When tramping about in the winter they eat large quantities of ice and snow, and on the march the women carry small canteens of sealskin, which they fill with snow and carry inside of their jackets, where the heat of the body melts the snow and keeps

¹ "They have no set Time for Meals, but every one eats when he is hungry, except when they go to sea, and then their chief Repast is a supper after they are come home in the Evening." (Egede, Greenland, p. 135. Compare also, Crantz, vol. 1, p. 145.)

it liquid. This great fondness for plenty of cold water has been often noticed among the Eskimo elsewhere, and appears to be quite characteristic of the race.¹ They have acquired a taste for liquor, and like to get enough to produce intoxication. As well as we could judge, they are easily affected by alcohol. Some of them during our stay learned to be very fond of coffee, "ka'fe," but tea they are hardly acquainted with, though they will drink it. I have noticed that they sometimes drank the water produced by the melting of the sea ice along the beach, and pronounced it excellent when it was so brackish that I found it quite undrinkable.

NARCOTICS.

The only narcotic in use among these people is tobacco, which they obtain directly or indirectly from the whites, and which has been in use among them from the earliest time when we have any knowledge of them. When Mr. Elson, in the *Blossom's* barge, visited Point Barrow, in 1826, he found tobacco in general use and the most marketable article.² This undoubtedly came from the Russians by way of Siberia and Bering Strait, as Kotzebue found the natives of the sound which bears his name, who were in communication with the Asiatic coast by way of the Diomedes, already addicted to the use of tobacco in 1816. It is not probable that tobacco was introduced on the Arctic coast by way of the Russian settlements in Alaska. There were no Russian posts north of Bristol Bay until 1833, when St. Michael's Redoubt was built. When Capt. Cook visited Bristol Bay, in 1778, he found that tobacco was not used there,³ while in Norton Sound, the same year, the natives "had no dislike to tobacco."⁴ Neither was it introduced from the English posts in the east, as Franklin found the "Kûnmû'dliû" not in the habit of using it—"The western Esquimaux use tobacco, and some of our visitors had smoked it, but thought the flavor very disagreeable,"⁵—nor had they adopted the habit in 1837.⁶

When the *Plover* wintered at Point Barrow, according to Dr. Simpson's account,⁷ all the tobacco, except a little obtained from the English discovery ships, came from Asia and was brought by the Nunatañimium. At present the latter bring very little if any tobacco, and the supply is obtained directly from the ships, though a little occasionally finds its way up the coast from the southwest.

¹ See, for instance, Egede: "Their Drink is nothing but Water" (Greenland, p. 134), and, "Furthermore, they put great Lumps of Ice and Snow into the Water they drink, to make it cooler for to quench their Thirst" (p. 135). "Their drink is clear water, which stands in the house in a great copper vessel, or in a wooden tub. * * * They bring in a supply of fresh water every day * * * and that their water may be cool they choose to lay a piece of ice or a little snow in it" * * * (Crantz, vol. 1, p. 144). Compare, also, Parry, 2d voy., p. 506, where the natives of Iglulik are said to drink a great deal of water, which they get by molting snow, and like very cold. The same fondness for water was observed by Nordenskiöld in Siberia (Vega, vol. 2, p. 114)

² Beechey, Voyage, p. 308.

³ Third Voyage, vol. 2, p. 437.

⁴ Ibid, 2, p. 479.

⁵ Second Exp., p. 130.

⁶ See T. Simpson, Narrative, p. 156.

⁷ Op. cit., pp., 235, 236, 266.

They use all kinds of tobacco, but readily distinguish and desire the sorts considered better by the whites. For instance, they were eager to get the excellent quality of "Navy" tobacco furnished by the Commissary Department, while one of our party who had a large quantity of exceedingly bad fine-cut tobacco could hardly give it away. A little of the strong yellow "Circassian" tobacco used by the Russians for trading is occasionally brought up from the southwest, and perhaps also by the Nunatañiniun, and is very highly prized, probably because it was in this form that they first saw tobacco. Snuff seems to be unknown; tobacco is used only for chewing and smoking. The habit of chewing tobacco is almost universal. Men, women, and even children, though the latter be but 2 or 3 years old and unweaned,¹ when tobacco is to be obtained, keep a "chew," often of enormous size, constantly in the mouth. The juice is not spit out, but swallowed with the saliva, without producing any signs of nausea. The tobacco is chewed by itself and not sweetened with sugar, as was observed by Hooper and Nordenskiöld among the "Chukches."² I knew but two adult Eskimo in Utkiavvñ who did not chew tobacco, and one of these adopted the habit to a certain extent while we were there.

Tobacco is smoked in pipes of a peculiar pattern called *kui'nye*, of which the collection contains a series of ten specimens.

Of these, No. 89288 [705],³ figured in Ray's Point Barrow Report, *Ethnology*, Pl. I, Fig. 1, will serve as a type. The bowl is of brass, neatly inlaid on the upper surface with a narrow ring of copper close to the edge, from which run four converging lines, 90° apart, nearly to the center. Round the under surface are also three concentric rings of copper. The wooden stem appears to be willow or birch, and is in two longitudinal sections, held together by the lashing of sealskin thong which serves to attach the bowl to the stem. This lashing was evidently put on wet and allowed to shrink on, and the ends are secured by tucking under the turns. The whipping at the mouthpiece is of fine sinew thread. A picker of steel for cleaning out the bowl is attached to the stem by a piece of seal thong, the end of which is wedged under the turns of the lashing. The remaining pipes are all of the same general pattern, but vary in the material of the bowl and in details of execution. The stems are always of the same material and put together in the same way, but are sometimes lozenge-shaped instead of elliptical in section. The lashing is sometimes of three-ply sinew braid. The bowl shows the greatest variation, both in form and material.

Fig. 6a (No. 56737 [10], from Utkiavvñ) has an iron bowl, noticeable for the ornamentation of the shank. The metal work has all been done with the file except the fitting of the saucer to the shank. This has evidently been heated and shrunk on. Three pipes have bowls of

¹ Compare J. Simpson, *op. cit.*, p. 250, and Nordenskiöld, *Vega*, vol. 2, p. 116.

² *Tents, etc.*, p. 83; *Vega*, vol. 2, p. 116.

³ The numbers first given are those of the National Museum; the numbers in brackets are those of the collector.

smoothly ground stone. No. 89289 [1582] (Fig. 6*b* from Utkiavwĩñ) is of rather soft greenish gray slate. No. 89290 [864] is of the same shape, but of hard greenish stone, while the third stone pipe (No. 89291 [834], from Utkiavwĩñ), of gray slate, is of quite a different pattern. Three of the series have bowls of reindeer antler, lined with thin sheet brass, and one a bowl of walrus ivory, lined with thin copper. (See Fig. 6*c*, Nos. 89285 [954], 89286 [915], and 89287 [1129].)

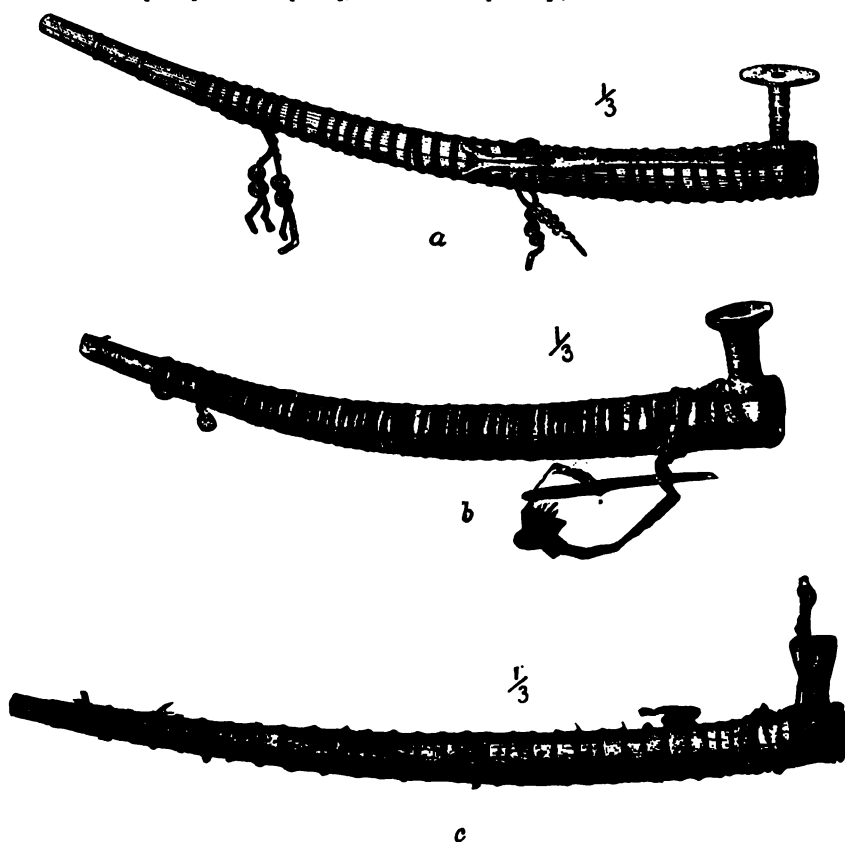


FIG. 6.—Pipes: a, pipe with metal bowl; b, pipe with stone bowl; c, pipe bowl of antler or ivory.

Antler and stone pipes of this pattern and rather small are usually carried by the men out of doors, while the more elaborate metal pipes, which are often very large and handsome (I have seen some with a saucer at least 3 inches in diameter) are more frequently used in the house and by the women. The stem is usually 1 foot or 13 inches long, though pipes at least 18 inches long were seen.

To most pipes are attached pickers, as in the type specimen. The picker is in all cases of metal, usually iron or steel, but sometimes of copper (see the pickers attached to pipes above). When not in use the point is tucked under the lashing on the stem. The pipes are readily taken apart for cleaning.

No. 89292 [1752] (Fig. 7) is an extemporized pipe made in a hurry by a man who wished to smoke, but had no pipe.

It is simply a rough willow stick, slightly whittled into shape, split and hollowed out like a pipestem. It is held together by a whipping of sinew thread and a lashing of deerskin thong, fastened by a slip-



FIG. 7.—Pipe made of willow stick.

knot at one end, the other being tucked in as usual. A small funnel-shaped hole at one end serves for a bowl, and shows by its charred surface that it has been actually used. This pipe was bought from one of the "Nunatañmiun," who were in camp at Pernyû in 1883, and shows its inland origin in the use of the deerskin thong. A coast native would have used seal thong.

The pipe is carried at the girdle, either with the stem thrust inside the breeches or in a bag attached to the belt. No. 56744 [55] (Utkiavwîñ) is the only specimen of pipe bag in the collection. It is a long, narrow, cylindrical bag, made of four white ermine skins, with two hind legs and two tails forming a fringe round the bottom, which is of dressed deerskin, in one piece, flesh side out. The band round the mouth is of gray deerskin, running only two-thirds of the way round. The piece which fills the remaining third runs out into the strap for fastening the bag to the belt. The ornamental strips on two of the longitudinal seams and round the bottom are of deerskin. The seams are all sewed "over and over" on the "wrong" side with sinew thread. This is an unusually handsome bag.

Tobacco is carried in a small pouch of fur attached to the girdle, and tucked inside of the breeches, or sometimes worn under the jacket, slung round the neck by a string or the necklace. The collection contains three of these, of which No. 89803 [889] (Fig. 8a) will serve as a typical specimen.

It is made by sewing together two pieces of wolverine fur, hair out, of the same shape and size, and round the mouth of this a band of short-haired light-colored deerskin, also hair out, with the ends meeting at one side in a seam corresponding to one of the seams of the wolverine fur. The mouth is ornamented with a narrow band of wolverine fur, the flesh side, which is colored red, turned out. It is closed by a piece of seal thong about 5 inches long, one end of which is sewed to the middle of the seam in the deerskin band and the other passed through a large blue glass bead and knotted. This string is wound two or three times round the neck of the bag, and the bight of it tucked under the

turns. The seams are all sewed "over and over" on the "wrong" side with sinew thread.

These tobacco pouches are usually of a similar pattern, often slightly narrowed at the neck, and generally fringed round the mouth with a narrow strip of wolverine fur as above. They are often ornamented with tags of wolverine fur on the seams (as in No. 89804 [1341, Fig. 8*b*]), and borders of different colored skin. No. 89805 [1350] is very elaborately ornamented. It is made of brown deerskin, trimmed with white deerskin clipped close and bordered with narrow braids of blue and red worsted, and little tags of the latter. According to Dr. Simpson,¹ these bags are called "del-la-mai'-yu." We neglected to obtain the proper names for them, as we always made use of the lingua franca "tiba' púksak," bag for tiba' (tobacco). No. 89903 [889] contains a specimen of tobacco as prepared for smoking by the Eskimo. This consists

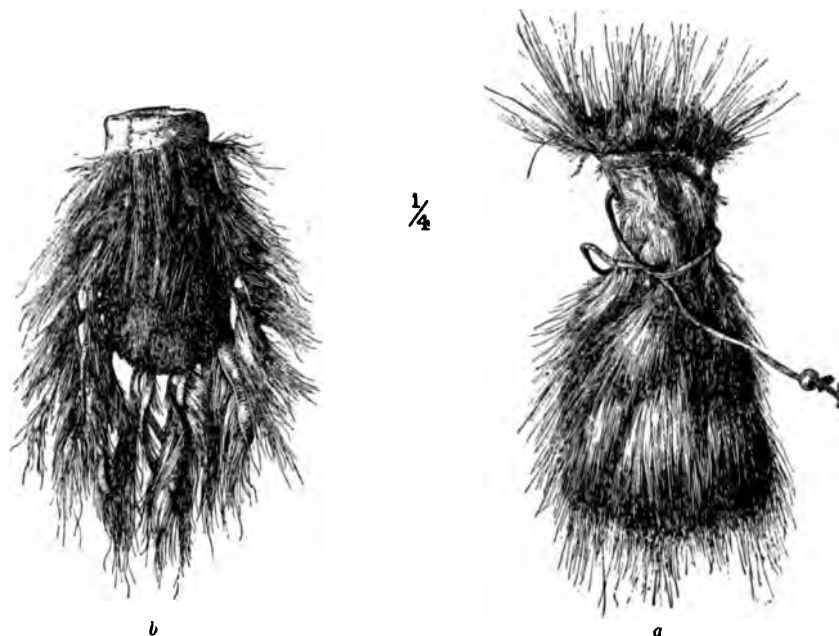


FIG. 8.—Tobacco pouches.

of common black Cavendish or "Navy" tobacco, cut up very fine, and mixed with finely chopped wood in the proportion of about two parts of tobacco to one of wood. We were informed that willow twigs were used for this purpose. Perhaps this may have some slight aromatic flavor, as well as serving to make the tobacco go further, though I did not recognize any such flavor in some tobacco from an Eskimo's pouch that I once smoked and found exceedingly bad. The smell of an Eskimo's

¹Op. cit., p. 243.

pipe is different from any other tobacco smoke and is very disagreeable. It has some resemblance to the smell of some of the cheaper brands of North Carolina tobacco which are known to be adulterated with other vegetable substances. The method of smoking is as follows: After clearing out the bowl with the picker, a little wad of deer hair, plucked from the clothes in some inconspicuous place, generally the front skirt of the inner jacket, is rammed down to the bottom of the bowl. This is to prevent the fine tobacco from getting into the stem and clogging it up. The bowl is then filled with tobacco, of which it only holds a very small quantity. The mouthpiece is placed between the lips, the tobacco ignited, and all smoked out in two or three strong inhalations. The smoke is very deeply inhaled and allowed to pass out slowly from the mouth and nostrils, bringing tears to the eyes, often producing giddiness, and almost always a violent fit of coughing. I have seen a man almost prostrated from the effects of a single pipeful. This method of smoking has been in vogue since the time of our first acquaintance with these people.¹

Though they smoke little at a time, they smoke frequently when tobacco is plentiful. Of late years, since tobacco has become plentiful, some have adopted white men's pipes, which they smoke without inhaling, and they are glad to get cigars, and, since our visit, cigarettes. In conversation with us they usually called all means for smoking "pai'pa," the children sometimes specifying "pai'pa-sigya'" (cigar) or "mûkpara-pai'pa," paper-pipe (cigarette). The use of the kui'nyæ, which name appears to be applied only to the native pipes, seems to be confined to the adults. We knew of no children owning them, though their parents made no objection to their chewing tobacco or owning or using clay or wooden pipes which they obtained from us. They carry their fondness for tobacco so far that they will even eat the foul oily refuse from the bottom of the bowl, the smallest portion of which would produce nausea in a white man. This habit has been observed at Plover Bay, Siberia.² Tobacco ashes are also eaten, probably for the sake of the potash they contain, as one of the men at Utkiavwîñ was fond of carbonate of soda, which he told the doctor was just like what he got from his pipe. Pipes of this type, differing in details, but all agreeing in having very small bowls, frequently of metal, and some contrivance for opening the stem, are used by the Eskimo from at least as far south as the Yukon delta (as shown by the collections in the National Museum) to the An-

¹ See T. Simpson: "Not content with chewing and smoking it, they swallowed the fumes till they became sick, and seemed to revel in a momentary intoxication." Point Barrow (1837), Narrative, p. 156. Also Kotzebue: "They chew, snuff, smoke, and even swallow the smoke." Kotzebue Sound (1816) Voyage, vol. 1, p. 237. Beechey also describes the people of Hotham Inlet in 1826 as smoking in the manner above described, obtaining the hair from a strip of dogskin tied to the pipe. Their tobacco was mixed with wood. Voyage, p. 300. Petitot (Monographie, etc., p. xxix) describes a precisely similar method of smoking among the Mackenzie Eskimos. Their tobacco was "mêlé à de la râclure de saule" and the pipe was called "kwîñepk." (Vocabulaire, p. 54).

² See Hooper, Tents, etc., p. 177, and Dall, Alaska, p. 81.

derson River and Cape Bathurst,¹ and have even been adopted by the Indians of the Yukon, who learned the use of tobacco from the Eskimo. They are undoubtedly of Siberian origin, as will be seen by comparing the figure of a "Chukch" pipe in Nordenskiöld's *Vega*, vol. 2, p. 117, Fig. 7, and the figure of a Tunguse pipe in Seebohm's "Siberia in Asia" (p. 149), with the pipes figured from our collection. Moreover, the method of smoking is precisely that practiced in Siberia, even to the proportion of wood mixed with the tobacco.²

The consideration of the question whence the Siberians acquired this peculiar method of smoking would lead me beyond the bounds of the present work, but I can not leave the subject of pipes without calling attention to the fact that Nordenskiöld³ has alluded to the resemblance of these to the Japanese pipes. A gentleman who has spent many years in China also informs me that the Chinese pipes are of a very similar type and smoked in much the same way.⁴ The Greenlanders and eastern Eskimo generally, who have learned the use of tobacco directly from the Europeans, use large-bowled pipes, which they smoke in the ordinary manner. In talking with us the people of Point Barrow call tobacco "tiba'" or "tibaki," but among themselves it is still known as ta'wak, which is the word found in use among them by the earliest explorers.⁵ "Tiba" was evidently learned from the American whalers, as it was not in use in Dr. Simpson's time. It is merely an attempt to pronounce the word tobacco, but has been adopted into the Eskimo

¹This is an interesting fact, as it shows that the Eskimo from Demarcation Point east learned to smoke from the people of Point Barrow, and not from the English or the northern Indians, who use pipes "modeled after the clay pipes of the Hudson Bay Company." (Dall, *Alaska*, p. 81, Fig. A.) They acquired the habit some time between 1837, when T. Simpson found them ignorant of the use of tobacco (see reference above, p. 65), and 1849, when they were glad to receive it from Pullen and Hooper. (Tents, etc., p. 258.) Petitot (*Monographie, etc.*, p. xxvi) states that the Eskimo of the Mackenzie informed him that the use of tobacco and the form of the pipe, with blue beads, labrets, and other things, came through the neighbors from a distant land called "Nate'povik," which he supposes to mean St. Michaels, but which, from the evidence of other travelers, is much more likely to mean Siberia.

The Eskimo geography, on which Fr. Petitot relies so strongly, is extremely vague west of Barter Island, and savors of the fabulous almost as much as the Point Barrow stories about the eastern natives. The evidence which leads Fr. Petitot to believe "Nate'povik" to be St. Michaels is rather peculiar. The Mackenzie natives call the people who are nearest to Nate'povik on the north "the Sedentary." Now, the people who live nearest to St. Michaels on the north are the "Sedentary American Tchukatchis" (?); therefore Nate'povik is probably St. Michaels. ("Le nom *Nate'povik* semble convenir à l'ancien fort russe Michaëlowski, en ce que la tribu innok la plus voisine de ce poste, vers le nord, est désignée par nos Tchiglit sous le nom d' *Apkicam-méut* ou de Sédentaires; or telle est la position géographique qui convient aux sédentaires Tchukatches américains, dont la limite la plus septentrionale, selon le capitaine Beechey, est la pointe Barrow.") A slight acquaintance with the work of of Dall and other modern explorers in this region would have saved Fr. Petitot from this and some other errors.

²See Wrangell, *Narrative of an Expedition, etc.*, p. 58. "The Russians here [at Kolymsk, 1820] smoke in the manner common to all the people of northern Asia; they draw in the tobacco smoke, swallow it, and allow it to escape again by the nose and ears (!)." The tobacco is said to be mixed with "finely powdered larch wood, to make it go further" (*ibid.*). See also Hooper, *Tents, etc.*: "Generally, I believe, about one-third part of wood is used" (pp. 176 and 177; and Nordenskiöld, *Vega*, vol. 2, p. 116.)

³*Vega*, vol. 2, p. 116.

⁴See also Petitot, *Monographie, etc.*, p. xxix.

⁵See Beechey, *Voyage*, p. 323; T. Simpson, *Narrative*, p. 156—"tobacco, which * * * they call tawák, or tawákh, a name acquired of course from Russian traders;" Hooper, *Tents, etc.*, p. 239; also Maguire and J. Simpson, *loc. cit. passim*. Petitot calls ta'wak "mot français corrompu"!

language sufficiently to be used as the radical in compound words such as "tiba'xutiká'ktûñe," "I have a supply of tobacco." There is no evidence that anything else was smoked before the introduction of tobacco, and no pipes seen or collected appear older than the time when we know them to have had tobacco.¹

HABITATIONS.

The winter house (Iglu).—The permanent winter houses are built of wood² and thickly covered with clods of earth. Each house consists of a single room, nearly square, entered by an underground passage about 25 feet long and 4 to 4½ feet high. The sloping mound of earth which

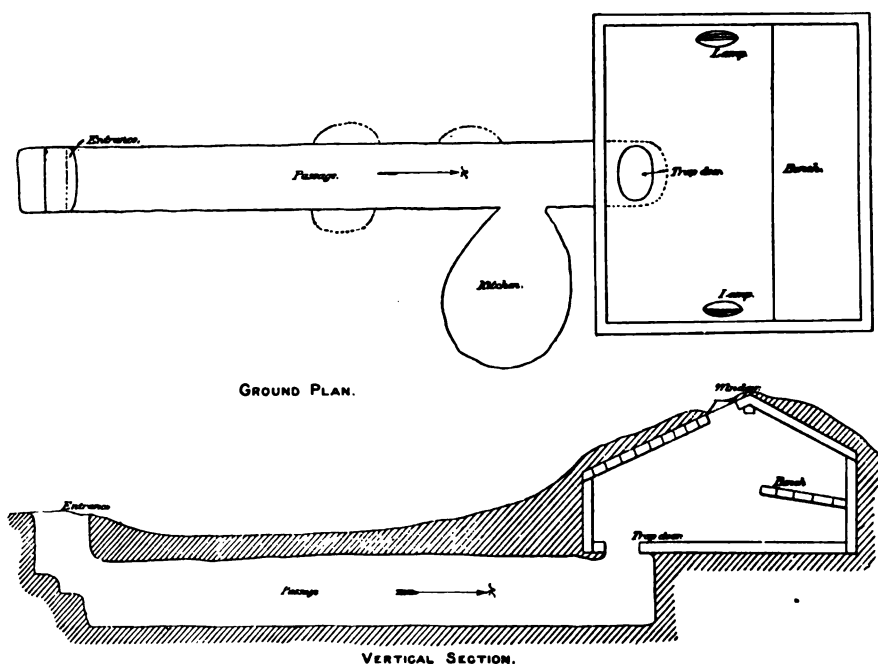


FIG. 9.—Plans of Eskimo winter house.

covers the house, grading off insensibly to the level of the ground, gives the houses the appearance of being underground, especially as the land on which they stand is irregular and hilly. Without very careful measurements, which we were unable to make, it is impossible to tell whether the floor is above or below the surface of the ground. It is certainly not very far either way. I am inclined to think that a space

¹ Since the above was written, the word for pipe, "kuinyu," has been found to be of Siberian origin. See the writer's article "On the Siberian origin of some customs of the Western Eskimos" (*American Anthropologist*, vol. 1, pp. 325-336).

² In some of the older houses, the ruins of which are still to be seen at the southwest end of the village of Utkiavwif, whales' bones were used for timbers. Compare Lyon Journal, p. 171, where the winter huts at Iglulik are described as "entirely constructed of the bones of whales, walrus, and smaller animals," with the interstices filled with earth and moss.

at or near the top of a hillock is simply leveled to receive the floor. In this case the back of the house on a hill side, like some in Utkiavwīū, would be underground.

The passage is entered at the farther end by a vertical shaft about 6 feet deep in the center of a steep mound of earth. Round the mouth is a square frame or combing of wood, and blocks of wood are placed in the shaft to serve as steps. One or two houses in Utkiavwīū had ship's companion ladders in the shaft. This entrance can be closed with a piece of walrus hide or a wooden cover in severe weather or when the family is away. The passage is about 4 feet wide and the sides and



FIG. 10.—Interior of iglu, looking toward door.

roof are supported by timbers of whalebone. On the right hand near the inner end is a good-sized room opening from the passage, which has a wooden roof covered with earth, forming a second small mound close to the house, with a smoke hole in the middle, and serves as a kitchen, while various dark and irregular recesses on the other side serve as storerooms. The passage is always icy and dark.

At the inner end of the passage a circular trapdoor in the floor opens into the main room of the house, close to the wall at the middle of one end. The floor is at such a height from the bottom of the tunnel that a man standing erect in the tunnel has his head and shoulders in the room. These rooms vary somewhat in dimensions, but are generally about 12 or 14 feet long and 8 or 10 feet wide. The floor, walls, and roof are made of thick planks of driftwood, dressed smooth and neatly fitted together, edge to edge. The ridgepole runs across the house and the roof slopes toward each end. The two slopes are unequal, the front, or that towards the entrance, being considerably the longer. The walls

are vertical, those at the ends being between 3 and 4 feet high, while the sides run up to 6 or 7 feet at the ridgepole. The wall planks run up and down, and those of the roof from the ridge to the ends of the house, where there is a stout horizontal timber. In some houses the walls are made of paneled bulkheads from some wrecked whaler.

In the front of the house over the trapdoor there are no planks for a space of about 2 feet. The lower part of this space is filled in with short transverse beams, so as to leave a square hole close to the ridge. This hole has a stout transverse beam at the top and bottom and serves as a window. When the house is occupied it is covered by a translucent membrane made of strips of seal entrail sewed together and stretched



FIG. 11.—Interior of igloo, looking toward bench.

over two arched sticks of light wood—whalebone was used in Dr. Simpson's time¹—running diagonally across from corner to corner. The window is closed with a wooden shutter when the house is shut up in winter, but both apertures are left open in summer. Just above the window, close to the ridgepole, is a little aperture for ventilation. Across the back of the room runs a platform or banquette, about 30 inches high in front and sloping back a little, which serves as a sleeping and lounging place. It is about 5 feet wide, and the front edge comes nearly under the ridgepole. It is made of thick planks running across the house, and supported at each end by a horizontal beam, the end of which projects somewhat beyond the bench and is supported by a round post. At each side of the house stands a lamp, and over these are suspended racks in the shape of small ladders for drying clothing,² etc. Deerskin blankets

¹ Op. cit., p. 256.

² Compare Hooper, *Tents, etc.*, p. 46: "Small lattice shelves * * * on which moccasins * * * are put to dry." Plover Bay. See also plate to face p. 160 Parry's *Second Voyage*.

for the bed, which are rolled up and put under the bench when not in use, and a number of wooden tubs of various sizes—I counted nine tubs and buckets in one house in Utkiavwīñ—complete the furniture.

Two families usually occupy such a house, in which case each wife has her own end of the room and her own lamp, near which on the floor she usually sits to work. Some houses contain but one family and others more. I knew one house in Utkiavwīñ whose regular occupants were thirteen in number, namely, a father with his wife and adopted daughter, two married sons each with a wife and child, his widowed sister with her son and his wife, and one little girl. This house was also the favorite stopping-place for people who came down from Nuwūk to spend the night. The furniture is always arranged in the same way. There is only one rack on the right side of the house and two on the left. Of these the farther from the lamp is the place for the lump of snow. In this same corner are kept the tubs, and the large general chamber pot and the small male urinal are near the trap door. Dishes of cooked meat are also kept in this corner. This leaves the other corner of the house vacant for women visitors, who sit there and sew. Male visitors, as well as the men of the house when they have nothing to do, usually sit on the edge of the banquette.

In sleeping they usually lie across the banquette with their feet to the wall, but sometimes, when there are few people in the house, lie lengthwise, and occasionally sleep on the floor under the banquette. Petitot says that in the Mackenzie region only married people sleep with their heads toward the edge of the banquette. Children and visitors lie with their heads the other way.¹ (See Fig. 9, ground plan and section of house, and Figs. 10 and 11, interior, from sketches by the writer. For outside see Fig. 12, from a photograph by Lieut. Ray).

At the back of the house is a high oblong scaffolding, made by setting up tall poles of driftwood, four, six, or eight in number, and fastening on cross pieces about 8 or 10 feet from the ground, usually in two tiers, of which the lower supports the frames of the kaiaks and the upper spears and other bulky property. Nothing except very heavy articles, such as sledges, boxes, and barrels, is ever left on the ground. A man can easily reach this scaffold from the top of the house, but it is high enough to be out of reach of the dogs. The cross pieces are usually supported on crotches made by lashing the lower jaw of a walrus to the pole, so that one ramus lies along the latter. Scaffolds of this sort, usually spoken of as "caches" or "cache frames," are of necessity used among the Eskimos generally, as it is the only way in which they can protect their bulky property.²

¹ Monographie, etc., p. xxiii.

² See for instance, Crantz, *History of Greenland*, vol. 1, p. 141; Franklin, *1st Exped.*, vol. 2, p. 194 (Coppermine River); *2d Exped.*, p. 121 (Mouth of the Mackenzie, where they are made of drift logs stuck up so that the roots serve as crotches to hold the cross pieces); Hooper, *Tents, etc.*, pp. 48, 228, and 343 (Plover Bay, Point Barrow, and Toket Point); J. Simpson, *op. cit.*, p. 256 (Point Barrow); Nordenskiöld, *Vega*, vol. 2, p. 92 (Pitlekaj).

Around Norton Sound, however, they use a more elaborate structure, consisting of a regular little house 6 feet square, raised 6 to 10 feet from the ground on four posts.¹

Belonging to each household, and usually near the house, are low scaffolds for the large boats, rows of posts for stretching lines of thong, and one or more small cellars or underground rooms framed with whales' bones, the skull being frequently used for a roof, which serve as store-houses for blubber. These may be called "blubber rooms."

These winter houses can only be occupied when the weather is cold enough to keep the ground hard frozen. During the summer the passageways are full of water, which freezes at the beginning of winter

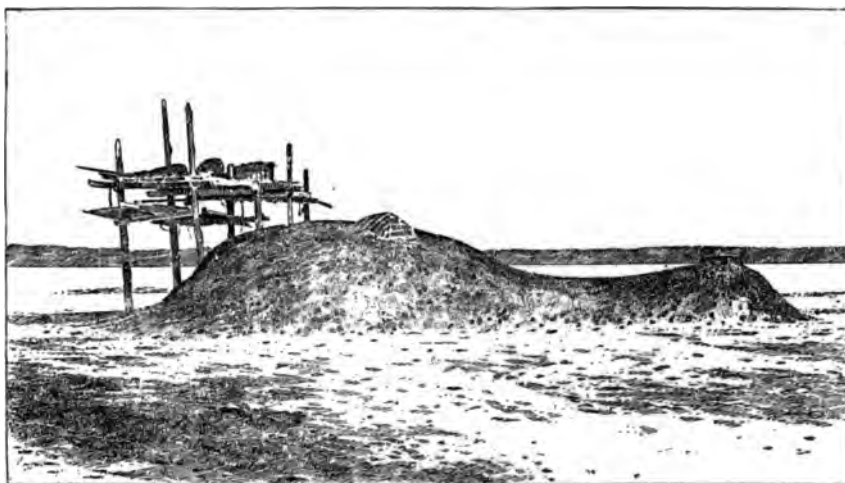


FIG. 12.—House in Utkiavwīn.

and is dug out with a pickax. The people of Utkiavwīn began to come to us to borrow our pickax to clean out their iglus about September 24, 1882, and all the houses were vacated before July 1, both seasons.

This particular form of winter house, though in general like those built by other Eskimo, nevertheless differs in many respects from any described elsewhere. For instance, the Greenland house was an oblong flat-roofed building of turf and stones, with the passageway in the middle of one side instead of one end, and not underground. Still, the door and windows were all on one side, and the banquette or "brix" only on the side opposite the entrance. The windows were formerly made of seal entrails, and the passage, though not underground, was still lower than the floor of the house, so that it was necessary to step up at each end.²

A detailed description of the peculiar communal house of the East

¹ Dall, *Alaska*, p. 13.

² Egede, *Greenland*, p. 114; Crantz, *History of Greenland*, vol. 1, p. 139; Rink, *Tales and Traditions*, p. 7.

Greenlanders, of which there is only one at each village, will be found in Capt. Holm's paper in the *Geografisk Tidsskrift*, vol. 8, pp. 87-89. This is the long house of West Greenland, still further elongated till it will accommodate "half a score of families, that is to say, 30 to 50 people." John Davis (1586) describes the houses of the Greenlanders "neere the Sea side," which were made with pieces of wood on both sides, and crossed over with poles and then covered over with earth.¹

At Iglulik the permanent houses were dome shaped, built of bones, with the interstices filled with turf, and had a short, low passage.² No other descriptions of permanent houses are to be found until we reach the

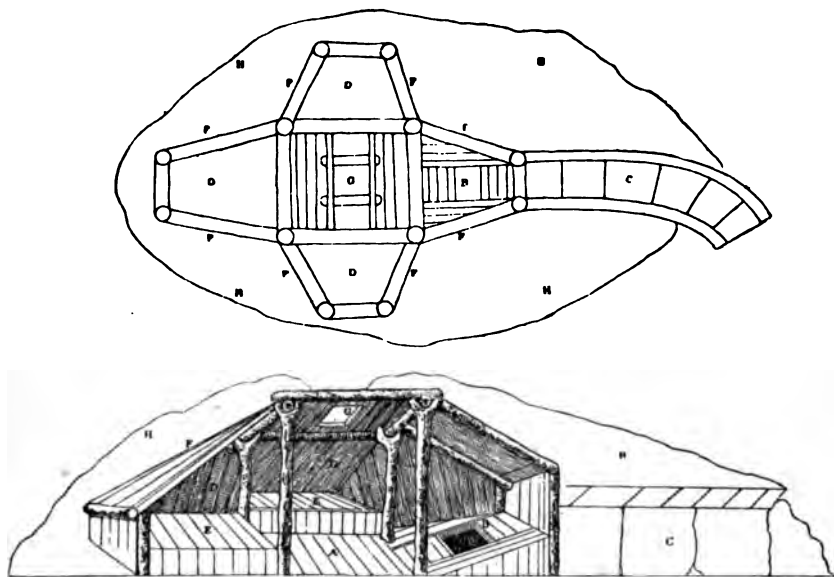


FIG. 13.—Ground plan and section of winter house in Mackenzie region.

people of the Mackenzie region, who build houses of timbers, of rather a peculiar pattern, covered with turf, made in the form of a cross, of which three or all four of the arms are the sleeping rooms, the floor being raised into a low banquette.³ (See Fig. 13.) Petitot⁴ gives a very excellent detailed description of the houses of the Anderson River people. According to his account the passageway is built up of blocks of ice. He mentions one house with a single alcove like those at Point Barrow.⁵

We have no description of the houses at the villages between Point Barrow and Kotzebue Sound, but at the latter place was found the

¹ Hakluyt, *Voyages*, etc. (1589), p. 788.

² Lyon, *Journal*, p. 171.

³ See Fig. 13, ground plan and section, copied from Petitot, *Monographie*, etc., p. xxiii.

⁴ *Monographie*, etc., p. xxi.

⁵ See also Franklin, *2d Exped.*, p. 121 (*Mouth of the Mackenzie*), and pp. 215 and 216 (*Atkinson Island*, Richardson. A ground plan and section closely resembling Petitot's are given here); and Hooper, *Tents*, etc., p. 243 (*Toker Point*).

large triple house described by Dr. Simpson, and compared by him with that described by Richardson, though in some respects it more closely resembles those seen by Hooper.¹ This house really has a fireplace in the middle, and in this approaches the houses of the southern Eskimo of Alaska. According to Dr. Simpson,² "a modification of the last form, built of undressed timber, and sometimes of very small dimensions, with two recesses opposite each other, and raised a foot above the middle space, is very common on the shores of Kotzebue Sound," but he does not make it plain whether houses like those used at Point Barrow are not used there also.

This form of house is very like the large snow houses seen by Lieut. Ray at hunting camps on Kulugrua. Dr. Simpson describes less permanent structures which are used on the rivers, consisting of small trees split and laid "inclining inward in a pyramidal form towards a rude square frame in the center, supported by two or more upright posts. Upon these the smaller branches of the felled trees are placed, and the whole, except the aperture at the top and a small opening on one side, is covered with earth or only snow."³ These buildings, and especially the temporary ones described by Dr. Simpson, used on the Nunatak, probably gave rise to the statement we heard at Point Barrow that "the people south had no iglus and lived only in tents." The houses at Norton Sound are quite different from the Point Barrow form. The floor, which is not planked, is 3 or 4 feet under ground, and the passage enters one side of the house, instead of coming up through the floor, and a small shed is built over the outer entrance to the passage. The fire is built in the middle of the house, under the aperture in the roof which serves for chimney and window, and there is seldom any banquette, but the two ends of the room are fenced off by logs laid on the ground, to serve as sleeping places, straw and spruce boughs being laid down and covered with grass mats.³

The houses in the Kuskokwim region are quite similar to those just described, but are said to be built above ground in the interior, though they are still covered with sods.⁴ There are no published accounts of the houses of the St. Lawrence islanders, but they are known to inhabit subterranean or partly underground earth-covered houses, built of wood, while the Asiatic Eskimo have abandoned the old underground houses, which were still in use at the end of the last century, and have adopted the double-skin tent of the Chukchees.⁵ In addition to the cases quoted by Dall, Capt. Cook speaks of finding the natives of St. Lawrence Bay in 1778 living in partly underground earth-covered houses.⁶

¹See ante.

²Op. cit., p. 258.

³Dall, Alaska, pp. 13 and 14, diagram on p. 13.

⁴Petroff, Report, etc., p. 15.

⁵See Dall, Cont. to N. A. Ethn., vol. 1, p. 105. Mr. E. W. Nelson tells me, however, that the village at East Cape, Siberia, is composed of real iglus.

⁶Third Voyage, vol. 2, p. 450.

Arrangement in villages.—The village of Utkiavwîñ occupies a narrow strip of ground along the edge of the cliffs of Cape Smyth, about 1,000 yards long, and extending some 150 yards inland. The houses are scattered among the hillocks without any attempt at regularity and at different distances from each other, sometimes alone, and sometimes in groups of two contiguous houses, which often have a common cache frame. Nuwük, from Dr. Simpson's account¹ and what we saw in our hurried visits, is scattered in the same way over the knolls of Point Barrow, but has its greatest extension in an east and west direction. From Simpson's account (*ibid.*) double houses appear more common at Nuwük than at Utkiavwîñ, and he even speaks of a few threefold ones. All the houses agree in facing south. This is undoubtedly to admit the greatest amount of light in winter, and seems to be a tolerably general custom, at least among the northern Eskimo.²

The custom of having the dwelling face south appears to be a deeply rooted one, as even the tents in summer all face the same way.³

The tents on the sandspit at Plover Bay all face west. The same was observed by the Krause brothers at East Cape.⁴ At Utkiavwîñ there are twenty-six or twenty-seven inhabited houses. The uninhabited are mostly ruins and are chiefly at the southwest end of the village, though the breaking away of the cliffs at the other end has exposed the ruins of a few other old houses. Near these are also the ruins of the buildings destroyed by the ice catastrophe described above (p. 31). The mounds at the site of the United States signal station are also the ruins of old iglus. We were told that "long ago," before they had any iron, five families who "talked like dogs" inhabited this village. They were called Isû'tkwamiun. Similar mounds are to be seen at Pernyû, near the present summer camp. About these we only learned that people lived there "long ago." We also heard of ruined houses on the banks of Kulugrua.

Besides the dwellings there are in Utkiavwîñ three and in Nuwük two of the larger buildings used for dancing, and as workrooms for the men, so often spoken of among other Eskimo.

Dr. Simpson states⁵ that they are nominally the property of some of the more wealthy men. We did not hear of this, nor did we ever hear the different buildings distinguished as "So-and-so's," as I am inclined to think would have been the case had the custom still prevailed. They are called kû'dyîgi or kû'drîgi (karrigi of Simpson), a word which corresponds, *mutatis mutandis*, with the Greenlandic kagsse, which means, first, a circle of hills round a small deep valley, and then a circle of

¹ *Op. cit.*, p. 256.

² For example, I find it mentioned in Greenland by Kane, 1st Grinnell Exp., p. 40; at Iglulik by Parry, 2d Voy., p. 499; and at the mouth of the Mackenzie by Franklin, 2d Exp., p. 121, as well as by Dr. Simpson at Nuwük, *op. cit.*, p. 256.

³ Frobisher says the tents in *Meta Incognita* (in 1577) were "so pitched up, that the entrance into them, is alwaies South, or against the Sunne." Hakluyt's *Voyages, etc.*, (1589) p. 623.

⁴ *Geographische Blätter*, vol. 5, p. 27.

⁵ *Op. cit.*, p. 259.

people who sit close together (and then, curiously enough, a brothel). At Utkiavwĩñ they are situated about the middle of the village, one close to the bank and the others at the other edge of the village. They are built like the other houses, but are broader than long, with the ridgepole in the middle, so that the two slopes of the roof are equal, and are not covered with turf, like the dwellings, being only partially banked up with earth.

The one visited by Lieut. Ray on the occasion of the "tree dance" was 16 by 20 feet and 7 feet high under the ridge, and held sixty people. In the fall and spring, when it is warm enough to sit in the kũ'dyĩgi without fire and with the window open, it is used as a general lounging place or club room by the men. Those who have carpentering and similar work to do bring it there and others come simply to lounge and gossip and hear the latest news, as the hunters when they come in generally repair to the kũ'dyĩgi as soon as they have put away their equipments.

They are so fond of this general resort that when nearly the whole village was encamped at Imėkpũñ in the spring of 1883, to be near the whaling ground, they extemporized a club house by arranging four timbers large enough for seats in a hollow square near the middle of the camp. The men take turns in catering for the club, each man's wife furnishing and cooking the food for the assembled party when her husband's turn comes. The club house, however, is not used as a sleeping place for the men of the village, as it is said to be in the territory south of Bering Strait,¹ nor as a hotel for visitors, as in the Norton Sound region.² Visitors are either entertained in some dwelling or build temporary snow huts for themselves.

The kũ'dyĩgi is not used in the winter, probably on account of the difficulty of warming it, except on the occasions of the dances, festivals, or conjuring ceremonies. Crevices in the walls are then covered with blocks of snow, a slab of transparent ice is fitted into the window, and the house is lighted and heated with lamps. Buildings of this sort and used for essentially the same purposes have been observed among nearly all known Eskimo, except the Greenlanders, who, however, still retain the tradition of such structures.³ Even the Siberian Eskimo, who have abandoned the iglu, still retained the kũ'dyĩgi until a recent date at least, as Hooper saw at Oong-wy-sac a performance in a "large tent, apparently erected for and devoted to public purposes (possibly as a council room as well as a theater, for in place of the

¹ Petroff, Report, etc., p. 128.

² Dall, Alaska, p. 16.

³ See Rink, Tales and Traditions, p. 8; also Geografisk Tidsskrift, vol 8, p. 141. Speaking of buildings of this sort, Dr. Rink says: "Men i Grønland kjendes de vel kun af Sagnet. Paa Øer Disko vil man have paavist Ruinen af en saadan Bygning, som besynderlig nok særlig sagdes at have været benyttet til Festligheder af erotisk Natur." Boas, "The Central Eskimo," passim; Lyon, Journal, p. 325 (Iglulik); Richardson, in Franklin's 2d Exp., pp. 215-216 (Atkinson Island); Pet. tot. Monographie, etc., xxx; "Kėchim, ou maison des assemblées;" Beechey, Voyage, p. 268 (Point Hope); Dall, Alaska, p. 16 and elsewhere; Petroff, Rep. p. 128 and elsewhere.

usual inner apartments only a species of bench of raised earth ran round it).¹ These buildings are numerous and particularly large and much used south of Bering Strait, where they are also used as steam bath houses.²

Snow houses (apúya).—Houses of snow are used only temporarily, as for instance at the hunting grounds on the rivers, and occasionally by visitors at the village who prefer having their own quarters. For example, a man and his wife who had been living at Nuwük decided in the winter of 1882-'83 to come down and settle at Utkiavwü, where the woman's parents lived. Instead of going to one of the houses in the village, they built themselves a snow house in which they spent the winter. The man said he intended to build a wooden house the next season. These houses are not built on the dome or beehive shape so often described among the Eskimo of the middle region of Dr. Rink.³

The idea naturally suggests itself that this form of building is really a snow *tupek* or tent, while the form used at Point Barrow is simply the iglu built of snow instead of wood. When built on level ground, as in the village, the snow house consists of an oblong room about 6 feet by 12, with walls made of blocks of snow, and high enough for a person to stand up inside. Beams or poles are laid across the top, and over these is stretched a roof of canvas. At the south end is a low narrow covered passage of snow about 10 feet long leading to a low door not over 2½ feet high, above which is the window, made, as before described, of seal entrail. The opening at the outer end of the passage is at the top, so that one climbs over a low wall of snow to enter the house.

At the right side of the passage, close to the house, is a small fireplace about 2½ feet square and built of slabs of snow, with a smoke hole in the top and a stick stuck across at the proper height to hang a pot on. When the first fire is built in such a fireplace there is considerable melting of the surface of the snow, but as soon as the fire is allowed to go out this freezes to a hard glaze of ice, which afterwards melts only to a trifling extent. Opposite to the door of the house, which is protected by a curtain of canvas, corresponding to the Greenlandic *ubkuak*, "a skin which is hung up before the entrance of the house,"⁴ the floor is raised into a banquette about 18 inches high, on which are laid boards and skins. Cupboards are excavated under the banquette, or in the walls, and pegs are driven into the walls to hang things on.

¹ Tents, etc., p. 136.

² See references to Dall and Petroff, above.

³ Parry, 2nd Voy., p. 160 and plate opposite; Franklin, 1st Exped. vol. 2, pp. 43-47, ground plan, p. 46; Boas, "Central Eskimo," pp. 539-553; Kumlien, Contributions, etc., p. 31; Petitot, Monographie, etc., p. xvii (a full description with a ground plan and section on p. xix), and all the popular accounts of the Eskimo.

⁴ Grenlandsk Ordbog, p. 404; Kane's 1st Grinnell Exp., p. 40, calls it a "skin-covered door." Compare, also, the skin or matting hung over the entrance of the houses at Norton Sound, Dall, Alaska, p. 13, and the bear-skin doors of the Nunatafmiun and other Kotzebue Sound natives, mentioned by Dr. Simpson, op. cit., p. 259.

As such a house is only large enough for one family, there is only one lamp, which stands at the right-hand side of the house¹.

At the hunting grounds, or on the road thither in the winter, a place is selected for the house where the snow is deeply drifted under the edge of some bank, so that most of the house can be made by excavation. When necessary, the walls are built up and roofed over with slabs of snow. Such a house is very speedily built. The first party that goes over the road to the hunting ground usually builds houses at the end of each day's march, and these serve for the parties coming later, who have simply to clear out the drifted snow or perhaps make some slight repairs. On arriving at the hunting ground they establish themselves in larger and more comfortable houses of the same sort; generally for two families. Lieut. Ray, who visited these camps, has drawn the plan represented in Fig. 14. There is a banquette, *a*, at each end of the room,

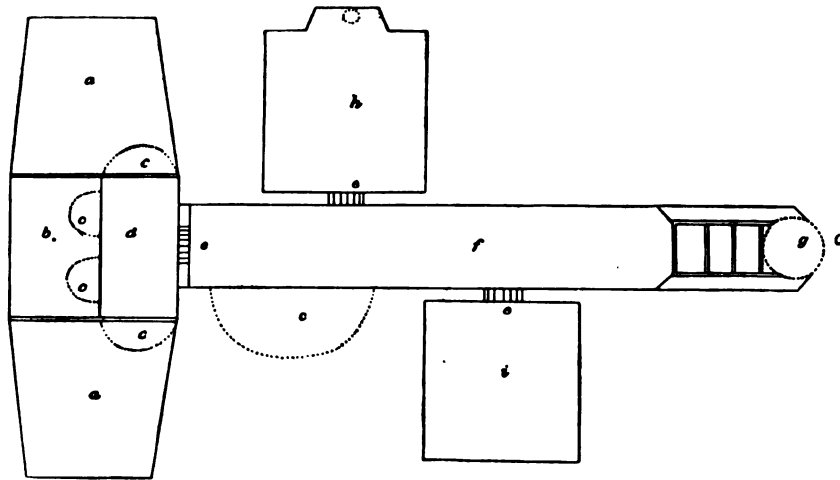


FIG. 14.—Ground plan of large snow house.

which is much broader than long (compare the form of house common at Kotzebue Sound, mentioned above, p. 78), but only one lamp, on a low shelf of snow, *b*, running across the back of the room and excavated below into a sort of cupboard. There are also similar cupboards, *c*, at different places in the walls, and a long tunnel, *f*, with the usual storerooms, *i*, and kitchen, *h*, from which a branch tunnel often leads to an adjoining house. The floor is marked *d*, the entrance to the tunnel *g*, and the door *e*. The house is lighted by the seal-gut windows of the iglu brought from the village.

On going into camp the railed sled is stuck points down into the snow and net-poles, or ice-picks, thrust through the rails, making a temporary cache frame,² on which are hung bulky articles—snowshoes and

¹ Compare Dr. Simpson's description. *op. cit.*, p. 259.

² Compare the woodcut on p. 406, vol. 1. of Kane's 2d Exp., where two sleds are represented as stuck up on end with their "upstanders" meeting to form a platform—Smith Sound.

guns.¹ Small storehouses of snow or ice are built to contain provisions. In the autumn many such houses are built in the village, of slabs of clear fresh-water ice about 4 inches thick cemented together by freezing. These resemble the buildings of fresh-water ice at Iglulik, described by Capt. Lyon.²

Other temporary structures of snow, sometimes erected in the village, serve as workshops. One of these, which was built at the edge of the village in April, 1883, was an oblong building long enough to hold an umiak, giving sufficient room to get around it and work, and between 6 and 7 feet high. The walls were of blocks of snow and the roof of canvas stretched over poles. One end was left open, but covered by a canvas curtain, and a banquette of snow ran along each side. It was lighted by oblong slabs of clear ice set into the walls, and warmed by several jams. Several men in succession used this house for repairing and rigging up their umiaks, and others who had whittling to do brought their work to the same place.

Such boat shops are sometimes built by digging a broad trench in a snowbank and roofing it with canvas. Women dig small holes in the snow, which they roof over with canvas and use for work-rooms in which to dress seal skins. In such cases there is probably some superstitious reason, which we failed to learn, for not doing the work in the iglu. The tools used in building the snow houses are the universal wooden snow-shovel and the ivory snow-knife, for cutting and trimming the blocks. At the present day saws are very much used for cutting the blocks, and also large iron knives (whalemen's "boarding knives," etc.) obtained from the ships.

Tents (tupĕk).—During the summer all the natives live in tents, which are pitched on dry places upon the top of the cliffs or upon the gravel beach, usually in small camps of four or five tents each. A few families go no farther than the dry banks just southwest of the village, while the rest of the inhabitants who have not gone eastward trading or to the rivers hunting reindeer are strung along the coast. The first camp below Utkiavwĭñ is just beyond the double lagoon of Nunava, about 4 miles away, and the rest at intervals of 2 or 3 miles, usually at some little inlet or stream at places called Sĕ'kqluka, Nakĕ'drixo, Kuosu'gru, Nună'ktuau, Īpersua, Wă'lăkpa (Refuge Inlet, according to Capt. Maguire's map, Parl. Rep. for 1854, opp. p. 186), Er'nĭvwĭñ, Sĭ'ñaru, and Sa'kămna. It is these summer camps seen from passing ships which have given rise to the accounts of numerous villages along this coast. There is usually a small camp on the beach at Sĭ'nyyû and one at Imĕ'kpĭñ, while a few go to Pernyû even early in the season.

As the sea opens the people from the lower camps travel up the coast and concentrate at Pernyû, where they meet the Nuwunĭmiun, the Nuna-

¹ Firearms can not be carried into a warm room in cold weather, as the moisture in the air immediately condenses on the cold surface of the metal.

² Journal, p. 204; see also the plate opposite p. 358 of Parry's 2d Voyage.

tañmiun traders, and the whalers, and are joined later in the season by the trading parties returning from the east, all of whom stop for a few days at Pernyû. On returning to the village also, in September, the tents are pitched in dry places among the houses and occupied till the latter are dry enough to live in. Tents are used in the autumnal deer hunts, before snow enough falls to build snow houses. In the spring of 1883, when the land floe was very heavy and rough off Utkiavwîñ, all who were going whaling in the Utkiavwîñ boats went into camp with their families in tents pitched on the crown of the beach at Imék pûñ, whence a path led off to the open water.

The tents are nowadays always made of cloth, either sailcloth obtained from wrecks or drilling, which is purchased from the ships. The latter is preferred as it makes a lighter tent and both dark blue and white are used. Reindeer or seal skins were used for tents as lately as 1854. Elson saw tents of sealskin lined with reindeer skin at Refuge Inlet,¹ and Hooper mentions sealskin tents at Cape Smyth and Point Barrow.² Dr. Simpson gives a description of the skin tents at Point Barrow.³ Indeed, it is probable that canvas tents were not common until after the great "wreck seasons" of 1871 and 1876, when so many whaleships were lost. The Nunatañmiun at Pernyû had tents of deerskin, and I remember also seeing one sealskin tent at the same place, which, it is my impression, belonged to a man from Utkiavwîñ. Deerskin tents are used by the Anderson River natives,⁴ while sealskins are still in use in Greenland and the east generally.⁵ The natives south of Kotzebue Sound do not use tents, but have summer houses erected above ground and described as "generally log structures roofed with skins and open in front."⁶ That they have not always been ignorant of tents is shown by the use of the word "topek" for a dwelling at Norton Sound.⁷

The tents at Point Barrow are still constructed in a manner very similar to that described by Dr. Simpson (see reference above). Four or five poles about 12 feet long are fastened together at the top and spread out so as to form a cone, with a base about 12 feet in diameter. Inside of these about 6 feet from the ground is lashed a large hoop, upon which are laid shorter poles (sometimes spears, umiak oars, etc.). The canvas cover, which is now made in one piece, is wrapped spirally round this

¹ Beechey's Voyage, p. 315.

² Tents, etc., pp. 216, 225.

³ Op. cit., p. 260.

⁴ MacFarlane MSS. and Petitot, Monographie, etc., p. xx, "des tentes coniques (*tuppek*) en peaux de renne."

⁵ See Rink, Tales, etc., p. 7 ("skins" in this passage undoubtedly means sealskins, as they are more plentiful than deerskins among the Greenlanders, and were used for this purpose in Egede's time—Greenland, p. 117; and Kumlien, op. cit., p. 33.). In east Greenland, according to Holm, "Om Sommeren bo Angsmagsalikerne i Telte, der ere betrukne med dobbelte Skind og have Tarmskinda Forhæng." Geogr. Tids., vol. 8, p. 89. In Frobisher's description of Meta Incognita (in 1577), he says: "Their houses are tents made of scale skins, pitched up with 4 Firre quarters, foure square, meeting at the toppe, and the skinnes sewed together with sinewes, and layd thereupon." Hakluyt's Voyages, etc. (1589), p. 628. See also Boas, "Central Eskimo."

⁶ Petroff, op. cit., p. 128.

⁷ Dall, Alaska, p. 13.

frame, so that the edges do not meet in front except at the top, leaving a triangular space or doorway, filled in with a curtain of which part is a translucent membrane, which can be covered at night with a piece of cloth. A string runs from the upper corner of the cloth round the apex of the tent and comes obliquely down the front to about the middle of the edge of the other end of the cloth. The two edges are also held together by a string across the entrance. Heavy articles, stones, gravel, etc., are laid on the flap of the tent to keep it down, and spears, paddles, etc., are laid up against the outside. (See Fig. 15, from a photograph by Lieut. Ray.)

Inside of the tent there is much less furniture than in the iglu, as the lamp is not needed for heating and lighting, and the cooking is done outdoors on tripods erected over fires. The sleeping place is at the

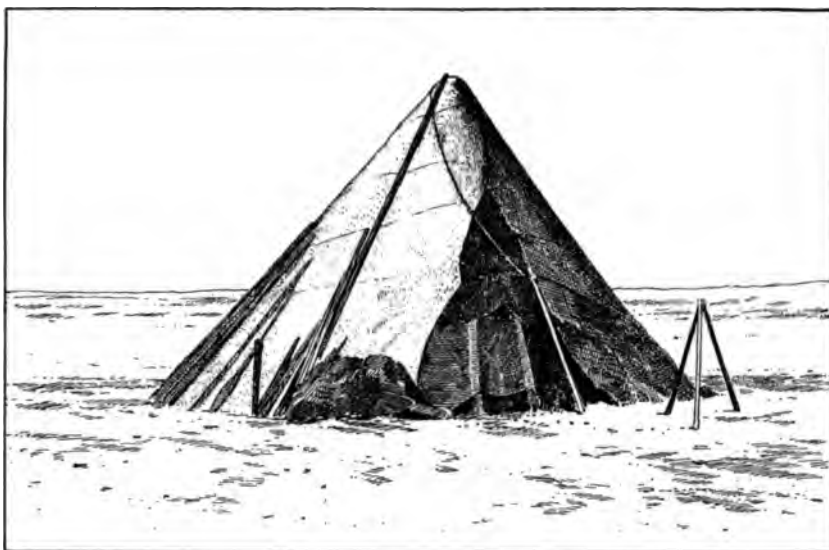


FIG. 15.—Tent on the beach at Utkiavwif.

back of the tent, and is usually marked off by laying a log across the floor, and spreading boards on the ground. Not more than one family usually occupy a tent. The tents at the whaling camp mentioned above were, at first, fitted out with snow passages and fireplaces like a snow hut, and many had a low wall of snow around them, but these had all melted before the camp was abandoned.

These tents differ considerably in model from those in use in the east, though all are made by stretching a cover over radiating poles. For example, the tents in Greenland have the front nearly vertical,¹ while at Cumberland Gulf two sets of poles connected by a ridgepole are used, those for the front being the shorter.² The fashion at Iglulik is some-

¹ Egede, *Greenland*, p. 117; Crantz, vol. 1, p. 141; Rink, *Tales*, etc., p. 7.

² Kumlien, *op. cit.*, p. 33.

what similar.¹ Small rude tents only large enough to hold one or two people are used as habitations for women during confinement, and for sewing rooms when they are working on deerskins in the autumn. Tents for the latter purpose are called "su'dliwīn," the place for working.

HOUSEHOLD UTENSILS.

FOR HOLDING AND CARRYING FOOD, WATER, ETC.

Canteens (i'mutin).—None of the canteens, the use of which has been described above (under "Drinks"), were obtained for the collection. They were seen only by Lieut. Ray and Capt. Herendeen, who made winter journeys with the natives. They describe them as made of seal-skins and of small size. I find no published mention of the use of such canteens among the Eskimo elsewhere, except in Baffin Land.²

Wallets, etc.—Food and such things are carried in roughly made bags of skin or cloth, or sometimes merely wrapped up in a piece of skin or entrail, or whatever is convenient. Special bags, however, are used for bringing in the small fish which are caught through the ice. These are flat, about 18 inches or 2 feet square, and made of an oblong piece of sealskin, part of an old kaiak cover, doubled at the bottom and sewed up each side, with a thong to sling it over the shoulders.

Buckets and tubs.—Buckets and tubs of various sizes are used for holding water and other fluids, blubber, flesh, entrails, etc., in the house, and are made by bending a thin plank of wood (spruce or fir) round a nearly circular bottom and sewing the ends together. These are probably all obtained from the Nunatañimun, as it would be almost impossible to procure suitable wood at Point Barrow. The collection contains four specimens—two tubs and two buckets.

No. 56764 [370] (Fig. 16) will serve as a type of the water bucket (kítau'ε). A thin strip of spruce 8 inches wide is bent round a circular bottom of the same wood 10½ inches in diameter. The edge of the latter is slightly rounded and



FIG. 16.—Wooden bucket.

fits into a shallow croze one-fourth inch from the lower edge of the strip. The ends of the strip overlap 3½ inches and are sewed together with narrow strips of whalebone in two vertical seams of short stitches, one

¹ See Parry's 2nd Voyage, p. 271 and plate opposite. Compare also Chappell, "Hudson Bay," pp. 75-77, figure on p. 75.

² "When out traveling, they mostly carry their water supply in a seal's stomach, prepared for the purpose." Kumlien, op. cit., p. 41. Compare also Hall, Arctic Researches, p. 584.

seam close to the outer end, which is steeply chamfered off and painted red, and the other 1·6 inches from this. Both seams are countersunk in shallow grooves on the outer part. The bucket is ornamented with a shallow groove running round the top, and a vertical groove between the seams. These grooves and the seam grooves are painted red. The bail is of stout iron wire fastened on by two ears of white walrus ivory cut into a rude outline of a whale, and secured by neat lashings of whale-bone passing through corresponding holes in the ear and the bucket. The bucket has been some time in use.

No. 56763 [369] is a bucket with a bail, and very nearly of the same shape and dimensions. It has, however, a bail made of rope yarns braided together, and the ears are plain flat pieces of ivory. Buckets of this size, with bails, are especially used for water, particularly for bringing it from the ponds and streams. The name "kútauæ" corresponds to the Greenlandic kátauak, "a water-pail with which water is brought to the house."¹

No. 89891 [1735] (Fig. 17), which is nearly new, is a very large tub (ilul'kpûñ, which appears to mean "a capacious thing") without a bail, and is 11 inches high and 20 in diameter. The sides are made of two pieces of plank of equal length, whose ends overlap alternately and are sewed together as before. The bottom is in two pieces, one large and one small, neatly fastened together with two dowels, and is not only held in by having its edge chamfered to fit the croze, but is pegged in with fourteen small treenails. The seams, edges, and two ornamental grooves around the top are painted red as before.

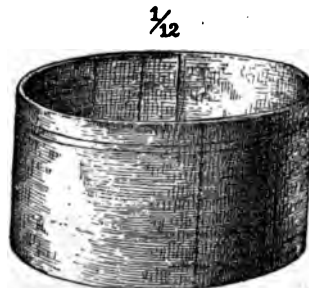


FIG. 17.—Large tub.

No. 89890 [1753] is smaller, 9·7 inches high and 14·5 in diameter. It has no bail, and is ornamented with two grooves, of which the lower is painted with black lead. The bottom is in two equal pieces, fastened together with three dowels. This is a new tub and has the knotholes neatly plugged with wood. There are a number of these tubs in every house. They are known by the generic name of imusiáru (which is applied also to a barrel, and which means literally "an unusual cup or dipper," small cups of the same shape being called i'musyú), but have special names signifying their use. For instance, the little tub about 6 inches in diameter, used by the males as a urinal, is called kúvwñ ("the place for urine.") One of these large tubs always stands to catch the drip from the lump of snow in the house, and those of the largest size, like No. 89891 [1735], are the kind used as chamber pots.

Vessels of this sort are in use throughout Alaska, and have been observed among the eastern Eskimo where they have wood enough to

¹ Grenl. Ordbog., p. 135.

make them. For instance, the Eskimo of the Coppermine River "form very neat dishes of fir, the sides being made of thin deal, bent into an oval form, secured at the ends by sewing, and fitted so nicely to the bottom as to be perfectly water-tight."¹ There are specimens in the Museum from the Mackenzie and Anderson Rivers, described in the MacFarlane MS. as "pots for drinking with, pails for carrying and keeping water, and also as chamber pots. Oil is also sometimes carried in them in winter."

In some places where wood is scarce vessels of a similar pattern are made of whalebone. Vessels "made of whalebone, in a circular form, one piece being bent into the proper shape for the sides," are mentioned by Capt. Parry on the west shore of Baffins Bay,² and "circular and oval vessels of whalebone" were in use at Iglulik.³ This is the same as the Greenlandic vessel called *pertak* (a name which appears to have been transferred in the form *pi'túño* to the wooden meat bowl at Point Barrow), "a dish made of a piece of whalebone bent into a hoop, which makes the sides, with a wooden bottom inserted."⁴ Nordenskiöld speaks of vessels of whalebone at Pitlekaj, but does not specify the pattern.⁵ Whalebone dishes were used at Point Barrow, but at the present day only small ones for drinking-cups are in general service. One large dish was collected. (Fig. 18. No. 89850 [1199]).

A strip of whalebone $4\frac{1}{4}$ inches wide is bent round a nearly circular bottom of cottonwood so as to form a small tub. The edges of the bot-

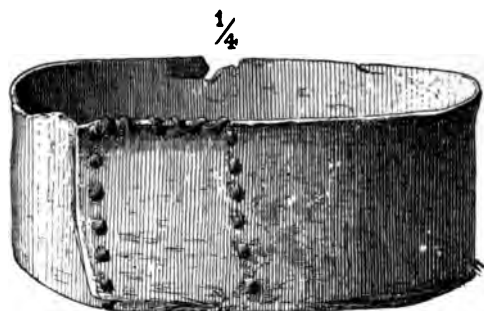


FIG. 18.—Whalebone dish.

tom are chamfered to fit a shallow croze in the whalebone. The overlapping ends of the whalebone are sewed together with a strip of whalebone in long stitches. This dish is quite old and impregnated with grease. Vessels of this kind are uncommon, and it is probable that none have been made since whalebone acquired its present commercial value.

They were very likely in much more general use formerly, as when there was no such market for whalebone as at present it would be cheaper to make tubs of this material than to buy wooden ones. In corroboration of this view it may be noted that Dr. Simpson does not mention woodenware among the articles brought for sale by the Nunatañmiun.⁶ The small whalebone vessels will be described under drinking cups, which see.

¹ Franklin, 1st Exp., vol. 2, p. 181.

² First Voy., p. 286.

³ Second Voy., p. 503.

⁴ Grenl. Ordbog., p. 293.

⁵ Vega, vol. 2, p. 124.

⁶ Op. cit., p. 266.

Meat bowls.—(Pitúño, see remarks on p. 88.) Large wooden bowls are used to hold meat, fat, etc., both raw and cooked, which are generally served on trays. These are of local manufacture and carved from blocks of soft driftwood. The four specimens collected are all made of cottonwood, and, excepting No. 73570 [408], have been long in use and are thoroughly impregnated with grease and blood.

No. 89864 [1322] (Fig. 19) will serve as the type. This is deep and nearly circular, with flat bottom and rounded sides. The brim is ornamented with seven large sky-blue glass beads imbedded in it at equal intervals, except on one side, where there is a broken notch in the place of a bead.

Another, No. 89863 [1320], is larger and not flattened on the bottom, and the brim is thinner.

It is also provided with a bail of seal thong, very neatly made, as follows: One end of the thong is knotted with a single knot into one of the holes so as to leave one long part and one short part (about 3 inches). The long part is then carried

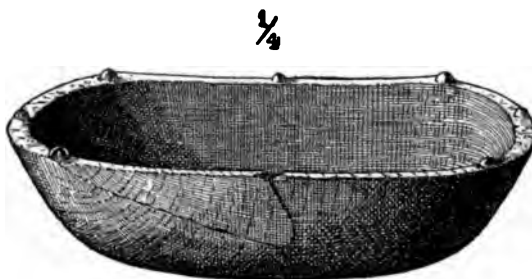


FIG. 19.—Meat bowl.

across and through the other hole from the outside, back again through the first hole and again across, so that there are three parts of thong stretched across the bowl. The end is then tightly wrapped in a close spiral round all the other parts, including the short end, and the wrapping is finished off by tucking the end under the last turn. The specimen shows the method of mending wooden dishes, boxes, etc., which have split. A hole is bored on each side of the crack, and through the two is worked a neat lashing of narrow strips of whalebone, which draws the parts together.

In No. 89865 [1321], which has been split wholly across, there are six such stitches, nearly equidistant, holding the two parts together. This bowl is strengthened by neatly riveting a thin flat "strap" of walrus ivory along the edge across the end of the crack. These three bowls are of nearly the same shape, which is the common one. The new bowl (No. 73570 [408]) is of a less common shape, being not so nearly hemispherical as the others, but shaped more like a common milk pan. It is ornamented with straight lines drawn in black lead, dividing the surface into quadrants. These were probably put on to catch the white man's eye, as the bowl was made for the market. Dishes of this description are common throughout Alaska (see the National Museum collections) and have been noted at Plover Bay.¹

¹ Hooper, Tenta, etc., p.147.

FOR PREPARING FOOD.

Pots of stone and other materials (u'tkuziñ).—In former times, pots of soapstone resembling those employed by the eastern Eskimo, and probably obtained from the same region as the lamps, were used for cooking food at Point Barrow, but the natives have so long been able to procure metal kettles directly or indirectly from the whites (Elson found copper kettles at Point Barrow in 1826)¹ that the former have gone wholly out of use, and at the present day fragments only are to be found. There are four such fragments in the collection, of which three are of the same model and one quite different.

No. 89885-6 [1559] (Fig. 20) is sufficiently whole to show the pattern of the first type. It is of soft gray soapstone. A large angular gap is broken from the middle of one side, taking out about half of this side,



FIG. 20.—Stone pot

and a small angular piece from the bottom. From the corner of this gap the pot has been broken obliquely across the bottom, and mended in three places with stitches of whale-bone made as described under No.

89865 [1321]. One end is cut down for about half its height, and the edge carried round in a straight line till it meets the gap in the broken side. This end appears to have been pieced with a fresh piece of stone, as there are holes for stitches in the edge of the whole side and in the upper edge of the broken side. There are also two "stitch holes" at the other side of the gap, showing how it was originally mended. A low transverse ridge across the middle of the whole end was probably an ornament. Holes for strings by which the pot was hung up are bored one-fourth to one-half inch from the brim. Two of these are bored obliquely through the corners, which are now broken off. The holes in the sides close to the corners were probably made to take the place of these. The pot is neatly and smoothly made, and the brim is slightly rounded. It shows signs of great age, and is blackened with soot and crusted with oil and dirt.²

Nos. 89886 [680] and 89868 [1096] are much less complete. They are the broken ends of pots slightly smaller than the above, but of precisely the same pattern, even to the ornamental transverse ridge across the end.³ The string holes are bored through the corners as before, and

¹ Beechey's Voyage, p. 572.

² This specimen was broken in transportation, and the pieces received different Museum numbers. It is now mended with glue.

³ Compare these pots with the two figured in Parry's 2d Voyage (plate opposite p. 160). The smaller of these has a ridge only on the end, but on the larger the ridge runs all the way round. The plate also shows how the pots were hung up. See also Fig. 1, plate opposite p. 548.

in both pots are holes showing where they have been mended by whalebone stitches, fragments of which are still sticking in one pot. This method of mending soapstone vessels by sewing is mentioned by Capt. Parry as practiced at Iglulik.¹

No. 89883 [1097] (Fig. 21) is a small pot of a quite different shape, best understood from the figure. Round the edge are eight holes for strings nearly equidistant. The outside is rough, especially on the bottom. One of the sides is much gapped, and the acute tip has been broken off obliquely and mended with a stitch of whalebone. The care used in mending these vessels shows that they were valuable and not easily replaced. I can find no previous mention of the use of stone vessels for cooking on the western coast, and there are no specimens in the National Museum collections. The only Eskimo stone vessels are a couple of small stone bowls from Bristol Bay. These are very much the shape of



FIG. 21.—Small stone pot.

the wooden bowls above described, and appear to have been used as oil dishes and not for cooking, as the inside is crusted with grease, while the outside is not blackened. On the other hand, stone cooking pots are very generally employed even now by the eastern Eskimos, and have been frequently described.² The close resemblance of the pots from Point Barrow to those described by Capt. Parry, taken in connection with Dr. Simpson's statement³ that the stone lamps were brought from the east, renders it very probable that the kettles were obtained in the same way. The absence of this utensil among the southern Eskimo of Alaska is probably due to the fact that being inhabitants of a well wooded district they would have no need of contrivances for cooking over a lamp.

I obtained three fragments of pottery, which had every appearance of great age and were said to be pieces of a kind of cooking-pot which they used to make "long ago, when there were no iron kettles." The material was said to be earth (nu'na), bear's blood, and feathers,⁴ and appears to have been baked. They are irregular fragments (No.

¹2d Voyage, p. 502.

²I need only refer to Crantz, who describes the "bastard-marble kettle," hanging "by four strings fastened to the roof, which kettle is a foot long and half a foot broad, and shaped like a longish box" (vol. 1, p. 140); the passage from Parry's 2d Voyage, referred to above; Kumlien, *op. cit.*, p. 20 (Cumberland Gulf); Boas, "Central Eskimo," p. 545; and Gilder, Schwatka's Search, p. 260 (West Shore of Hudson Bay).

³*Op. cit.*, pp. 267-269.

⁴Compare the cement for joining pieces of soapstone vessels mentioned by Boas ("Central Eskimo," p. 526) consisting of "seal's blood, a kind of clay, and dog's hair."

89697 [1589], Fig. 22) of perhaps more than one vessel, which appears to have been tall and cylindrical, perhaps shaped like a bean-pot, pretty smooth inside, and coated with dried oil or blood, black from age. The outside is rather rough, and marked with faint rounded transverse ridges, as if a large cord had been wound round the vessel while still soft. The largest shard has been broken obliquely across and mended with two stitches of sinew, and all are very old and black.

Beechey (*Voyage*, p. 295) speaks of "earthen jars for cooking" at Hotham Inlet in 1826 and 1827, and Mr. E. W. Nelson has collected a

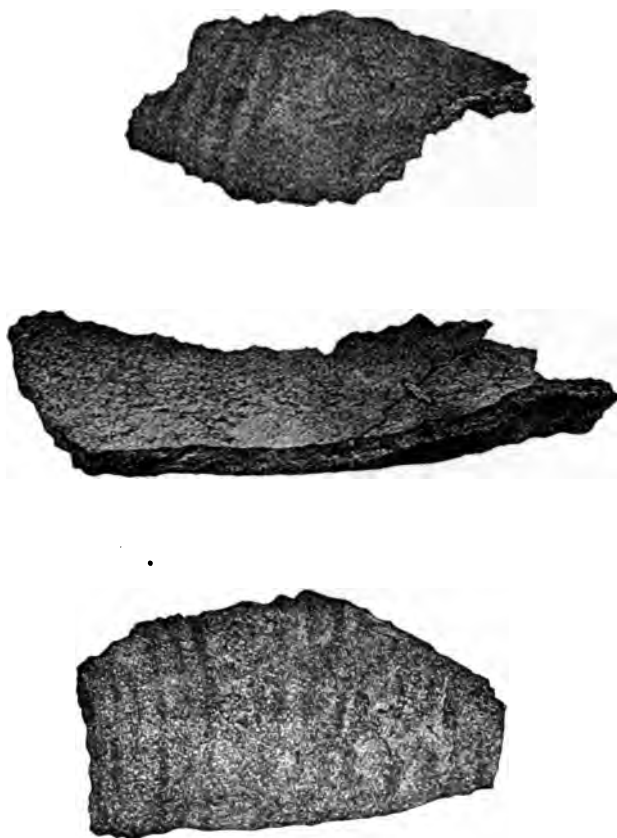


FIG. 22.—Fragments of pottery.

few jars from the Norton Sound region, very like what those used at Point Barrow must have been. Choris figures a similar vessel in his *Voyage Pittoresque*, Pl. III (2d), Fig. 2, from Kotzebue Sound. Metal kettles of various sorts are now exclusively used for cooking, and are called by the same name as the old soapstone vessels, which it will be observed corresponds to the name used by the eastern Eskimo. Light sheet-iron camp-kettles are eagerly purchased and they are very glad to get any kind of small tin cans, such as preserved meat tins, which

they use for holding water, etc., and sometimes fit with bails of string or wire, so as to use them for cooking porridge, etc., over the lamp. They had learned the value of these as early as Maguire's time,¹ as had the people of Plover Bay in 1849.²

Bone crushers.—In preparing food it is often desirable to break the large bones of the meat, both to obtain the marrow and to facilitate the trying out of the fat for making the pemmican already described. Deer bones are crushed into a sort of coarse bone-meal for feeding the dogs when traveling. For this purpose heavy short-handled stone mauls are used. These tools may have been formerly serviceable as hammers for driving treenails, etc., as the first specimen obtained was described as "savik-pidjûk-nunamisini'ktuë-kau'të" (literally "iron-not-dead-hammer"), or the hammer used by those now dead, who had no iron. For this purpose, however, they are wholly superseded by iron hammers, and are now only used for bone crushers. The collection contains a large series of these implements, namely, 13 complete mauls and 13 unhafted heads. All are constructed on the same general plan, consisting of an oblong roughly cylindrical mass of stone, with flat ends, mounted on the expanded end of a short haft, which is applied to the middle of one side of the cylinder and is slightly curved, like the handle of an adz. Such a haft is frequently made of the "branch" of a reindeer antler, and the expanded end is made by cutting off a portion of the "beam" where the branch joins it. A haft so made is naturally elliptical and slightly curved at right angles to the longer diameter of the ellipse, and is applied to the head so that the greatest thickness and therefore the greatest strength comes in the line of the blow, as in a civilized ax or hammer. The head and haft are held together by a lashing of thong or three-ply braid of sinew, passing through a large hole in the large end of the haft and round the head. This lashing is put on wet and dries hard and tight.³ It follows the same general plan in all the specimens, though no two are exactly alike. The material of the heads, with three exceptions (No. 56631 [222], gray porphyry; No. 89654 [906], black quartzite, and No. 89655 [1241], coarse-grained gray syenite), is massive pectolite (see above, p. 60), generally of a pale greenish or bluish gray color and slightly translucent, sometimes dark and opaque. No. 56635 [243] will serve as the type of these implements.⁴

The head is of light bluish gray pectolite, and is lashed with a three-ply braid of reindeer sinew to a haft of some soft coniferous wood, probably spruce, rather smoothly whittled out and soiled by handling. The transverse ridge on the under side of the butt is to keep the hand from slipping off the grip. The whole is dirty and shows signs of considerable age.

¹ See Further Papers, etc., p. 909.

² Hooper, Tents, etc., p. 57.

³ We saw this done on No. 56634 [83], the head and haft of which were brought in separate and put together by an Eskimo at the station.

⁴ Figured in Ray's Point Barrow Report, Ethnology, Pl. II, Fig. 6.

These mauls vary considerable in size. The largest is 7·1 inches long and 2·5 in diameter, and the smallest 2·1 inches long by 2·4. This is a very small hammer, No. 56634 [83] having a haft only 4·7 inches long. The haft is usually about 5 inches long. The longest (belonging to one of the smaller heads, 4 inches by 2) is 7·2 inches long, and the shortest (belonging to a slightly larger head, 4·7 by 3·1 inches) is 4·5 inches. The largest two heads, each 7·1 by 2·5 inches, have hafts 5 inches long.

The lashing of all is put on in the same general way, namely, by securing one end round the head and through the eye, then taking a variable number of turns round the head and through the hole, and tightening these up by wrapping the end spirally round all the parts, where they stretch from head to haft on each side. Seal thong, narrow or broad, is more generally used than



FIG. 23.—Stone maul.

sinew braid (only three specimens out of the thirteen have lashings of sinew). When broad thong is used the loop is made by splicing, as follows: A slit is cut about 1½ inches from the end of the thong, and the end is doubled in a bight and passed through this slit. The end is then slit and the other end of the thong passed through it and drawn taut, making a splice which holds all the tighter for drawing on it. A simple loop is tied in sinew braid.

The following figures will illustrate the most important variations in the form of this implement. Fig. 23, No. 56634 [83] from Utkiawwīñ, has a head of light gray pectolite, slightly translucent, and evidently ground flat on the faces,



FIG. 24.—Stone maul.

and the haft is of reindeer antler, with a slight knob at the butt. A square piece of buckskin is doubled and inserted between the head and haft. The lashing is of fine sealskin twine, and the spiral wrapping is carried wholly round the head. This was the first stone maul collected, and was put together at the station, as mentioned above. It is rather smaller than usual. Fig. 24, No. 56637 [196], from Utkiawwīñ, has the

head of grayish pectolite, rough and unusually large. The haft is of some soft coniferous wood soaked with grease. It is nearly round, instead of elliptical, with an irregular knob at the butt, and not curved, but fastened obliquely to the head. The loop of double thong attached to the haft is probably to go round the wrist.

Fig. 25, No. 56639 [161], from Utkiavwñ, is of pectolite, the upper and lower faces almost black and the sides light gray. The haft is of

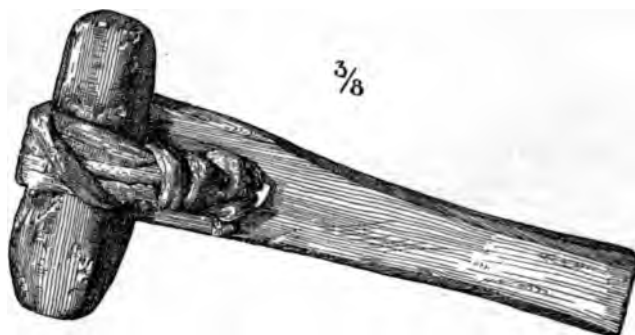


FIG. 25.—Stone maul.

hard wood and unusually long (7·2 inches). It is noticeable for being attached at right angles to the head, by a very stout lashing of thong of the usual kind, and further tightened by a short flat stick wedged in below the head on one side. There appears to have been a similar “key” on the other side. This is an unusual form.

Fig. 26, No. 89654 [906], is from Nuwñk. The head is an oblong, nearly cylindrical, water-worn pebble of black quartzite, 7·1 inches long; the haft is of reindeer antler, and the lashing of seal thong.

Fig. 27, No. 89655 [1241], from Utkiavwñ. The head of this maul is a long pebble of rather coarse-grained gray syenite, and is peculiar in having a shallow groove roughly worked out round the middle to keep the lashing from slipping. It is 4·7 inches long and 3·1 in diameter.

The haft is of reindeer antler 4·5 inches long, and the lashing of seal thong peculiar only in the large number of turns in the spiral wrappings.



FIG. 26.—Stone maul.

Fig. 28, No. 89657 [877], from Nuwük. This is peculiar in having the haft fitted into a deep angular groove on one side of the head, which is of pectolite and otherwise of the common pattern. The haft of reindeer antler and the lashing of broad thong are evidently newer than the head and are clumsily made and put on, the latter making several turns

about one side of the haft as well as through it and round the head.

None of the unmounted heads, which are all of pectolite, are grooved in this way to receive the haft, but No. 56658 [205] has two shallow, incomplete grooves round the middle for lashings, and No. 56655 [218], which is nearly square in section, has



FIG. 27.—Stone maul.

shallow notches on the edges for the same purpose. One specimen of the series comes from Sidaru, but differs in no way from specimens from the northern villages.

Stonemauls of this type have previously been seldom found among the American Eskimo. The only specimens in the Museum from America are two small unhafted maul heads of pectolite, one from Hotham Inlet and the other from Cape Nome, and a roughly made maul from Norton Sound, all collected by Mr. Nelson. The last is an oblong piece of dark-colored jade rudely lashed to the end of a short thick stick, which has a lateral projection round which the lashing passes instead of through a

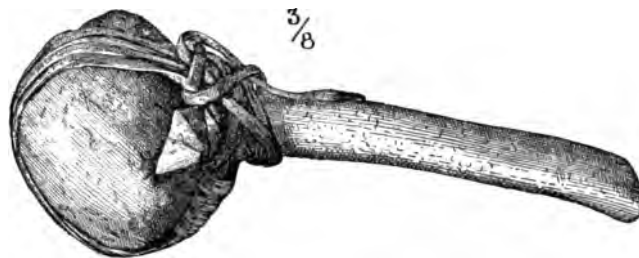


FIG. 28.—Stone maul.

hole in the haft. Among the "Chukches" at Pithkaj, however, Nordenskiöld found stone mauls of precisely the same model as ours and also used as bone crushers. He observed that the natives themselves ate the crushed bone after boiling it with blood and water.¹ Lieut. Ray saw only dogs fed with it in the interior. Nordenskiöld does not men-

¹ Vega, vol. 2, p. 113; figures on p. 112.

tion the kind of stone used for these tools, but the two in the National Museum, collected by Mr. Nelson at Cape Wankarem, are both of granite or syenite and have a groove for the lashing. (Compare No. 89655 [1241], fig. 27.)

In addition to the above-described stone mauls, there are in the collection five nearly similar mauls of heavy bone, which have evidently



FIG. 29.—Bone maul.

served the same purpose. They were all brought over for sale from Utkiavwfi at about the same time, and from their exceedingly oily condition were evidently brought to light in rummaging round in the old "blubber-rooms," where they have long lain forgotten. Four of these differ in no respect from the stone mauls except in having the heads made of whale's rib; the fifth is all in one piece.

The following figures will illustrate the general form of these imple-



FIG. 30.—Bone maul.

ments: Fig. 29, No. 89847 [1046]: The head is a section of a small rib, 4·8 inches long, and has a deep notch on each side to receive the lashing. The haft is probably of spruce (it is so impregnated with grease that it

is impossible to be sure about it), and is rough and somewhat knobby, with a rounded knob on the butt and two shallow finger notches on the under side of the grip. It is attached by a lashing of stout thong of the ordinary pattern. Fig. 30, No. 89849 [1047]: The head is a straight four-sided block of whale's rib, 6 inches long. The deep notches for the lashing, one on each side, are 1 inch behind the middle. The haft is a

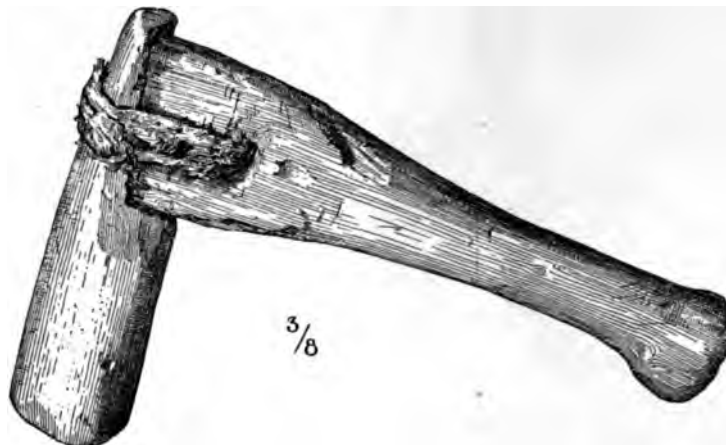


Fig. 31.—Bone maul.

roughly whittled knotty piece of spruce, and instead of a knob has a thick flange on the lower side of the butt. The lashing is of fourteen or fifteen turns of seal twine, and keyed upon each side by a roughly split stick thrust in under the head. Fig. 31, No. 89846 [1048]: This is peculiar in having the haft not attached at or near the middle of the head, but at one end, which is shouldered to receive it. The haft is of the common pattern and attached as usual, the lashing being made of very stout

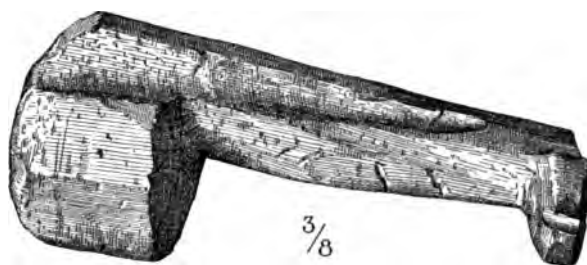


Fig. 32.—Bone maul.

sinew braid. The head is a section of a small rib 6 inches long. Fig. 32, No. 89845 [1049]: This is made in one piece, and roughly carved with broad cuts from a piece of whale's jaw. The grooves and holes in the bone are the natural canals of blood vessels. All these mauls are battered on the striking face, showing that they have been used.

At the first glance it seems as if we had here a series illustrating the development of the stone hammer. Fig. 32 would be the first form, while

the next step would be to increase the weight of the head by lashing a large piece of bone to the end of the haft, instead of carving the whole laboriously out of a larger piece of bone. The substitution of the still heavier stone for the bone would obviously suggest itself next. The weak point in this argument, however, is that the advantage of the transition from the first to the next form is not sufficiently obvious. It seems to me more natural to suppose that the hafted stone hammer has been developed here, as is believed to have been the case elsewhere, by simply adding a handle to the pebble which had already been used as a hammer without one. These bone implements are then to be considered as makeshifts or substitutes for the stone hammer, when stones suitable for making the latter could not be procured. Now, such stones are rare at Point Barrow, and must be brought from a distance or purchased from other natives; hence the occasional use of such makeshifts as these. This view will account for the rarity of these bone hammers, as well as the rudeness of their construction. No. 89845 [1049] would thus be merely the result of individual fancy and not a link in the chain of development.

FOR SERVING AND EATING FOOD.

TRAYS.

Cooked food is generally served in large shallow trays more or less neatly carved from driftwood and nearly circular or oblong in shape.

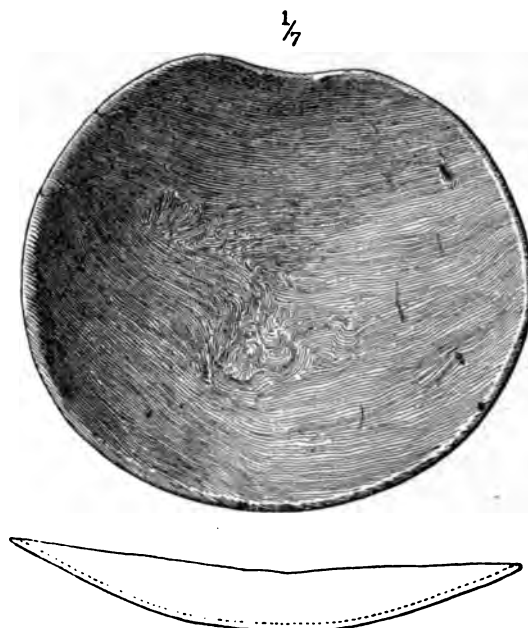


FIG. 33.—Meat dish.

The collection contains two specimens of the circular form and three oblong ones. All but one of these have been long in use and are very greasy. No. 73576 [392] (Fig. 33) has been selected as the type of the

circular dishes (i'libiq). This is very smoothly carved from a single piece of pine wood. The brim is rounded, with a large rounded gap in one side, where a piece has probably been broken out. The brim is slightly cracked and chipped. The vessel is very greasy and shows marks inside where meat has been cut up in it. No. 89867 [1323] is a very similar dish, and made

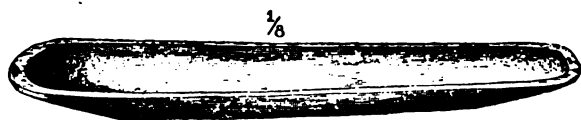


FIG. 34.—Oblong meat dish.

of the same material, but elliptical instead of circular, and larger, being 22.5 inches long, 15.5 broad, and 2.1 deep. It has been split in two, and mended with whale-bone stitches in the manner previously described.

No. 73575 [223] (Fig. 34) is a typical oblong dish. It is neatly hollowed out, having a broad margin painted with red ocher. It measures 24 inches in length, is made of pine, rather roughly carved on the outside, and is new and clean. This is a common form of dish. Fig. 35, No.

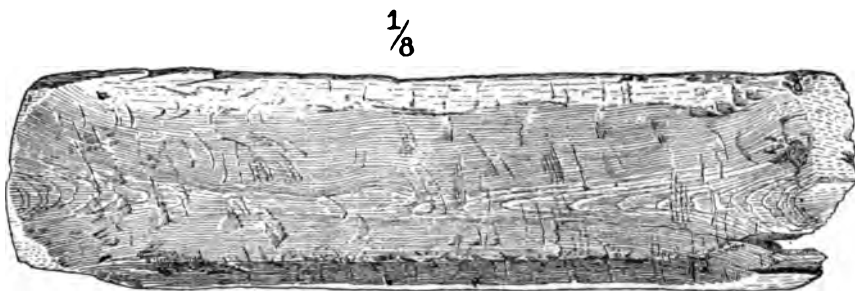


FIG. 35.—Oblong meat dish; very old.

89868 [1377], is an old tray of an unusual form. It is rudely hewn out of a straight piece of plank, 34.8 inches long, showing inside and out the marks of a dull adz, called by the seller "kau'dlo tu'mai," "the footprints of the stone (scil. adz)." The excavation is shallow and leaves a margin of 2 inches at one end, and the outside is roughly beveled off at the sides and ends. The holes near the ends were evidently for handles of thong. The material is spruce, discolored and somewhat greasy. Fig. 36, No. 89866

[1376], was said by the native who brought it over for sale to be especially intended for fish. It is much the shape of No. 73575 [223], but broader, slightly deeper, and more curved.

The brim is narrow and rounded and the bottom smoothly rounded off. It measures 23.3 inches in length, and is made of pine. It has been deeply split in two places and stitched together with whale-

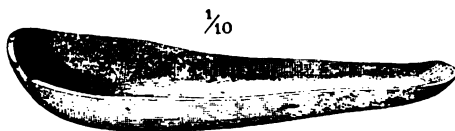


FIG. 36.—Fish dish.

bone in the usual way. Trays and dishes of this sort are in general use among all Eskimo,¹ and are sometimes made of tanned sealskins.²

DRINKING VESSELS.

Whalebone Cup (Imusyú).—One of the commonest forms of drinking vessels is a little tub of whalebone of precisely the same shape as the large whalebone dish described above (p. 88). Of these there are five specimens in the collection, all from Utkiavwñ. No. 89853 [1302] (Fig. 37) will serve as the type. It is 4.6 inches long and made by binding a strip of black whalebone round a spruce bottom, and sewing together the ends, which overlap each other about 1½ inches, with coarse strips of whalebone.



FIG. 37.—Whalebone cup.

There are two vertical seams three-fourths inch apart. The bottom is held in by fitting its slightly chamfered edge into a shallow croze cut in the whalebone. All these cups are made almost exactly alike, and nearly of the same size, varying only a fraction of an inch in height, and from 4.2 to 5.5 inches in length. The only variation is in the distance the ends overlap and the number of stitches in the seams. Such cups are to be found in nearly every house, and one is generally kept conveniently near the water bucket. Though the pattern is an ancient one, they are still manufactured. No. 56560

[654] was found among the debris of one of the ruined houses at Utkiavwñ, and differs from the modern cups only in having the ends sewed together with one seam instead of two, while No. 89851 [1300], though it has been in actual use, was made after our arrival, as the bottom is made of a piece of one of our cigar boxes.



FIG. 38.—Horn dipper.

Dippers of horn are in very general use for drinking water. These are all of essentially the same shape, and are made of the light yellow translucent horn of the mountain sheep. There are three specimens in our collection, of which No. 56534 [28] (Fig. 38) has been selected as the type. This is made of a single piece of pale yellow translucent horn,

¹ See for example, Crantz, vol. 1, p. 144, Greenland; Parry, 2d. Voy., p. 503, Iglulik; and Hooper, Tents, etc., p. 170, Plover Bay.

² Beasels, *Naturalist*, Sept. 1884, p. 867.

apparently softened and molded into shape, cut only on the edges and the handle. A stout peg of antler is driven through the handle, 1 inch from the tip, and projects behind, serving as a hook by which to hang the dipper on the edge of a bucket. The other two are similar in shape and size, but No. 89831 [1293] has no peg, and has one side of the handle cut into a series of slight notches to keep the hand from slipping, while No. 89832 [1577] is rather straighter and has a smaller, shallower bowl, and the grip of the handle roughened with transverse grooves. Fig. 39, No. 89739 [774], is a horn dipper, but one that is very old and of a

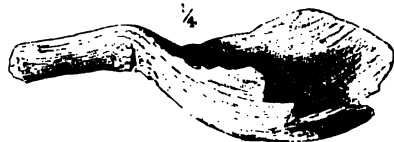


FIG. 39.—Horn dipper.

pattern no longer in use. The bowl, which is much broken and gapped, is oval and deep, with a thick handle at one end, running out in the line of the axis of the bowl. This handle, which is the thick part of the horn, near the tip, is flat above, rounded below, and has its tip slightly rounded, apparently by a stone tool. Just where the bowl and handle meet there is a deep transverse saw-cut, made to facilitate bending the handle into its place. The material is horn, apparently of the mountain sheep, turned brown by age and exposure. The specimen had been long lying neglected round the village of Utkiavwñ.

Horn dippers of the same general pattern as these are common throughout Alaska. The Museum collection contains a large series of such utensils, collected by Mr. Nelson and others. The cups and dippers of musk-ox horn found by Parry at Iglulik are somewhat different in shape.¹ Those made of the enlarged base of horn² have a short handle and a nearly square bowl, while the hollow top of the horn is used for a cup without alteration beyond sometimes bending up the end, which serves as a handle.³ Curiously enough, cups of this last pattern appear not to be found anywhere else except at Plover Bay, eastern Siberia, where very similar vessels (as shown by the Museum collections) are made from the horn of the Siberian mountain sheep. An unusual form of dipper is beautifully made of fossil ivory. Such cups are rare and highly prized. We saw only three, one from each village, Nuwñk, Utkiavwñ, and Sidaru, and all were obtained for the collection. They show signs of age and long use. They differ somewhat in shape and size, but each is carved from a single piece of ivory and has a large bowl and a straight handle. No. 56535 [371] (Fig. 40), which will serve as the type of the ivory dipper (*i'musyû, killgwû'garo*), is neatly carved from a single piece of fine-grained fossil ivory, yellowed by age. The handle, polished by long use, terminates in a blunt, recurved, tapering hook, which serves the purpose of the peg in the

¹ Second Voyage, p. 503.

² See Fig. 26, plate opposite p. 550.

³ See Figs. 8 and 9, opposite p. 548.

horn dipper. The rounded gap in the brim opposite the handle is an accidental break. Another, No. 89830 [1259], from Sidaru, is a long trough-like cup, with rounded ends and a short flat handle at one end, made of a short transverse section of a rather small tusk, keeping the natural roundness of the tusk, but cut off flat on top and excavated. A wooden peg, like those in the horn dippers, is inserted in the end of the handle. This cup is especially interesting from its resemblance to the one obtained by Beechey (Voyage, Pl. I, Fig. 4) at Eschscholtz



FIG. 40.—Dipper of fossil ivory.

Bay, from which it differs only in being about 2 inches shorter and deeper in proportion. Thomas Simpson speaks of obtaining an ivory cup from some Point Barrow natives at Dease Inlet exactly like the one figured by Beechey, but with the handle broken off.¹ Fig. 41, No. 89833 [933], from Nuwük, has a large bowl, nearly circular, with a broad, straight handle and a broad hook. The part of the bowl to which the handle is attached, a semicircular piece 3 inches long and $1\frac{3}{4}$ wide, has been split out with the grain of the tusk, and mended with three stitches, in this case of sinew, in the usual manner. There was an old gap in the brim opposite to the handle, and the edges of it have been



FIG. 41.—Dipper of fossil ivory.

freshly and roughly whittled down. The ornamentation of the outside and handle, consisting of narrow incised lines and small circles, each with a dot in the center, is well shown in the figure. These engravings were originally colored with red ocher, but are now filled with dirt and are nearly effaced by wear on the handle. This dipper is not of such fine quality of ivory as the other two. It is not unlikely that all these vessels were made by the natives around Kotzebue Sound, where ivory is plenty, and where Beechey, as quoted above, found one so like one of ours. We were informed by the owner that No. 56535 [371] was obtained from the Nunatañniun.

¹ Narrative, p. 148.

Spoons and ladles.—Each family has several spoons of various sizes, and narrow shallow ladles of horn, bone, etc. The large spoon is for stirring and ladling soup, etc. There is only one specimen in the collection, No. 89739 [1352] (Fig. 42). This is a new one, made by a native of Utkiavwñ, whom I asked to make himself a new spoon and bring



FIG. 42.—Wooden spoon.

me his old one. He, however, misunderstood me and brought over the new one, which Lient. Ray purchased, not knowing that I had especially asked for the old one. These spoons seem to be in such constant use that the natives did not offer them for sale. This

specimen is smoothly carved from a single piece of pine, and painted all over, except the inside of the bowl, with red ocher. A cross of red ocher is marked in the middle of the bowl, and there is a shallow groove, colored with blacklead, along the middle of the handle on top. The length is 13.2 inches. A small spoon of light-colored horn, No. 89416 [1379], has a bowl of the common spoon shape with a short, flat handle. Spoons of this sort were not seen in use, and as this is new and evidently made for sale it

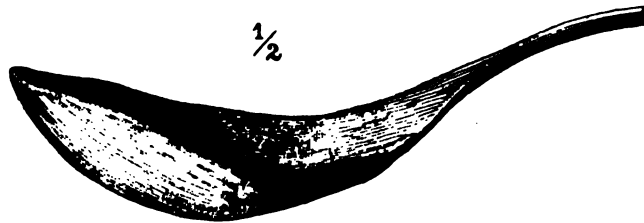


FIG. 43.—Horn ladle.

may be meant for a copy of one of our spoons. The narrow ladles of horn or bone may formerly have been used for eating before it was so easy to get tin pots, but at present are chiefly used for dipping oil, especially for filling the lamp. The collection contains one of horn and four of bone.

No. 89415 [1070], Fig. 43, is made of a single piece of mountain-sheep horn, dark brown from age and use, softened and molded into shape.

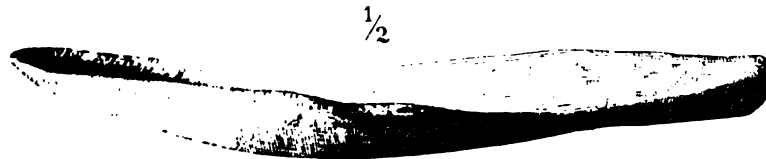


FIG. 44.—Bone ladle.

It is impregnated with oil, showing that it has been long in use. This utensil closely resembles a great number of specimens in the Museum from the more southern parts of Alaska. No. 89411 [1294] (Fig. 44) is

a typical bone ladle. The material is rather coarse-grained, compact bone from a whale's rib or jawbone. No. 89414 [1013] closely resembles this but is a trifle larger. The other two specimens are interesting as showing an attempt at ornamentation. No. 89412 [1102] (Fig. 45, from Nuwük) is carved smoothly into a rude, flattened figure of a whale (*Balaena mysticetus*). The flukes form the handle and the belly is hollowed out into the bowl of the ladle. No. 89413 [934] (Fig. 46, from Utkiavwīñ) has the handle carved into a rude bear's head, which has the eyes, nostrils, and outline of the mouth incised and filled in with



FIG. 45.—Bone ladle in the form of a whale.

dark oil dregs. All these ladles have the curved side of the bowl on the left, showing that they were meant to be used with the right hand. The name, *kliu'te*, obtained for these ladles is given in the vocabulary collected by Dr. Oldmixon as "scraper," which seems to be the etymological meaning of the word. These implements may be used for scraping blubber from skins, or the name may correspond in meaning to the

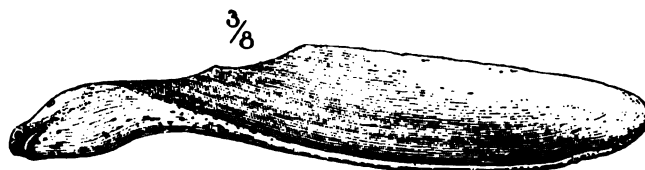


FIG. 46.—Bone ladle.

cognate Greenlandic *kiliortút*, "a scraper; especially a mussel shell (a natural scraper)." The resemblance of these ladles to a mussel shell is sufficiently apparent for the name to be applied to them. Indeed, they may have been made in imitation of mussel shells, which the Eskimo, in all probability, like so many other savages, used for ladles as well as scrapers.

MISCELLANEOUS HOUSEHOLD UTENSILS.

Lamps (kódlö).—Mention has already been made of the stone lamps or oil-burners used for lighting and warming the houses, which, in Dr. Simpson's time, were obtained by trading from the "*Káñmú'dlññ*," who in turn procured them from other Eskimo far to the east. These are flat, shallow dishes, usually like a gibbous moon in outline, and are of two sizes: the larger house lamp, 18 inches to 3 feet in length, and the small traveling lamp, 6 or 8 inches long. The latter is used in the temporary snow huts when a halt is made at night. In each house are usually two lamps, one standing at each side, with the curved side against the wall, and raised by blocks a few inches from the floor. In one large house, that of old *Yúks'ña*, the so-called "chief," at Nuwük,

there were three lamps, the third standing in the right-hand front corner of the house. The dish is filled with oil, which is burned by means of a wick of moss fibers arranged along the outer edge. Large lamps are usually divided into three compartments, of which the middle is the largest, by wooden partitions called *sä'potin* (corresponding to the Greenlandic *saputit*, "(1) a dam across a stream for catching fish, (2) a dam or dike in general"), along which wicks can also be arranged. The women tend the lamps with great care, trimming and arranging the wick with little sticks. The lamp burns with scarcely any smoke and a

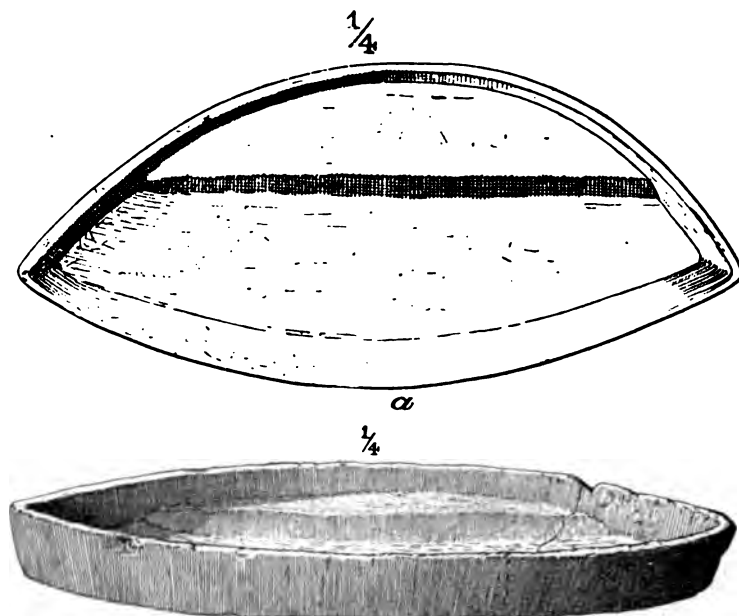


FIG. 47.—Stone house lamp.

bright flame, the size of which is regulated by kindling more or less of the wick, and is usually kept filled by the drip from a lump of blubber stuck on a sharp stick (*ajû'ksûxbwñ*) projecting from the wall about a foot above the middle of the lamp.¹

In most houses there is a long slender stick (*kukun*, "a lighter"), which the man of the house uses to light his pipe with when sitting on the banquette, without the trouble of getting down, by dipping the end in the oil of the lamp and lighting this at the flame. The sticks used for trimming the wick also serve as pipe-lighters and for carrying fire across the room in the same way.² No food, except an occasional

¹Compare the custom noticed by Parry, at Iglulik, of hanging a long thin strip of blubber near the flame of the lamp to feed it (2d Voyage, p. 502). According to Petitot (*Monographie, etc.*, p. xviii), the lamps in the Mackenzie district are fed by a lump of blubber stuck on a stick, as at Point Barrow.

²Compare Nordenskiöld, *Vega*, vol. 2, p. 119: "The wooden pins she uses to trim the wick . . . are used when required as a light or torch . . . to light pipes, etc. In the same way other pins dipped in train oil are used" (*Pittekaj*) and foot note on same page: "I have seen such pins, also oblong stones, sooty at one end, which, after having been dipped in train-oil, have been used as torches. . . . in old Eskimo graves in northwestern Greenland."

luncheon of porridge or something of the sort, is now cooked over these lamps. Two such lamps burning at the ordinary rate give light enough to enable one to read and write with ease when sitting on the banquette, and easily keep the temperature between 50° and 60° F. in the coldest weather. In the collection are three house lamps, two complete and one merely a fragment, and three traveling lamps.

Fig. 47 (No. 89879) [872] is a typical house lamp, though rather a small specimen. It is carved out of soft gray soapstone and is 17 inches long. The back is nearly vertical, while the front flares strongly outward. The back wall is cut down vertically inside with a narrow rounded brim and the front curves gradually in from the very edge to the bottom of the cavity, which is 1½ inches deep in the middle. The posterior third of the cavity is occupied by a flat, straight shelf with a sloping edge about 0.7 inch high. About a third of one end of the lamp

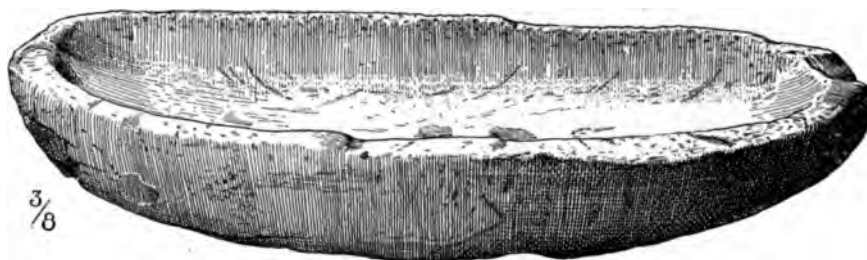


FIG. 48.—Sandstone lamp.

has been broken off obliquely and mended, as usual, with stitches. There are two of these neatly countersunk in channels. The specimen has been long in use and is thoroughly incrustated with oil and soot. No. 89880 [1731] (Fig. 48) is peculiar, from the material of which it is made. This is a coarse, gritty stone, rather soft, but much more difficult to work than the soapstone. It is rudely worked into something the same shape as the type, but has the cavity but slightly hollowed out, without a shelf, and only a little steeper behind than in front. The idea at once suggests itself that this lamp, which is very old and sooty, was made at Point Barrow and was an attempt to imitate the imported lamps with stone obtained from the beds reported by Lieut. Ray in Kulugrua. There is, of course, no means of proving this supposition. There is no mention of any material except soapstone being made into lamps by the Greenlanders or other eastern Eskimo, but the lamps from Kadiak and Bristol Bay in the National Museum are made of some hard gray stone.

Fig. 49, No. 56673 [133], is a traveling lamp, and is a miniature of the large lamp, No. 89879 [872], 8.7 inches long, 4.2 wide, and 1 inch high, also of soapstone and without a shelf. The front also is straighter, and the whole more roughly made. No. 89882 [1298] is another traveling lamp, also of soapstone, and made of about half of a large lamp. It has been

used little if at all since it was made over, as the inside is almost new while the outside is coated with soot and grease. It is 6.3 inches long. No. 80881 (1209) is a miniature of No. 80880, 3.1 inches long, and is made of the same gritty stone.



FIG. 49. Traveling lamp.

Suitable material is not at hand for the proper comparison of the lamps

used by the different branches of the Eskimo race. All travelers who have written about the Eskimo speak of the use of such lamps, which agree in being shallow, oblong dishes of stone. Dr. Bessels' figures a lamp of soapstone from Ita, Smith Sound, closely resembling No. 80880, and a little lamp in the Museum from Greenland is of essentially the same shape, but deeper. The same form appears at Hudson Strait in the lamps collected by Mr. L. M. Turner, while those used at Iglulik are nearly semi-circular.² South of Kotzebue Sound lamps of the shape so common in the east are used, but these, Mr. Turner informs me, are never made of soapstone, but always of sandstone, shale, etc. The people of Kadiak and the Aleuts anciently used lamps of hard stone, generally oval in shape, and sometimes made by slightly hollowing out one side of a large round pebble.³ Such a rough lamp was brought by Lieut. Stoney, U. S. Navy, from Kotzebue Sound. No such highly finished and elaborate lamps as the large house lamps at Point Barrow are mentioned except by Nordenskiöld, who figures one from Siberia.⁴ This lamp is interesting as the only one described with a ledge comparable to the shelf of No. 80879. Lamps from the region between

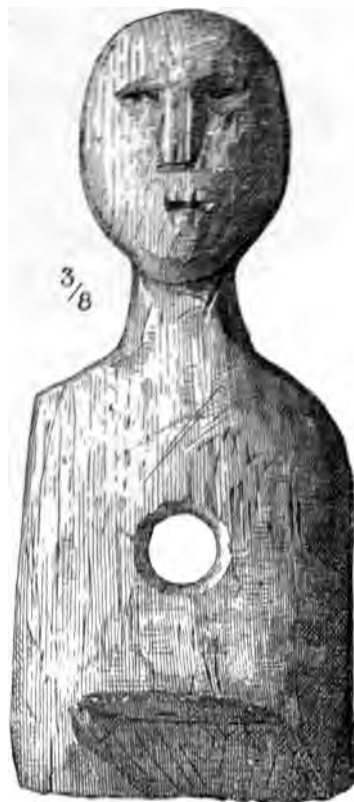


FIG. 50. Socket for blubber holder.

Point Barrow and Boothia Felix are especially needed to elucidate the distribution and development of this utensil. The rudely hollowed peb-

¹ *Naturalist*, September, 1884, p. 807, Fig. 2.

² Parry, *Second Voyage*, Pl. opposite p. 548, Fig. 2.

³ See Dull, *Alaska*, p. 387, and Petroff, *Report*, etc., p. 141. See also the collections of Turner and Fischer from Attu and Kadiak.

⁴ *Vega*, vol. 2, p. 23, Fig. 6 on p. 22, and diagrams, p. 23.

ble of the ancient Aleut and the elaborate lamp of the Point Barrow Eskimo are evidently the two extremes of the series of forms, but the intermediate patterns are still to be described.

Fig. 50, No. 56492 [108], is a peculiar article of which only one specimen was collected. We were given to understand at the time of purchasing it that it was a sort of socket or escutcheon to be fastened to the wall above a lamp to hold the blubber stick described above. No such escutcheons, however, were seen in use in the houses visited. The article is evidently old. It is a flat piece of thick plank of some soft wood, 11.4 inches long, 4.2 broad, and about $1\frac{1}{2}$ thick, very rudely carved into a human head and body without arms, with a large round hole about $1\frac{1}{4}$ inches in diameter through the middle of the breast. The eyes and mouth are incised, and the nose was in relief, but was long ago split off. There is a deep furrow all around the head, perhaps for fastening on a hood.

CLOTHING.

MATERIAL.

The clothing of these people is as a rule made entirely of skins, though of late years drilling and calico are used for some parts of the dress which will be afterwards described. Petroff¹ makes the rather surprising statement that "a large amount of ready-made clothing finds its way into the hands of these people, who wear it in summer, but the excessive cold of winter compels them to resume the fur garments formerly in general use among them." Fur garments are in as general use at Point Barrow as they ever were, and the cast-off clothing obtained from the ships is mostly packed away in some corner of the iglu. We landed at Cape Smyth not long after the wreck of the *Daniel Webster*, whose crew had abandoned and given away a great deal of their clothing. During that autumn a good many men and boys wore white men's coats or shirts in place of the outer frock, especially when working or lounging about the station, but by the next spring these were all packed away and were not resumed again except in rare instances in the summer.

The chief material is the skin of the reindeer, which is used in various stages of pelage. Fine, short-haired summer skins, especially those of does and fawns, are used for making dress garments and underclothes. The heavier skins are used for everyday working clothes, while the heaviest winter skins furnish extra warm jackets for cold weather, warm winter stockings and mittens. The white or spotted skins of the tame Siberian reindeer, obtained from the "Nunatañmiun," are especially valued for full-dress jackets. We heard no mention of the use of the skin of the unborn reindeer fawn, but there is a kind of dark deer-skin used only for edgings, which appears to be that of an exceedingly young deer. This skin is extremely thin, and the hair so short that it is almost invisible. Siberian deerskins can always be recognized by

¹ Report, etc., p. 125.

having the flesh side colored red,¹ while American-dressed skins are worked soft and rubbed with chalk or gypsum, giving a beautiful white surface like pipe-clayed leather.

The skins of the white mountain sheep, white and blue fox, wolf, dog, ermine, and lynx are sometimes used for clothing, and under jackets made of eider duck skins are rarely used. Sealskin dressed with the hair on is used only for breeches and boots, and for those rarely. Black dressed sealskin—that is, with the epidermis left on and the hair shaved off—is used for waterproof boots, while the white sealskin, tanned in urine, with the epidermis removed, is used for the soles of winter boots. Waterproof boot soles are made of oil-dressed skins of the white whale, bearded seal, walrus, or polar bear. The last material is not usually mentioned as serving for sole leather among the Eskimo. Nordenskiöld,² however, found it in use among the Chukches for this purpose. It is considered an excellent material for soles at Point Barrow, and is sometimes used to make boat covers, which are beautifully white. Heavy mittens for the winter are made of the fur of the polar bear or of dogskin. Waterproof outer frocks are of seal entrails, split and dried and sewed together. For trimmings are used deerskin of different colors, mountain-sheep skin, and black and white sealskin, wolf, wolverine, and marten fur, and whole ermine skins, as well as red worsted, and occasionally beads.



FIG. 51. Man in ordinary deer skin clothes.

STYLE OF DRESS.

Dr. Simpson³ gave an excellent general description of the dress of these people, which is the same at the present day. While the same in general pattern as that worn by all other Eskimo, it differs in many details from that worn by the eastern Eskimo,⁴ and most closely resembles the style in vogue at and near Norton Sound.⁵ The man's dress (Fig. 51, from a photograph of Apaidyao) consists of the usual loose hooded frock, without opening except at the neck and wrists. This reaches just over the hips, rarely about to mid-thigh, where it is cut

¹Compare Nordenskiöld, Vega, vol. 2, p. 213.

²Vega, vol. 2, p. 98.

³Op. cit., pp. 241-245.

⁴See for example, Egede, p. 219; Crantz, vol. 1, p. 136; Bessels, Op. cit., pp. 805 and 868 (Smith Sound); Kane, 1st Grinnell Exp., pp. 45 (Greenland) and 132 (Cape York); Brodbeck, "Nach Osten," pp. 21, 24, and Holm, Geografisk Tidskrift, vol. 8, p. 90 (East Greenland); Parry, 2d Voy., pp. 494-6 (Ighlittk); Boas, "Central Eskimo," pp. 551-6; Kumlien, loc. cit., pp. 22-25 (Cumberland Gulf); also, Frolicher, in Hakluyt's Voyages, 1580, etc., p. 628.

⁵Dall, Alaska, pp. 21 and 141.

off square, and is usually confined by a girdle at the waist. Under this garment is worn a similar one, usually of lighter skin and sometimes without a hood. The thighs are clad in one or two pairs of tight-fitting knee breeches, confined round the hips by a girdle and usually secured by a drawstring below the knee which ties over the tops of the boots. On the legs and feet are worn, first, a pair of long, deerskin stockings with the hair inside; then slippers of tanned sealskin, in the bottom of which is spread a layer of whalebone shavings, and outside a pair of close-fitting boots, held in place by a string round the ankle, usually reaching above the knee and ending with a rough edge, which is covered by the breeches. Dress boots often end with an ornamental border and a drawstring just below the knee. The boots are of reindeer skin, with white sealskin soles for winter and dry weather, but in summer waterproof boots of black sealskin with soles of white whale skin, etc., are worn. Overshoes of the same material, reaching just above the ankles, with a drawstring at the top and ankle strings, are sometimes worn over the winter boots. When traveling on snowshoes or in soft dry snow the boots are replaced by stockings of the same shape as the under ones, but made of very thick winter deerskins with the flesh side out.

Instead of breeches and boots a man occasionally wears a pair of pantaloons or tight-fitting trousers terminating in shoes such as are worn by the women. Over the usual dress is worn in very cold weather a circular mantle of deerskin, fastened by a thong at the neck—such mantles are nowadays occasionally made of blankets—and in rainy weather both sexes wear the hooded rain frock of seal gut. Of late years both sexes have adopted the habit of wearing over their clothes a loose hoodless frock of cotton cloth, usually bright-colored calico, especially in blustering weather, when it is useful in keeping the drifting snow out of their furs.

Both men and women wear gloves or mittens. These are of deerskin for ordinary use, but in extreme weather mittens of polar bear skin are worn. When hunting in winter it is the custom to wear gloves of thin deerskin under the bearskin mitten, so that the rifle can be handled without touching the bare hand to the cold iron. The women have a common trick of wearing only one mitten, but keeping the other arm withdrawn from the sleeve and inside of the jacket.

The dress of the women consists of two frocks, which differ from those of the men in being continued from the waist in two rather full rounded skirts at the front and back, reaching to or below the knee. A woman's frock is always distinguished by a sort of rounded bulge or pocket at the nape of the neck (see Fig. 52, from a sketch by the writer), which is intended to receive the head of the infant when carried in the jacket. The little peak at the top of the hood is also characteristic of the



FIG. 52.—Womans' hood.

woman's frock. On her legs a woman wears a pair of tight-fitting deerskin pantaloons with the hair next the skin, and outside of these a similar pair made of the skins of deer legs, with the hair out, and having soles of sealskin, but no anklestrings. The outer pantaloons are usually laid aside in spring, and waterproof boots like the men's, but fastened below the knee with drawstrings, are worn over the under pantaloons. In the summer pantaloons wholly of waterproof sealskin are often put on. The women's pantaloons, like the men's breeches, are fastened with a girdle just above the hips. It appears that they do not stay up very well, as the women are continually "hitching" them up and tightening their girdles.

Until they reach manhood the boys wear pantaloons like the women, but their jackets are cut just like those of the men. The dress of the girls is a complete miniature of that of the women, even to the pocket for the child's head. Those who are well-to-do generally own several complete suits of clothes, and present a neat appearance when not engaged in dirty work. The poorer ones wear one suit on all occasions till it becomes shabby. New clothes are seldom put on till winter.

The outer frock is not often worn in the iglu, being usually taken off before entering the room, and the under one is generally dispensed with. Men habitually leave off their boots in the house, and rarely their stockings and breeches, retaining only a pair of thin deerskin drawers. This custom of stripping in the house has been noticed among all Eskimos whose habits have been described, from Greenland to Siberia. The natives are slow to adopt any modifications in the style of dress, the excellence and convenience of which has been so frequently commented upon that it is unnecessary to refer to it. One or two youths learned from association with us the convenience of pockets, and accordingly had "patch pockets" of cloth sewed on the outside of the skirt of the inner frock, and one young man in 1883 wore a pair of sealskin hip boots, evidently copies from our india-rubber wading boots. I now proceed to the description of the clothing in detail.

Head clothing.—The only head covering usually worn is the hood of the frock, which reaches to about the middle of the head, the front being covered by the hair. Women who are carrying children in the jacket sometimes wrap the head in a cloth. (I have an indistinct recollection of once seeing a woman with a deerskin hood, but was too busy at the time to make a note or sketch of it.) One man at Utkiavwīn (Nāgawau'ra, now deceased), who was quite bald on the forehead, used to protect the front of his head with a sort of false front of deerskin, tied round like a fillet. No specimens of any of these articles were obtained. Fancy conical caps are worn in the dances and theatrical performances, but these belong more properly under the head of Games and Pastimes (where they will be described) than under that of Clothing.

Frocks (atigè).—Two frocks are always worn by both sexes except in the house, or in warm weather, the inner (ilupa) with the hair next the skin, and the outer (kalûru'ru) with the hair out. The outer frock is also sometimes worn with the hair in, especially when it is new and the flesh side clean and white. This side is often ornamented with little tufts of marten fur and stripes of red ocher. The difference in shape between the frocks of the two sexes has been already mentioned. The man's frock is a loose shirt, not fitted to the body, widening at the bottom, and reaching, when unbelted, just below the hips. The skirts are cut off square or slightly rounded, and are a little longer behind than in front. The hood is rounded, loose around the neck, and fitted in more on the sides than on the nape. The front edge



FIG. 53.—Man's frock.

of the hood, when drawn up, comes a little forward of the top of the head and runs round under the chin, covering the ears.

There are in the collection three specimens, all rather elaborate dress frocks, to be worn outside. All have been worn. No. 56751 [184] (Fig. 53), brown deerskin, will serve as the type. The pattern can best

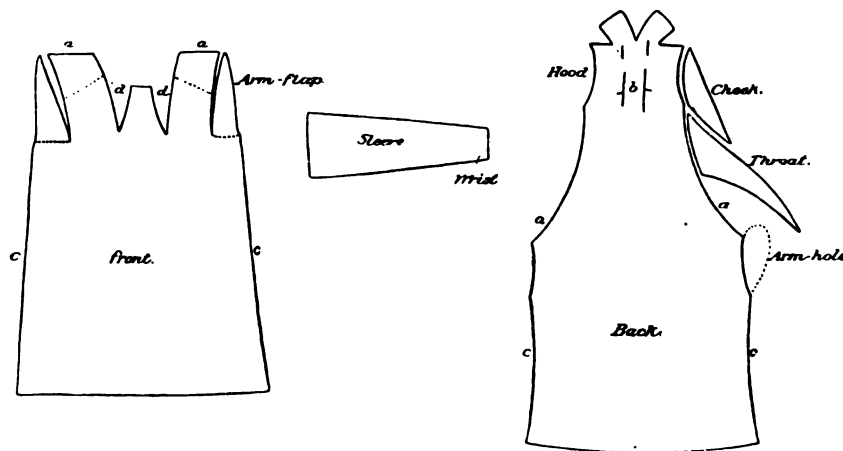


FIG. 54.—Pattern of man's deerskin frock.

be explained by reference to the accompanying diagrams (Fig. 54). The body consists of two pieces, front and back, each made of the

greater part of the skin of a reindeer fawn, with the back in the middle and the sides and belly coming at the edges. The head of the

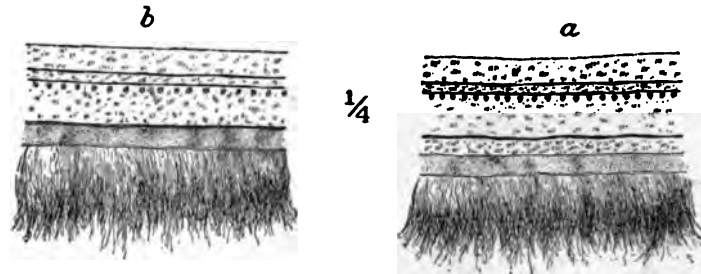


FIG. 55.—Detail of trimming, skirt and shoulder of man's frock.

animal is made into the hood, which is continuous with the back. Each sleeve is in two pieces, front and back, of the same shape, which are sewed together along the upper edge, but separated below by the

arm flap of the front, which is bent down and inserted like a gusset from the armpit nearly to the wrist. A band of deerskin an inch broad is sewed round the edge of the hood, flesh side out. The trimming consists, first, of a narrow strip of long-haired wolfskin (taken from the middle of the back) sewed to the outer side of the binding of the hood, its ends separated by the chin piece, so that the long hairs form a fringe around the face. Similar strips are sewed round each wrist with the fur inward. The binding round the skirt (Fig. 55a) is 2½ inches broad. The light-colored strips are clipped mountain sheep skin, the narrow pipings are of the dark brown skin of a very young fawn, the little tags on the second strip are of red worsted and the fringe is of



FIG. 56.—Man wearing plain, heavy frock.

wolverine fur, sewed on with the flesh side, which is colored red, probably with ochre, outward. A band of similar materials, arranged a

little differently (Fig. 55*b*) and $1\frac{1}{4}$ inches broad, is inserted into the body at each shoulder seam, so that the fringe makes a sort of epaulet. This jacket is 24.5 inches long from the chin to the bottom of the skirt, 21 inches wide across the shoulders, and 24.5 inches wide at the bottom.

Apart from the trimming this is a very simple pattern. There are no seams except those absolutely necessary for producing the shape, and the best part of each skin is brought where it will show most, while the poorer portions are out of sight under the arms.

The chief variation in deerskin frocks is in the trimming. All have the hood fitted to the head and throat, with cheek and throat pieces, and these are invariably white or light colored, even when the frock is made of white Siberian deer skin. When possible the head of the deer



FIG. 57.—Man's frock of mountain sheepskin, front and back.

is always used for the back of the hood, as Capt. Parry observed to be the custom at Iglulik.¹ A plain frock is sometimes used for rough work, hunting, etc. This has no fringe or trimming round the hood, skirt, or wrists, the first being smoothly hemmed or bound with deer-skin and the last two left raw-edged. Fig. 56 shows such a jacket, which is often made of very heavy winter deerskin. Most frocks, however, have the border to the hood either of wolf or wolverine skin, in the latter case especially having the end of the strips hanging down like tassels under the chin. The long hairs give a certain amount of protection to the face when walking in the wind.² Instead of a fringe the hood sometimes has three tufts of fur, one on each side and one above.

¹ Second Voy., p. 537.

² Compare Dall, Alaska, p. 22.

Trimmings of edging like that above described, or of plain wolverine fur round the skirts and wrists, are common, and the shoulder straps rather less so. Frocks are sometimes also fringed on the skirts and seams with little strips of deerskin, after what the Point Barrow people called the "Kûnmûdhû" fashion.¹ Nearly all the natives wear outer frocks of deerskin, but on great occasions elaborately made garments of other materials are sometimes seen. Nos. 56758 [87] (Fig. 57, *a* and *b*) and 56757 [11] (Fig. 58, *a* and *b*) are two such frocks. No. 56758 [87] is of mountain sheep skin, nearly white. As shown in the diagrams (Fig. 59, *a*, *b*, *c*) the general pattern is not unlike the type described, but there are more pieces in the hood and several small gussets are inserted to improve the set of the garment. The trimmings are shoulder



FIG. 58.—Man's frock of ermine skins, front and back.

straps, and a border round the skirt of edging like that described above, and the seams of the throat pieces are piped with the dark almost hairless deerskin, which sets them off from the rest of the coat. The wrists have narrow borders of wolf fur, and there was a wolfskin fringe to the hood, which was removed before the garment was offered for sale.

No. 56757 [11] is a very handsome garment (Fig. 58). The body and sleeves are of white and brown (winter and summer) ermine skins arranged in an elegant pattern, and the hood of reindeer and mountain sheep skin. This is the only frock seen in which the hood is not fitted to the sides of the throat by curved and pointed throat pieces, after the fashion universal among the western Eskimo, from Cape Bathurst at least to Norton Sound. The pattern of the hood is shown by the dia-

¹ There are several frocks so trimmed in the National Museum, from the Mackenzie and Anderson region.

gram (Fig. 60 *a*). The middle piece is the skin of a reindeer head, the two cheek pieces and median chin piece of mountain sheep skin. When the hood is put together the lower edge of it is sewed to the neck of the body, which has the back and front of nearly the same size and shape (diagram, Fig. 60 *b*), though the back is a little longer in the

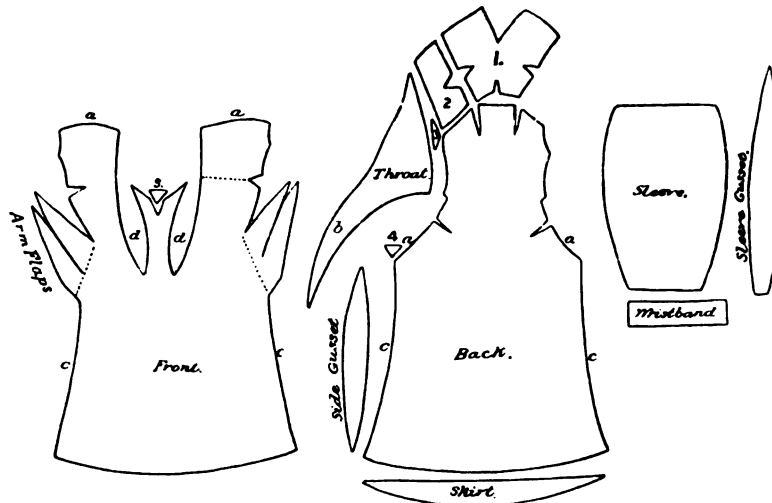


FIG. 59.—Pattern of sheepskin frock.

skirt. There is no regular seam on the shoulders, where irregular bits of white ermine skin are pieced together so as to fit. From the armpit on each side runs a narrow strip of sheepskin between back and front. The sleeve is a long piece made of three white ermine skins put together lengthwise, doubled above, with a straight strip of sheepskin let in below, and enlarged near the body by two triangular gussets (front and back) let in between the ermine and sheepskin. The wristbands are broad pieces of sheepskin. The skirts are of white ermine skins pieced together irregularly, but the skins composing the front, back, and sleeves are split down the back of the animal and neatly cut into long rectangular pieces, with the feet and tails still attached. They are arranged in a pattern of vertical stripes, two skins fastened together end to end making a stripe, which is the same on the front and the back. There

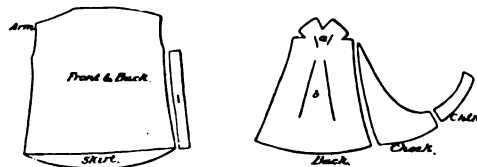


FIG. 60.—Pattern of ermine frock. *a*, hood; *b*, body.

is a brown stripe down the middle, then two white stripes on each side, and a brown stripe on each edge. The hood is bound round the edge with white sheepskin and bordered with wolfskin. There are shoulder straps and a border round the skirt of edging of the usual materials, but slightly different arrangement, and tagged with small red glass beads.

The former owner of this beautiful frock (since dead) was always very elegantly dressed. His deerskin clothes were always much trimmed, and he owned an elegant frock of foxskins, alternately blue and white, with a hood of deerskin, which we did not succeed in obtaining for the collection. (The "jumper of mixed white and blue fox pelts," seen by Dr. Kane at Ita,¹ must have been like this.)

The woman's frock differs from that worn by the men, in the shape of the hood and skirts, as mentioned above, and it is also slightly fitted

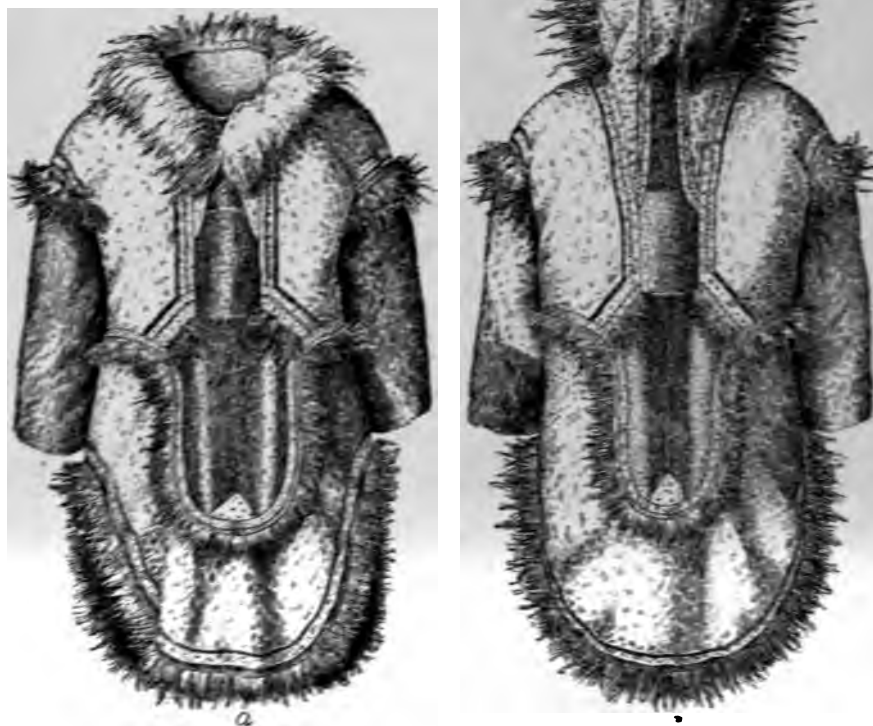


FIG. 61.—Woman's frock, front and back.

in to the waist and made to "bag" somewhat in the back, in order to give room for carrying the child. The pattern is considerably different from that of the man's frock, as will be seen from the description of the type specimen (the only one in the collection), No. 74041 [1791] (Fig. 61, *a* and *b*), which is of deerskin. The hood is raised into a little point on top and bulges out into a sort of rounded pocket at the nape. This is a holiday garment, made of strips of skin from the shanks and belly of the reindeer, pieced together so as to make a pattern of alternating

¹Second Grinnell Exp., vol. 1, p. 203.

light and dark stripes. The pattern is shown in the diagram, Fig. 62. The sleeves are of the same pattern as those of No. 56751 [184]. The edge of the hood is bound with deerskin, hair outwards. Trimming: a strip of edging (Fig. 63) in which the light stripes are clipped white mountain sheepskin, the dark pipings brown, almost hairless, fawnskin, and the tags red worsted, is inserted in the seam between 7 on each side and 6 and 2, and a similar strip between the inner edge of 3, 2, 7, 9, and 1. A broader strip of similar insertion, fringed below with marten fur, with the flesh side out

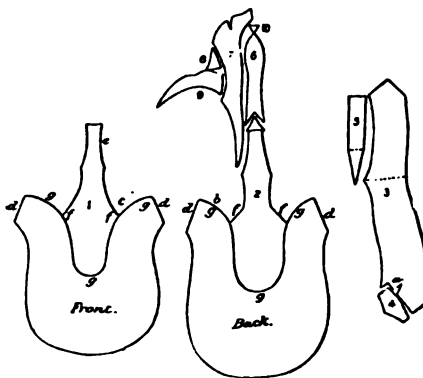


FIG. 62.—Pattern of woman's frock.

and colored red, runs along the short seam *ffff*. The seam between 9 and 7 has a narrow piping of thin brown deerskin, tagged with red worsted. A strip of edging, without tags and fringed with marten fur (Fig. 64), is inserted in the seam *gggg*. The border of the skirt is 1 inch

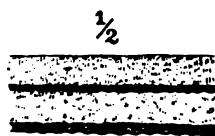


FIG. 63.—Detail of edging, woman's frock.

wide (Fig. 64). The dark stripe is brown deerskin, the white, mountain sheep, and the fur, marten, with the red flesh side out. The fringes are double strips of white deerskin sewed to the inside of the last seam, about 3 inches apart. The shoulder straps are of edging like that at *g*, but have the fur sewed on so as to show the red flesh side. The hood has a fringe of wolfskin sewed to the outside of the binding. This frock measures 45 inches in the back, 32 in the front, 19 across the shoulders, and 17 at the waist. The skirts are 21 inches wide, the front 18, and the back 20 inches long. The pieces 7, 8, and 9 of the hood are white. This is an unusually handsome garment.

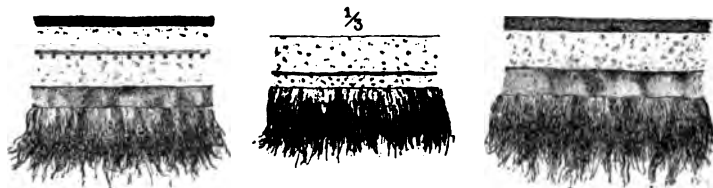


FIG. 64.—Details of trimming, woman's frock.

Deerskin garments rarely have the ornamental piecing seen in this frock. Each one of the numbered parts of the pattern is generally in one piece. The pieces 8 and 9 are almost universally white, and 7 is often so. About the same variety in material and trimming is to be found as in the men's frocks, though deer and mountain sheep skins were the only materials seen used, and the women's frocks are less often seen without the fringe round the hood. Plain deerskin frocks are often bordered round the skirts with a fringe cut from deerskin. The

women nowadays often line the outer frock with drilling, bright calico, or even bedticking, and then wear it with this side out.

The frocks for both sexes, while made on the same general pattern as those of the other Eskimo, differ in many details from those of eastern America. For instance, the hood is not fitted in round the throat with the pointed throat pieces or fringed with wolf or wolverine skin until we reach the Eskimo of the Anderson River. Here, as shown by the specimens in the National Museum, the throat pieces are small and wide apart, and the men's hoods only are fringed with wolverine skin. The women's hoods are very large everywhere in the east for the better accommodation of the child, which is sometimes carried wholly in the hood.¹

The hind flap of the skirt of the woman's frock, except in Greenland, has developed into a long narrow train reaching the ground, while the front flap is very much decreased in size (see references just quoted). The modern frock in Greenland is very short and has very small flaps (see illustrations in Rink's *Tales*, etc., pp. 8 and 9), but the ancient fashion, judging from the plate in Crantz's *History of Greenland*, referred to above, was much more like that worn by the western Eskimo. In the Anderson and Mackenzie regions the flaps are short and rounded and the front flap considerably the smaller. There is less difference in the general shape of the men's frocks. The hood is generally rounded and close fitting, except in Labrador and Baffin Land, where it is pointed on the crown. The skirt is sometimes prolonged into rounded flaps and a short scallop in front, as at Iglulik and some parts of Baffin Land.² Petittot³ gives a full description of the dress of a "chief" from the Anderson River. He calls the frock a "*blouse échancrée par côté et terminée en queues arrondies par devant et par derrière.*" The style of frock worn at Point Barrow is the prevalent one along the western coast of America nearly to the Kuskokwim. On this river long hoodless frocks reaching nearly or quite to the ground are worn.⁴ The frock worn in Kadiak was hoodless and long, with short sleeves and large armholes beneath these.⁵

The men of the Siberian Eskimo and sedentary Chukches, as at Plover Bay, wear in summer a loose straight-bottomed frock without a hood, but with a frill of long fur round the neck. The winter frock is described as having "a square hood without trimmings, but capable of being drawn, like the mouth of a bag, around the face by a string in.

¹ Egede, p. 131; Crantz, i, p. 137 and Pl. III. (Greenland); Bessels, op. cit., p. 865 (Smith Sound—married women only); Parry, 2d Voy., p. 494, and numerous illustrations, passim (Iglulik); Packard, *Naturalist* Vol. 19, p. 6, Pl. xxiii (Labrador), and Kumlien, l. c., p. 33 (Cumberland Gulf). See also several specimens in the National Museum from Ungava (collected by L. M. Turner) and the Mackenzie and Anderson rivers (collected by MacFarlane). The hoods from the last region, while still much larger and wider than those in fashion at Point Barrow, are not so enormous as the more eastern ones. The little peak on the top of the woman's hood at Point Barrow may be a reminiscence of the pointed hood worn by the women mentioned by Bessels, op. cit.

² Parry, 2d Voy., p. 494, and 1st Voy., p. 283.

³ Monographic, etc., p. xiv.

⁴ Petroff, op. cit., p. 134, Pls. 4 and 5. See also specimens in the National Museum.

⁵ Petroff, op. cit., p. 139, and Liscansky, Voy., etc., p. 194.

served in the edge."¹ According to Nordenskiöld,² the men at Pitlekaj wear the hoodless frock summer and winter, putting on one or two separate hoods in winter. The under hood appears to be like one or two which I saw worn at Plover Bay, namely, a close-fitting nightcap of thin reindeer skin tied under the chin. The dress of the Siberian women consists of frock and baggy kneebreeches in one piece, sewed to tightfitting boots reaching to the knees.³

Mantles.—"Circular" mantles of deerskin, fastened at the neck by a thong, and put on over the head like a poncho, are worn by the men in very cold weather over their other clothes when lounging in the open air about the village or watching at a seal hole or tending the seal nets at night. The cloaks are especially affected by the older men, who, having grown-up sons or sons-in-law, do not have to go sealing in winter, and spend a great deal of their time in bright weather chatting together out of doors. There is



FIG. 65.—Man's cloak of deerskin.

one specimen in the collection, No. 56760 [94] (Fig. 65). It is made of fine summer doe-reindeer skin, in three pieces, back and two sides of dark skin, sewed to a collar of white skin from the belly of the animal.

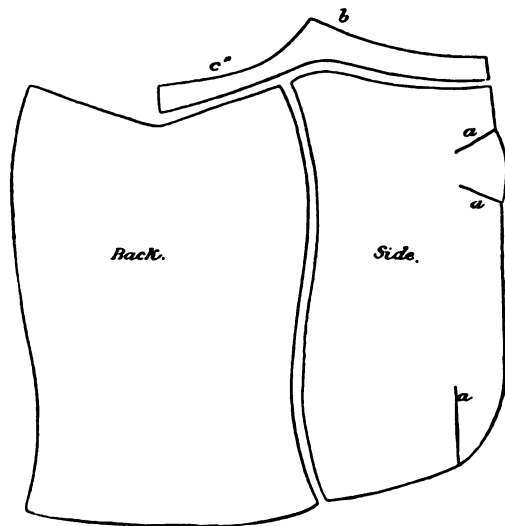


FIG. 66.—Pattern of man's cloak.

For pattern see diagram (Fig. 66). The seams at *a* are gored to make the cloak hang properly from the shoulder. The collar is in two pieces, joined in the middle, and the edge *c* is turned over toward the hair side and "run" down in a narrow hem. The points *b* of the collar are brought together in the middle and joined by a little strap of deerskin about an inch long, so that the edge *c* makes a round hole for the neck. The width of the mantle is 60 inches and its depth 39. It is worn with

the white flesh side out, as is indicated by the seams being sewed "over

¹ Dall, Alaska, p. 379.

² Vega, vol. 2, p. 98.

³ Nordenskiöld, Vega, vol. 2, p. 100 and Fig. on p. 57; Dall, Alaska, p. 379 and plate opposite. I also noticed this dress at Plover Bay in 1881. Compare also Krause Brothers, Geogr. Blätter, vol. 5, No. 1, p. 5, where the dress along the coast from East Cape to Plover Bay is described as we saw it at Plover Bay.

and over" on the hair side. All the mantles seen were essentially of the same pattern. The edge is sometimes cut into an ornamental fringe, and the flesh side marked with a few narrow stripes of red ochre. This garment appears to be peculiar to northwestern America. No mention is to be found of any such a thing except in Mr. MacFarlane's MS. notes, where he speaks of a deerskin blanket "attached with a line across the shoulders in cold weather," among the Anderson River Eskimo. We have no means at present of knowing whether such cloaks are worn by the coast natives between Point Barrow and Kotzebue Sound, but one was worn by one of the Nunata'fimiun who were at Nuwtik in the autumn of 1881.

Rain-frocks.—The rain-frock (*silt'ûa*) is made of strips of seal or walrus intestines about 3 inches broad, sewed together edge to edge. This material is light yellowish brown, translucent, very light, and quite waterproof. In shape the frock resembles a man's frock, but the hood comes well forward and fits closely round the face. It is generally plain, but the seams are nowadays sewed with black or colored cotton for ornament. The garment is of the same shape for both sexes, but the women frequently cover the flesh side of a deerskin frock with strips of entrail sewed together vertically, thus making a garment at once waterproof and warm, which is worn alone in summer with the hair side in. These gut shirts are worn over the clothes in summer when it rains or when the wearer is working in the boats. There are no specimens in the collection.

The kaiak jacket of black sealskin, so universal in Greenland, is unknown at Point Barrow. The waterproof gut frocks are peculiar to the western Eskimo, though shirts of seal gut, worn between the inner and outer frock, are mentioned by Egede (p. 130) and Crantz¹ as used in Greenland in their time. Ellis also² says: "Some few of them [i. e., the Eskimo of Hudsons Strait] wear shifts of seals' bladders, sewed together in pretty near the same form with those in Europe." They have been described generally under the name *kamleika* (said to be a Siberian word) by all the authors who have treated of the natives of this region, Eskimo, Siberians, or Aleuts. We saw them worn by nearly all the natives at Plover Bay. One handsome one was observed trimmed on the seams with rows of little red nodules (pieces of the beak of one of the puffins) and tiny tufts of black feathers.

The cotton frock, already alluded to as worn to keep the driving snow out of the furs, is a long, loose shirt reaching to about midleg, with a round hole at the neck large enough to admit the head. This is generally of bright-colored calico, but shirts of white cotton are sometimes worn when hunting on the ice or snow. Similar frocks are worn by the natives at Pitlekaj.³

¹ Vol. 1, p. 137.

² Voyage to Hudsons Bay, p. 136.

³ Nordenskiöld, Vega, vol. 2, p. 98.

ARM CLOTHING.

Mittens.—The hands are usually protected by mittens (aitkä'ti) of different kinds of fur. The commonest kind are of deerskin, worn with the flesh side out. Of these the collection contains one pair, No. 89828 [973] (Fig. 67). They are made of thick winter reindeer skin, with the white flesh side outward, in the shape of ordinary mittens but short and not narrowed at the wrists, with the thumb short and clumsy. The seams are all sewed "over and over" on the hair side. These mittens are about 7½ inches long and 4½ broad. The free part of the thumb is only 2¼ inches long on the outer side. Such mittens are the ordinary hand covering of men, women, and children. In extreme cold weather or during winter hunting, very heavy mittens of the same shape, but gathered to a wristband, are worn. These are made of white bearskin for men and women,

for children of dog-skin, with the hair out. When the hand covered with such a mitten is held upon the windward side of the face in walking, the long hair affords a very efficient protection against the wind. The long stiff hair of the bearskin also makes the mitten a very convenient brush for re-



FIG. 67.—Deerskin mittens.

moving snow and hoar frost from the clothes. It is even sometimes used for brushing up the floor.

In the MacFarlane collection are similar mittens from the Mackenzie region. Petitot¹ says the Anderson River "chief" wore pualuk "mitaines en peau de morse, aussi blanches et aussi soyeuses que de belle laine." These were probably of bearskin, as a mitten of walrus skin is not likely to be "blanche" or "soyeuse." Gloves are worn under these as at Point Barrow. All these mittens are short in the wrist, barely meeting the frock sleeve, and leaving a crack for the cold to get in, which is partially covered by the usual wolf or wolverine skin fringe of the sleeve. I have already mentioned the common habit among the women of carrying only one mitten and drawing one arm inside of the frock.² The men, except when hunting, frequently wear only one of these heavy mittens, which are called pu'alu. Waterproof mittens of black sealskin, coming well up over the forearm, were also observed, but not obtained. I do not remember ever seeing them in use.

¹ Monographie, etc., p. xv.

² Compare Parry, 2d Voy., p. 494, where a similar habit is mentioned at Iglulik.

Gloves.—Gloves of thin deerskin, worn with the hair in, and often elegantly ornamented, are used with full dress, especially at the dances. As already stated, the men wear such gloves under the pualu when shooting in the winter. When ready to shoot, the hunter slips off the mitten and holds it between his legs, while the glove enables him to cock the rifle and draw the trigger without touching the cold metal with his bare hands. There are two pairs of gloves in the collection. No. 89829 [974] (Fig. 68) illustrates a very common style called a'drigûdrûn. They are made of thin reindeer skin, with the white flesh side out, and



FIG. 68.—Deerskin gloves.

are rights and lefts. The short and rather clumsy fingers and thumbs are separate pieces from the palm, which is one straight, broad piece, doubled so as to bring the seam on the same side as the thumb. The thumbs are not alike on both hands. The outside piece of the thumb runs down to the wrist on the left glove, but is shorter on the right, the lower 2 inches of the edge seam being between the edges of the palm piece. Each finger is a single piece doubled lengthwise and sewed over the tip and down one side. The wrists are ornamented with an edging of two narrow strips of clipped mountain sheep skin, bordered with a narrow strip of wolverine fur with the reddened flesh side out. These gloves were made for sale and are not well mated, one being 8½ inches, with fingers (all of the same length) 4½ inches long, while the other is 8 inches long with fingers of 3½ inches. No. 56747 [128] is a pair of gloves made in the same way but more elaborately ornamented. There is a band of deerskin but no fringe round the wrist. The back of the hand is covered with brown deerskin, hair out, into which is inserted the square ornamental pattern in which the light stripes are white deerskin and the dark pipings the usual almost hairless fawn-skin. Gloves like this type are the most common and almost universally have a fringe round the wrist. They are also usually a little longer-wristed than the mittens.

Mittens are universally employed among the Eskimo, but gloves with fingers, which, as is well known, are a much less warm covering for the hand than mittens, are very rare. They are in use at Norton Sound¹ and in the Mackenzie district,² and have even been observed among the Arctic Highlanders of Smith Sound, who, however, generally wear mittens.³ Dr. Simpson⁴ mentions both deerskin and bear-skin mittens as used at Point Barrow, but makes no reference to gloves. The natural inference from this is that the fashion of wearing gloves has been introduced since his time. It is quite probable that the introduction of firearms has favored the general adoption of gloves. The following hypothesis may be suggested as to the way the fashion reached Point Barrow: We may suppose that the Malimiut of Norton Sound got the idea directly from the Russians. They would carry the fashion to the Nunatañmiun at Kotzebue Sound, who in their turn would teach it to the Point Barrow traders at the Colville, and these would carry it on to the eastern natives.

LEG AND FOOT CLOTHING.

Breeches (kã'kli).—The usual leg-covering of the men is one or two pairs of knee breeches, rather loose, but fitted to the shape of the leg. They are very low in front, barely covering the pubes, but run up much higher behind, sometimes as high as the small of the back. They are held in place by a girdle of thong round the waist, and are usually fastened below the knee, over the boots, by a drawstring. There is one pair in the collection, No. 56759 [91], Fig. 69. They are of short-haired brown reindeer skin, from the body of the animal, worn with the hair out. The waist is higher behind than in front, and each leg is slightly gathered to a band just below the knee. Pattern (see diagram, Fig. 70): There are two pieces in each leg, the inside and the outside. The spaces between the edges *e* of the two legs is filled by the gusset,

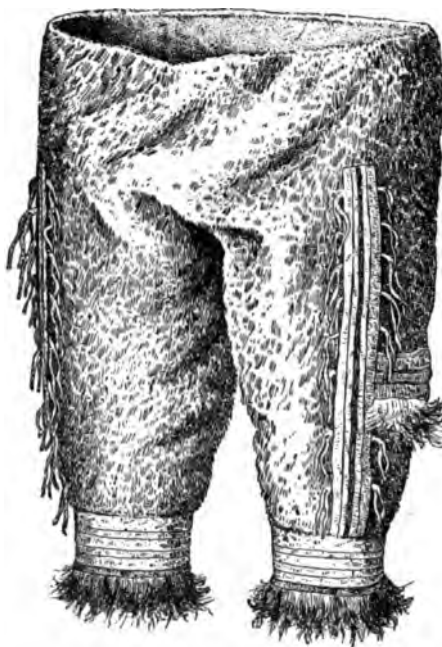


FIG. 69.—Man's breeches of deerskin.

¹ Dall, Alaska, pp. 23, 152, and 153. He speaks of the thumb (p. 23) as "a triangular, shapeless protuberance": a description which applies well to those in our collection.

² MacFarlane MS., and Petitot, Monographie, etc., p. xv.

³ Bessels, Naturalist, vol. 18, p. 865.

⁴ Op. cit., p. 242.

made of five pieces, which covers the pubes. The crotch is reinforced by a square patch of white deerskin sewed on the inside. The trimming consists of strips of edging. The first strip (Fig. 71) is $1\frac{1}{4}$ inches wide, and runs along the front seam, inserted in the outside piece, to the knee-band, beginning 5 inches from the waist. The light strips

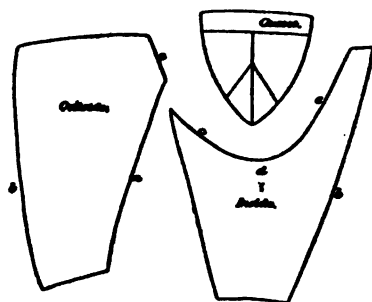


FIG. 70.—Pattern of man's breeches.

are of clipped mountain sheepskin; the dark one of dark brown deerskin; the pipings of the thin fawn skin, and the tags of red worsted. The edges of the strip are fringed with narrow double strips of mountain sheepskin 2 inches long, put on about $1\frac{1}{4}$ inches apart. A straight strip, 2 inches wide, is inserted obliquely across the outside piece from seam to seam. It is of the same materials, but differs slightly in pattern. The knee-band is of the same materials and $2\frac{1}{4}$ inches deep. The length from waist to knee is 24 inches behind, 23 in front; the girth of the leg 24 inches round the thigh and 14 round the knee. These represent a common style of full-dress breeches, and are worn with a pair of trimmed boots held up by drawstrings. They are always worn with the hair out and usually over a pair of deerskin drawers. The ordinary breeches are of heavier deerskin, made perfectly plain, being usually worn alone, with the hair turned in. When a pair of under breeches is worn, however, the hair of the outer ones is turned out. Trimmed breeches are less common than trimmed frocks, as the plain breeches when new are often worn for full dress. The clean, white flesh side presents a very neat appearance. The skin of the rough seal is sometimes, but rarely, used for summer breeches, which are worn with the hair out. With this exception, breeches seem to be invariably made of deerskin. This garment is practically universal among the Eskimo and varies very little in pattern.

Pantaloons (*kúmúñ*).—The women and children, and occasionally the men, wear pantaloons (strictly speaking), i. e., tight-fitting trousers continuous with the foot covering. Of the two pairs of pantaloons in the collection, No. 74042 [1792] (Fig. 72) will serve as the type. The shoes with sealskin moccasin soles and deerskin uppers are sewed at the ankles to a pair of tight-fitting deerskin trousers, reaching above the hips and higher behind than in front. Pattern (diagram, Fig. 73a): Each leg is composed of four long pieces (front 1, outside 2, back 3, and inside 4), five gussets (one on the thigh 5, and four on the calf, 6, 6, 6, 6), which enlarges the garment to fit the swell of the calf and thigh and the half-waistband (7). The two legs are put together by

are of clipped mountain sheepskin; the dark one of dark brown deerskin; the pipings of the thin fawn skin, and the tags of red worsted. The edges of the strip are fringed with narrow double strips of mountain sheepskin 2 inches long, put on about $1\frac{1}{4}$ inches apart. A straight strip, 2 inches wide, is inserted obliquely across the outside piece from seam to seam. It is of the same materials, but differs slightly in



FIG. 71.—Trimming of man's breeches.

joining the edges *d d d* of the opposite legs and sewing the gusset (8) into the space in front with its base joined to the edges *e e* of the two legs. The sole of each shoe is a single piece of white tanned sealskin with the grain side out, bent up about $1\frac{1}{2}$ inches all round the foot, rounded at the toe and heel and broadest across the ball of the foot. The toe and heel are "gathered" into shape by crimping the edge vertically. A space of about $3\frac{1}{2}$ inches is left uncrimped on each side of the foot. (The process of crimping these soles will be described under the head of boots and shoes, where it properly belongs). Around the top of this sole is sewed a narrow band of white sealskin, sewed "over and over" on the edge of the uncrimped space, but "run" through the gathers at the ends, so as to draw them up. The upper is in two pieces (heel, 9, and toe, 10). The heel piece is folded round the heel, and the toe piece doubled along the line *f*, and the curved edges *g g* joined to the straight edges *h h*, which makes the folded edge *f*, fit the outline of the instep. The bottom is then cut off accurately to fit the sole and sewed to the edge of the band. The trousers and shoes are sewed together at the ankles. The whole is made of the short-haired skin from the deer's legs. Pieces 2, 4, 7, 8, 9, and 10 are of dark brown skin (10 put on so that the tuft of coarse hair on the deer's ankle comes on the outside of the wearer's ankle), while the remaining pieces are white, making a pleasing pattern of broad stripes. The inner edge of 5 is piped with dark brown fawnskin, and a round piece of white skin is inserted at the bottom of 2. No. 56748 [136] is a pair of pantaloons of nearly the same pattern (see diagram, Fig. 73*b*) and put together in a similar way. These pantaloons have soles of sealskin with the hair left on and worn inside, and are made of deer leg skin, wholly dark brown, except the gussets on the calf, which are white. There is a piece of white skin let out, 2, as before, and the ankle tuft is in the same position.

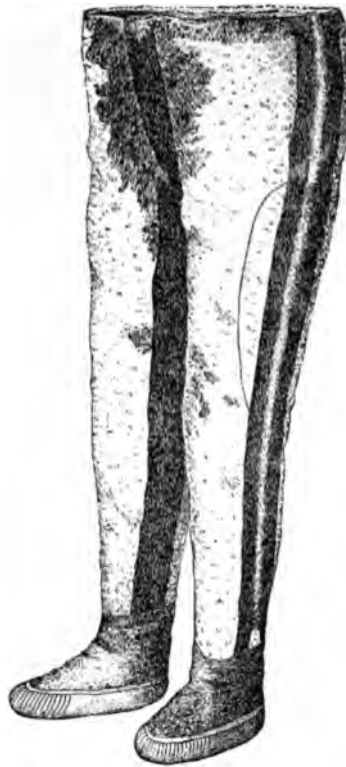


FIG. 72.—Woman's pantaloons.

From the general fit of these garments they appear to be all made on essentially the same pattern, probably without greater variations than those already described. When worn by the women the material is usually, if not always, the skin of reindeer legs, and most commonly of

the pattern of No. 56748 [136], namely, brown, with white leg gussets. Pantaloon wholly of brown skin are quite common, especially for everyday wear, while striped ones, like No. 74042 [1792], are much less usual and worn specially for full dress. Children's pantaloons are always brown, and I have seen one pair, worn by a young lad, of lynx skin. The two or three pairs which we saw worn by men were wholly brown. These pantaloons of leg skin with sealskin soles are always worn with the hair out and usually over a pair of under pantaloons of the same shape, but made of softer skins with longer hair, which is worn next the skin, and with stocking feet. The outer pantaloons are discarded

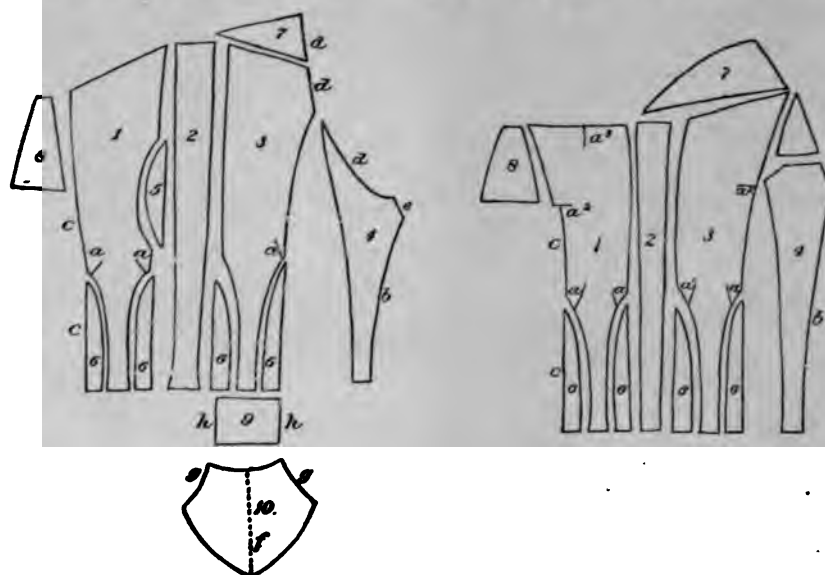


FIG. 73.—Patterns of women's pantaloons.

in summer and the inner ones only worn, the feet being protected by sealskin waterproof boots, as already stated. The waterproof sealskin pantaloons mentioned in the same connection do not fit so neatly, as they are made with as few seams as possible (usually only one, up the leg) to avoid leakage. They are sewed with the waterproof seam, and held up round the ankle by strings, like the waterproof boots to be described further on. This last-mentioned garment seems to be peculiar to the Point Barrow region (including probably Wainwright Inlet and perhaps the rest of the coast down to Kotzebue Sound). No mention of such a complete protection against wet is to be found in any of the published accounts of the Eskimo elsewhere, nor are there any specimens in the Museum.¹

¹Dr. Simpson's language (op. cit., p. 243) is a little indefinite ("The feet and legs are incased in water-tight sealskin boots"), but probably refers to these as well as to the knee boots. The "outside coat of the same material," and the boots and outside coat "made all in one, with a drawing string round the face," mentioned in the same place, appears to have gone wholly out of fashion since his time. At all events, we saw neither, though we continually saw the natives when working in the boats, and these garments, especially the latter, could hardly have failed to attract our attention.

Boots and breeches united in this way so as to form pantaloons are peculiar to the west of America, where they are universally worn from the Mackenzie district westward and southward. We have no specimens of women's leg coverings from the Mackenzie district, but Petitot¹ describes them thus: "Le pantalon * * * fait corps avec la chaussure." In the east the women always wear breeches separate from the boots, which usually differ from those of the men in their size and length, often reaching to the hips.²

Stockings.—Next to the skin on the feet and legs the men wear stockings of deerskin, usually of soft, rather long-haired skin, with the hair in. These are usually in three pieces, the leg, 1, toe piece, 2, and sole, 3 (see diagram, Fig. 74). A straight strip about 1 inch wide often runs round the foot between the sole and the other pieces. Stockings of this pattern, but made of very thick winter deerskin, are substituted for the outer boots when deer-hunting in winter in the dry snow, especially when snowshoes are used. They are warm; the flesh side sheds the snow well and the thick hair acts as a sort of wadding which keeps the feet from being galled by the bars and strings of the snowshoes. Many of the deer-hunters in 1883 made rough buskins of this pattern out of the skins of freshly killed deer simply dried, without further preparation.

Boots and shoes.—Over the stockings are worn boots or shoes with uppers of various kinds of skin, with the hair on, or black tanned sealskin, always fitted to heelless crimped moccasin soles of some different leather, of the pattern which, with some slight modifications of form, is universal among the Eskimo. These soles are made as follows: A "blank" for the sole is cut out, of the shape of the foot, but a couple of inches larger all round. Then, beginning at one side of the ball of the foot, the toe part is doubled over toward the inside of the sole, so that the edges just match. The two parts are then pinched together with

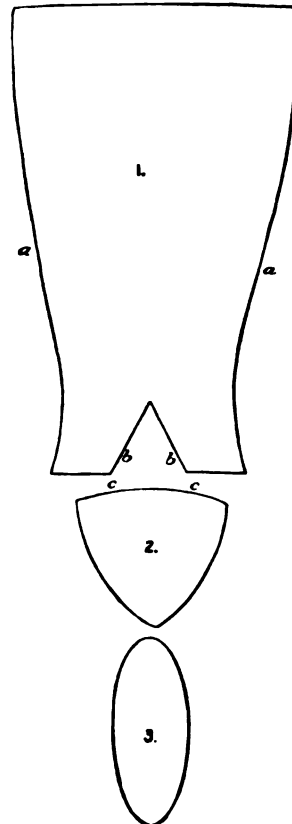


FIG. 74.—Pattern of stocking.

¹ Monographie, etc., p. xv.

² Bessels, Naturalist, vol. 18, p. 865, Smith Sound; Egede, p. 131, and Crantz, vol. 1, p. 138, Greenland; Parry, 2d Voy., p. 495 and 496, Iglulik, and Kumlien, op. cit., p. 23, Cumberland Gulf. Also in Labrador, see Pl. xvii, Naturalist, vol. 19, No. 6. The old couple whom Franklin met at the Bloody Fall of the Coppermine appear to have worn pantaloons, for he speaks of their "tight leggings sewed to shoes" (1st Exp., vol. 2, p. 180).

the teeth along a line parallel to the folded edge and at a distance from it equal to the depth of the intended fold. This bitten line runs from the edge of the leather as far as it is intended to turn up the side of the sole. A series of similar folds is carried round the toe to a point on the other side of the sole opposite the starting point. In the same way a series of crimps is carried round the heel, leaving an uncrimped space of 2 or 3 inches on each side of the foot. The sole is then sewed to a band or to the edge of the upper, with the thread run through each fold of the crimps. This gathers the sole in at the heel and toe and brings the uncrimped part straight up on each side of the shank. When the folds are all of the same length and but slightly gathered the sole is turned up nearly straight, as at the heel usually, and at the toe also of waterproof boots. When the folds are long and much gathered the sole slopes well in over the foot. Some boots, especially those intended for full dress, have the sole deeper on the sides than at the toe, so that the top of the sole comes to a point at the toe. The ordinary pattern is about the same height all round and follows the shape of the foot, being rather more gathered in over the toe than at the heel. The "blank" for the sole is cut out by measuring the size of the foot on the leather and allowing by eye the margin which is to be turned up. The crimping is also done by eye. Any irregularity in the length of the crimps can be remedied by pressing out the crease. I have never seen at Point Barrow the ivory knives, such as are used at Norton Sound for arranging the crimps.

Different kinds of leather are used for the soles, and each kind is supposed to be best suited for a particular purpose. The beautiful white urine-tanned sealskin is used for winter wear when the snow is dry, but is not suited for standing the roughness and dampness of the salt-water ice. For this purpose sealskin dressed with the hair on and worn flesh side out is said to be the very best, preferable even to the various waterproof skins used for summer boot soles. For waterproof soles are used oil-dressed skins¹ of the walrus, bearded seal, polar bear, or, best of all, the white whale. This last makes a beautiful light yellow translucent leather about 0.1 inch thick, which is quite durable and keeps out water for a long time. It is highly prized and quite an article of trade among the natives, a pair of soles usually commanding a good price. These Eskimo appear to be the only ones who have discovered the excellence of this material for waterproof soles, as there is no mention to be found of its use elsewhere. The "narwhal skin" spoken of by Dr. Simpson² is probably this material, as he calls it "Kel-lel'-lu-a," which is the ordinary word for white whale at Point Barrow. The narwhal is very rare in these waters, while the white whale is comparatively abundant. Dr. Simpson appears not to have seen the animal from which the skin was obtained. It is, however, by no means impossible that some skins of the narwhal, which when dressed would be indistinguishable

¹ Probably prepared like the boat covers described by Crantz, vol. 1, p. 167, by drying them without removing all of their own blubber.

² Op. cit., pp. 242-266.

from the white whale skins, are obtained from the eastern natives or elsewhere. Such crimped soles are in use among the Eskimo everywhere, varying but little in general pattern. The Greenland boots are specially noticeable for the neatness of the crimping, while specimens in the Museum from the central region are decidedly slovenly in their workmanship. The boots worn by the natives of Plover Bay have the sole narrowed at the shank and hardly coming over the foot except at the toe and heel, where they are crimped, but less deeply than usual. This style of sole very much resembles those of a pair of Kamchatdale boots in the National Museum, which, however, are turned up without crimping, as is the case with the boots used by the Aleuts on the Commander Islands, of which Dr. L. Stejneger has kindly shown me a specimen. There is a folded "welt" of sealskin in the seam between the upper and sole of the Plover Bay boots. I am informed by Capt. Herendeen that the natives have been taught to put this in by the whalers who every year purchase large numbers of boots on the Siberian coast, for use in the Arctic.



FIG. 75.—Man's boot of deerskin.

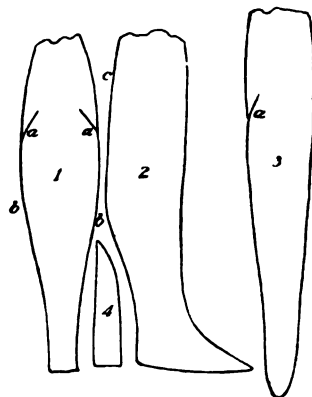


FIG. 76.—Pattern of deerskin boot.

Similar welts, which are very unusual on Eskimo boots, are to be seen on some brought by Mr. Nelson from Kings Island and Norton Sound. The winter boots usually have uppers of deerskin, generally the short-haired skin from the legs. Mountain-sheep skin is sometimes used for full-dress boots, and sealskin with the hair out for working boots. The latter is not a good material, as the snow sticks to it badly. There are four pairs of men's winter boots in the collection, from which No. 56750 [111] (Fig. 75) has been selected as the type of the everyday pattern. They are made of deer-leg skin with white sealskin soles. Leg and upper are in four pieces,¹ back 1, two sides 2 2, and front 3; 1 and 3 are gored at *a a a* to fit the swell of the calf; 1 and 3 are of dark skin, and 2 2 lighter colored, especially along the middle. The bottom is cut off accurately to fit the sole but the top is left irregular, as this is concealed by the breeches. The boots are

¹ See diagram, Fig. 76.

held up round the ankles by two tie-strings of sealthong, sewed in between the sole and the band, one on each side just under the middle of the ankle. They are long enough to cross above the heel, pass once or



FIG. 77.—Man's dress boot of deer-skin.

twice round the ankle, which fits more loosely than the rest of the boot, and tie in front. On each heel is a large round patch of seal skin with the hair on and pointing toward the toe (to prevent slipping). These patches are carefully "blind-stitched" on so that the stitches do not show on the outside.

Boots of this style are the common everyday wear of the men, sometimes made wholly of dark deerskin and sometimes variegated. They are often made of a pattern like that of the lower part of the women's pantaloons; that is, with the uppers separate from the leg pieces, which are brown, with four white gussets on the calf. Fig. 77, No. 56759 [91], is one of a pair of full-dress boots of a slightly different pattern. The leg pieces are the same in number as in No. 56750, and put together in the same way, but 2 and 3 are of a different shape.¹ They are made of deer-leg skins, each piece with a lighter streak down the middle. The soles are of white seal skin, finely crimped, with the edge com-

ing to a point at the toe, and the five ornamental bands are of seal skin, alternately black and white. A strip of edging three-fourths of an inch wide is inserted in the seam between 2 and 3 on each side. The light stripes are mountain-sheep skin and the dark ones the usual young fawn skin, tagged with red worsted. The leg reaches to just below the knee, and is hemmed over on the inside, to hold the draw-string, which comes out behind. There are strings at the ankles as before.

Fig. 79, No. 89834 [770], is one of a pair of almost precisely the same pattern as the last, but made of mountain-sheep skin. The soles are more deeply turned up all round and have three ornamental bands of seal skin around the edge, black, white, and black. Edging is inserted into both the seams on each side. It is of strips of moun-

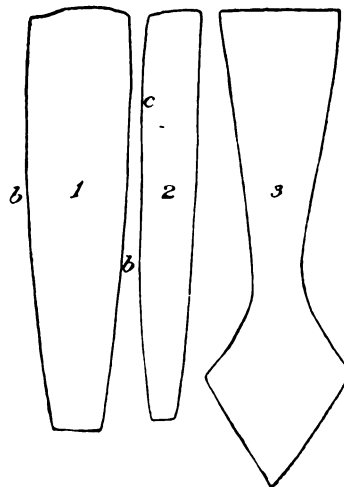


FIG. 78.—Pattern of man's dress boot of deerskin.

¹ See diagram, Fig. 78.

tain-sheep skin and a dark brown deerskin, tagged with red worsted, with the edge which laps over the side piece cut into oblique tags. There are no tiestrings, as the soles are turned up high enough to stay in place without them. These boots were brought from the east by one of the Nuwĭk trading parties in 1882. Fig. 80, No. 56749 [110], is also a full-dress boot, with soles like the last and no tiestrings. The leg is of two pieces of dark brown deerskin with the hair clipped short. These pieces are shaped like 2 in No. 56750, and the inner is larger, so that it laps round the leg, bringing the seam on the outside. The leg is enlarged to fit the swell of the calf by a large triangular gusset from the knee to the midleg, meeting the inside piece in an oblique seam across the calf. Instead of a hem, the top of the leg has a half-inch band sewed round it and a binding for the drawstring above this. Edging is inserted in the front seam, and obliquely across the outside of the leg. That in the front seam is three narrow strips of deerskin, dark in the middle and light on each side. The other is of mountain-sheep skin in three strips, piped with fawnskin and tagged with worsted.

The boots belong with the breeches, No. 56759. They fairly represent the style of full-dress boots worn with the loose-bottomed breeches. They all have drawstrings just below the knee, and often have no tie-strings at the ankles. The eastern Eskimo are everywhere described as wearing the boots tied at the top with a drawstring and the bottoms of the breeches usually loose and hanging down on them. Tying down the breeches over the tops of the boots, as is done at Point Barrow, is an improvement on the eastern fashion, as it closes the garments at the knee so as to prevent the entrance of cold air. The same result is obtained in an exactly opposite way by the people of Smith Sound, who, according to Bessels (*Naturalist*, vol. 18, p. 865), tie the boots over the breeches.

All fur garments, including boots, are sewed in the same way, usually with reindeer sinew, by fitting the edges together and sewing them "over and over" on the "wrong" side. The waterproof boots of black sealskin, however, are sewed with an elaborate double seam, which is quite waterproof, and is made as follows: The two pieces are put together, flesh side to flesh side, so that the edge of one projects beyond



FIG. 79.—Man's dress boot of skin of mountain sheep.

the other, which is then "blind-stitched" down by sewing it "over and over" on the edge, taking pains to run the stitches only part way through the other piece. The seam is then turned and the edge of



FIG. 80.—Pair of man's dress boots of deerskin.

the outer piece is turned in and "run" down to the grain side of the under with fine stitches which do not run through to the flesh side of it. Thus in neither seam are there holes through both pieces at once. The sewing is done with fine sinew thread and very fine round needles (the women used to ask for "little needles, like a hair"), and the edge of the leather is softened by wetting it in the mouth. A similar water-proof seam is used in sewing together boat covers.

There is one pair of water-proof boots in the collection (No. 76182 [1794] Fig. 81). The tops are of black dressed sealskin, reaching to the knee and especially full on the instep and

ankle, which results from their being made with the least possible number of seams, to reduce the chance of leaking. The soles are of white whale skin, turned up about $1\frac{1}{2}$ inches all around. The leg and upper are made all in one piece so that the double water-tight seam runs down the front of the leg to the instep, and then diagonally across the foot to the quarter on one side. The bottom is cut off accurately to fit the top of the sole. The edges of the upper and the sole are put together so that the inside of the former comes against the inside of the latter, and the two are "run" together with fine stitches, with a stout double under-thread running through them along the surface of the upper. The ornamental band at the top is of white sealskin "run" on with strong dark thread, and the checkered pattern is made by drawing a strip of black skin through slits in the white. Round the top of the band is sewed a binding of black sealskin, which holds a drawstring of sinew braid. The sole is kept up in shape and the boot made to fit round the ankle by a string of sealskin twine passed through four loops, one on each side just back of the ball of the foot, and one on each quarter. These loops are made of little strips of white whale skin, doubled over and sewed to the edge of the sole on the outside. The ends of the string are passed through the front loop so that the bight

comes across the ball of the foot, then through the hinder loops, and are crossed above the heel, carried once or twice around the ankle, and tied in front.

Such boots are universally worn in summer. The men's boots are usually left with an irregular edge at the top, and are held up by the breeches, while the women's usually have white bands around the tops with drawstrings. Half-boots of the same material, reaching to mid-leg, without drawstrings, or shoes reaching just above the ankle with a string round the top are sometimes worn over the deerskin boots. Similar shoes of deerskin are sometimes worn in place of boots.

Waterproof boots of black sealskin are universally employed by Eskimo and by the Aleuts. These boots stand water for a long time without getting wet through, but when they become wet they must be turned inside out and dried very slowly to prevent them from shrinking, and worked soft with a stone-skin-dressing tool or the teeth. The natives prefer to dry them in the sun. When the black epidermis wears off this leather is no longer waterproof, so that the women are always on the watch for white spots, which are mended with water-tight patches as soon as possible.

In the early spring, before it thaws enough to render waterproof boots necessary, the surface of the snow becomes very smooth and slippery. To enable themselves to walk on this surface without falling, the natives make a kind of "creeper" out of strips of sealskin. These are doubled lengthwise, and generally bent into a half-moon or horseshoe shape, with the folded edges on the outside of the curve, sewed on the toe and heel of the sealskin sole, as represented in Fig. 82.

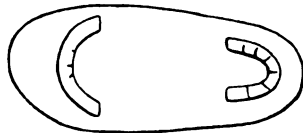


FIG. 82.—Sketch of "ice-creeper" on boot sole.



FIG. 81.—Woman's waterproof sealskin boot.

PARTS OF DRESS.

Belts (tapsi).—The belt which is used to hold up the pantaloons or breeches is simply a stout strip of skin tied round the waist. The girdle, which is always worn outside of the frock, except when the weather is warm or the wearer heated by exercise, is very often a similar strap of deerskin, or perhaps wolfskin. Often, however, and especially for

full dress, the men wear a handsome belt woven from feathers, and the women one made of wolverines' toes. There are in the collection two of the former and one of the latter.

No. 89544 [1419] (Fig. 83*a*) has been chosen as the type of a man's belt. It is 35 inches long and 1 inch broad, and made of the shafts of feathers woven into an elegant pattern, bordered on the edges with deerskin, and terminating in a leather loop at one end and a braided string at the other. The loop is a flat piece of skin of the bearded seal, in which is cut a large oblong eye. The weaving begins at the square end of the loop. The warp consists of nine long strands sewed through the inner face of the leather so as to come out on the hinder edge. The middle strand is of stout sinew braid, ending in a knot on the

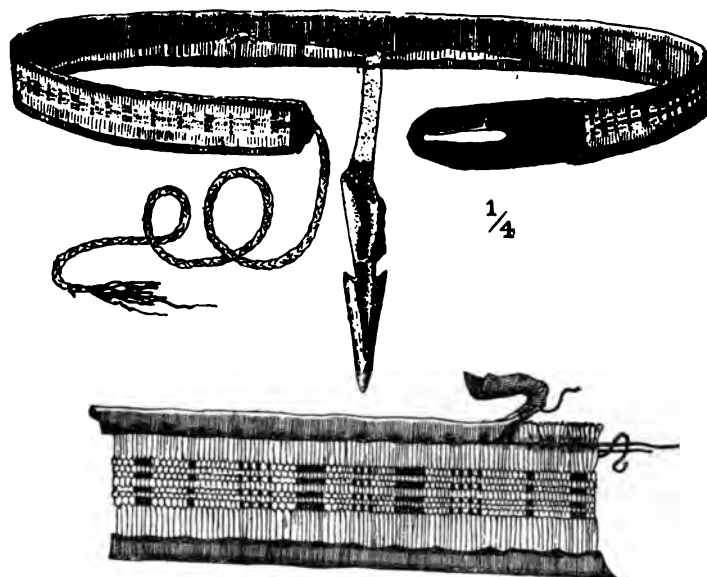


FIG. 83. Man's belt woven of feathers. The lower cut shows detail of pattern.

inner side of the leather. The four on each side are of fine cotton twine or stout thread, each two being one continuous thread passing through the leather and out again. The wool is the shafts of small feathers regularly woven, the first strand woven over and under, ending over the warp, the next under and over, ending under the warp, and so on alternately, each strand extending about one-fourth inch beyond the outer warp-strand on each side. This makes the pattern shown in Fig. 83*b*, a long stitch on each side, three very short ones on each side of the middle, and a slightly longer one in the middle. The strips of feathers forming the wool are not joined together, but one strip is woven in as far as it will go, ending always on the inner side of the belt, a new strip beginning where the other ends. The shafts of black feathers, with a few of the barbs attached, are

woven into the woof at tolerably regular intervals. Each black strand starts under the first strand of the warp, making the outer and inner of the three short stitches on each side black. This produces a checkered pattern along the middle of the belt (see enlarged section, Fig. 83*b*). The woof strands are driven home tightly and their ends are secured on each side by a double thread of cotton sewed into the corner of the leather loop. One thread runs along the outside of the belt and the other along the inside, passing between the ends of the feathers about every ten feathers and making a turn round the outer thread, as in Fig. 84. The edges of the belt are trimmed off even and bound with a narrow strip of deerskin with the flesh side out and painted red. The binding of the upper edge makes an irregular loose lining on the inside of the belt. Across the end of the belt is sewed on each side a narrow strip of sealskin, and the ends of the warp are gathered into a three-ply braid 16 inches long, which is used to fasten the belt by drawing it through the loop and knotting it. An ancient bone spear-head is attached to the belt as an amulet by a stout strap.

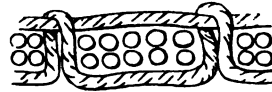


FIG. 84. — Diagram showing method of fastening the ends of feathers in belt.

No. 89543 [1420] is a similar belt worn in precisely the same way, but with the black feathers introduced in a different pattern. The weaving is done by hand with the help of some little tools, to be described under implements for making and working fiber. Belts of



FIG. 85. — Woman's belt of wolverine toes.

this style appear to be peculiar to the Point Barrow region. Indeed, girdles of any kind are seldom worn over the jacket by the men in the eastern regions.

The women never wear anything except a simple strip of skin or the wolverine belt mentioned above. No. 89542 [1421], Fig. 85, is one of these. It is made of nine strips of dark brown skin from round the foot of the wolverine, sewed together end to end. Each strip, except the one at the end, has a claw at the lower corner (on some of the strips the bit of skin bearing the claws is pieced in) so that there are

eight nearly equidistant claws making a fringe round the lower edge of the belt. There is a hole at each end into which is half-hitched the end of a narrow strip of deerskin about 8 inches long. These strings serve to tie the girdle. This belt is 33 inches long and 1½ inches wide, and has been worn so long that the inside is very dirty. Such belts are very valuable and highly prized, and are worn exclusively by the women.

Fig. 86, No. 89718 [1055], is an object which is quite uncommon and seldom if ever now seen in use. It is of walrus ivory, very old and yellow. It served as a belt-fastener (táp-sige). I have seen a brass clock wheel used on a girl's belt for the same purpose. This specimen is very old, neatly made, and polished smooth, probably from long use.



FIG. 86.—Belt-fastener.

Ornaments.—In addition to the trimmings above described there are certain ornamental appendages which belong to the dress, but can not be considered as essential parts of any garments, like the trimmings. For instance, nearly every male in the two villages wears dangling from his back between the shoulders an ermine skin either brown or white, or an eagle's feather, which is transferred to the new garment when the old one is worn out. This is perhaps an amulet as well as an ornament, as Dr. Simpson states.¹ An eagle's feather is often worn on the outside of the hood, pendant from the crown of the head. Attached to the belt are various amulets (to be described under the head of "Religion") and at the back always the tail of an animal, usually a wolverine's. Very seldom a wolf's tail is worn, but nearly all, even the boys, have wolverine tails, which are always saved for this purpose and used for no other. This habit among the Eskimo of western America of wearing a tail at the girdle has been noticed by many travelers, and prevails at least as far as the Anderson River, since Petitot,² in describing the dress of the Anderson River "chief," says: "par derrière il portait aux reins une queue épaisse et ondoyante de renard noir." According to him³ it is the women of that region, who wear, "à titre de talismans, des defroques empaillées de corbeau, de faucon, ou d'hermine." The custom of wearing an ermine skin on the jacket was observed by Dr. Armstrong of the *Investigator* at Cape Bathurst.⁴

PERSONAL ADORNMENT.

SKIN ORNAMENTATION.

Tattooing.—The custom of tattooing is almost universal among the women, but the marks are confined almost exclusively to the chin and form a very simple pattern. This consists of one, three, five, or perhaps as

¹Op. cit., p. 243.

²Monographie, etc., p. xiv.

³Ibid.

⁴Personal Narrative, p. 176.

many as seven vertical lines from the under lip to the tip of the chin, slightly radiating when there are more than one. When there is a single line, which is rather rare, it is generally broad, and the middle line is sometimes broader than the others. The women as a rule are not tattooed until they reach a marriageable age, though there were a few little girls in the two villages who had a single line on the chin. I remember seeing but one married woman in either village who was not tattooed, and she had come from a distant settlement, from Point Hope, as well as we could understand.

Tattooing on a man is a mark of distinction. Those men who are, or have been, captains of whaling umiaks that have taken whales have marks to indicate this tattooed somewhere on their persons, sometimes forming a definite tally. For instance, Añoru had a broad band across each cheek from the corners of the mouth (Fig. 87, from a sketch by the writer), made up of many indistinct lines, which was said to indicate "many whales." Amaiyuna had the "flukes" of seven whales in a line across his chest, and Mûñialu had a couple of small marks on one forearm. Niäksára, the wife of Añoru, also had a little mark tattooed in each corner of her mouth, which she said were "whale marks," indicating that she was the wife of a successful whaleman. Such marks, according to Petitot (*Monographie, etc.*, p. xv) are a part of the usual pattern in the Mackenzie district—"deux traits aux commissures de la bouche." One or two men at Nuwük had each a narrow line across the face, over the bridge of the nose, which were probably also "whale marks," though we never could get a definite answer concerning them.¹



FIG. 87.—Man with tattooed cheeks.

The tattooing is done with a needle and thread, smeared with soot or gunpowder, giving a peculiar pitted appearance to the lines. It is rather a painful operation, producing considerable inflammation and swelling, which lasts several days. The practice of tattooing the women is almost universal among the Eskimo, from Greenland to Kadiak, including the Eskimo of Siberia, the only exception being the

¹Compare the custom observed by H. M. S. *Investigator*, at Cape Bathurst, where, according to McClure (*Discovery of the Northwest Passage*, p. 93), a successful harpooner has a blue line drawn across his face over the bridge of the nose; or, according to Armstrong (*Personal Narrative*, p. 176), he has a line tattooed from the inner angle of the eye across the cheek, a new one being added for every whale he strikes. Petitot, however (*Monographie, etc.*, p. xxv), says that in this region whales are "scored" by tattooing crosses on the shoulder, and that a murderer is marked across the nose with a couple of horizontal lines. It is interesting to note in this connection that one of the "striped" men at Nuwük told us that he had killed a man. According to Holm, at Angmagsalik (east Greenland), "Mændene ero kun undtagelsesvis tatoverede og da kun med enkelte mindre Streger paa Arme og Haanded, for at kunne harpunere godt" (*Geogr. Tids.*, vol. 8, p. 88). Compare also Hooper, *Tents, etc.*, p. 37, "Men only make a permanent mark on the face for an act of prowess, such as killing a bear, capturing a whale, etc.;" and Parry, *2d Voyage*, p. 449, where some of the men at Iglulik are said to be tattooed on the back of the hand, as a souvenir of some distant or deceased person.

in either sex is rare. I do not remember ever seeing a bald woman, and there were only two bald men at the two villages. Neither of these men was very old.

Head-bands.—Some of the men and boys wear across the forehead a string of large blue glass beads, sometimes sewed on a strip of deer-skin. Occasionally, also a fillet is worn made of the skin of the head of a fox or a dog, with the nose coming in the middle of the forehead. Such head-dresses are by no means common and seem to be highly prized, as they were never offered for sale. MacFarlane (MS.) speaks of a similar head-dress worn at the Anderson River, "generally made of the skin of the fore part of the head skins of wolves, wolverines, and marmots. Very often, however, a string of beads is made use of instead." Another style of head-dress is the badge of a whalerman, and is worn only when whaling (and, I believe, at the ceremonies in the spring preparatory to the whaling). This seems to be very highly prized, and is, perhaps, "looked upon with superstitious regard."¹ None were ever offered for sale and we had only two or three opportunities of seeing it. It consists of a broad fillet of mountain-sheep skin, with pendants of flint, jasper, or crystal, rudely flaked into the shape of a whale (see under "Amulets," where specimens are described and figured), one in the middle of the brow and one over each ear. Some of them are also fringed with the incisor teeth of the mountain sheep attached by means of a small hole drilled through the end of the root, as on the dancing cap (see under "Games and Pastimes"). The captain and harpooner of a whaling crew which I saw starting out in the spring of 1882 each wore one of these fillets. The harpooner's had only the whale pendants, but the captain's was also fringed with teeth. This ornament closely resembles the fillet fringed with deer's teeth, observed by Capt. Parry at Iglulik,² which "was understood to be worn on the head by men, though we did not learn on what occasions."

Earrings (nógolu).—Nearly all the women and girls perforate the lobes of the ears and wear earrings. The commonest pattern is a little hook of ivory to which are attached pendants, short strings of beads, etc. Large, oblong, dark-blue beads and bugles are specially desired for this purpose. Cheap brass or "brummagem" earrings are sometimes worn nowadays. The fashion in earrings seems to have changed somewhat since Dr. Simpson's time, as I do not remember ever having seen the long strings of beads hanging across the breast or looped up behind as he describes them.³ At present, one earring is much more frequently worn than a pair. There are in the collection two pairs of the ivory hooks for earrings, which, though made for sale, are of the ordinary pattern. Of these No. 89387 [1340] (Fig. 90) will serve as the type. They are of coarse, white walrus ivory.

¹ See Dr. Simpson, *op. cit.*, p. 243. Compare also Brodbeck, "Nach Osten" (p. 23). Speaking of "ein Kopf- oder Stirnband," he says: "Vielleicht gilt es ihnen als eine Art von Zauberschützmittel, denn es ist um kein Geld zu haben. Drängt man sie, so sagen sie wohl, es sei nicht ihr eigen."

² *Second Voy.*, p. 498 and Fig. 7, pl. opposite p. 548.

³ *Op. cit.*, p. 241.

No. 89386 [1340] is a similar pair of earrings, in which the hook projects at right angles and terminates in a flat, round button. Both of the specimens are of the usual pattern, but very roughly made. The custom of wearing earrings is very general among the Eskimo. I need only refer to the descriptions of dress and ornaments already quoted.

Labrets.—As has been stated by all travelers who have visited Point Barrow since the time of Elson, all the adult males wear the labrets or stud-shaped lip ornaments. The discussion of the origin and extent of this habit, or even a comparison of the forms of labrets in use among the Eskimo, would lead me far beyond the scope of the present work.¹ They are or have been worn by all the Eskimo of western America, including St. Lawrence Island and the Diomedes, from the most southern point of their range to the Mackenzie and Anderson district, and were also worn by Aleuts in ancient times.² East of the Mackenzie district no traces of the habit are to be observed. Petitot³ says that Cape Bathurst is the most eastern point at which labrets are worn. The custom of wearing them at this place is perhaps recent, as Dr. Armstrong, of the *Investigator*, expressly states that he saw none there in 1850. At Plover Bay, eastern Siberia, however, I noticed one or two men with a little cross or circle tattooed under each corner of the mouth, just in the position of the labret. This may be a reminiscence of an ancient habit of wearing labrets, or may have been done in imitation of the people of the Diomedes and the American coast.

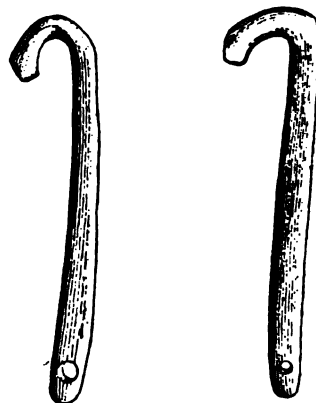


FIG. 90.—Earrings.

At Point Barrow at the present day the lip is always pierced for two labrets, one at each corner of the mouth, though one or both of them are frequently left out. They told us, however, that in ancient times a single labret only was worn, for which the lip was pierced directly in the middle. Certain old and large-sized labrets in the collection are said to have been thus worn. The incisions for the labrets appear to be made about the age of puberty, though I knew one young man who had been married for some months before he had the operation performed. From the young man's character, I fancy shyness or timidity, as suggested by Dr. Simpson,⁴ had something to do with the delay. Contrary to Dr. Simpson's experience, I did not see a single man above the age of 18 or 19 who did not wear the labrets. It seems hardly probable that ability

¹ This subject has been thoroughly treated by Mr. W. H. Dall in his admirable paper in the Report of the Bureau of Ethnology, No. 3 for 1881-'82, pp. 67-203.

² See Dall, *Contrib., etc.*, vol. 1, p. 87, and the paper just referred to.

³ *Monographie, etc.*, p. xxvi.

⁴ *Op. cit.*, p., 241.

to take a seal entitles a boy to wear labrets, as he suggests. We knew a number of boys who were excellent seal hunters and even able to manage a kaiak, but none had their lips pierced under the age of 14 or 15, when they may be supposed to have reached manhood. The incisions are at first only large enough to admit a flat-headed pin of walrus ivory, about the diameter of a crow quill, worn with the head resting against the gum. These are soon replaced by a slightly stouter pair, and these again by stouter ones, until the holes are stretched to a diameter of about one-half inch, when they are ready for the labrets.

We heard of no special ceremonies or festivals connected with the making of these incisions, such as Dall observed at Norton Sound,¹ but in the one case where the operation was performed at the village of Utkiavwñ during our stay, we learned that it was done by a man outside of the family of the youth operated upon. We were also informed that the incisions must be made with a little lancet of slate. The employment of an implement of ancient form and obsolete material for this purpose indicates, as Dall says in the passage referred to above, "some greater significance than mere ornamentation."

The collection contains two specimens of such lancets. No. 89721 [1153] (figured in Rept. Point Barrow Expedition, Ethnology, Pl. v, Fig. 4) is the type. A little blade of soft gray slate is carefully inclosed



FIG. 91.—Plug for enlarging labret hole.

in a neat case of cottonwood. The blade is lanceolate, 1.3 inches long, 0.6 broad, and 0.1 thick, with a short, broad tang. The faces are somewhat rough, and ground with a broad bevel to very sharp cutting edges. The case is made of two similar pieces of wood, flat on one side and rounded on the other, so that when put together they make a rounded body 3 inches long, slightly flattened, and tapering toward the rounded ends, of which one is somewhat larger than the other. Round each end is a narrow, deep, transverse groove for a string to hold the two parts together. A shallow median groove connects these cross grooves on one piece, which is hollowed out on the flat face into a rough cavity of a shape and size suitable to receive the blade, which is produced into a narrow, deep groove at the point, probably to keep the point of the blade from being dulled by touching the wood. The other piece, which serves as a cover, has merely a rough, shallow, oval depression near the middle. The whole is evidently very old, and the case is browned with age and dirt.

No. 89579 [1200] is a similar blade of reddish purple slate, mounted in a rough haft of bone. Fig. 91, No. 89715 [1211], is one of a pair of bone models, made for sale, of the ivory plugs used for enlarging the holes for the labrets, corresponding in size to about the second pair used. It is roughly whittled out of a coarse-grained compact bone, and closely

¹ Alaska, p. 141.

resembles the plugs figured by Dall from Norton Sound,¹ but lacks the hole in the tip for the transverse wooden peg, which is not used at Point Barrow. One youth was wearing the final size of plugs when we landed at the station. These were brought to a point like the tip of a walrus tusk, and had exactly the appearance of the tusks of a young walrus when they first protrude beyond the lip. The labrets worn at Point Barrow at the present day are usually of two patterns. One is a large, flat, circular disk about 1½ inches in diameter, with a flat stud on the back something like that of a sleevebutton, and the other a thick cylindrical plug about 1 inch long, and one-half inch in diameter, with the protruded end rounded and the other expanded into an oblong flange, presenting a slightly curved surface to the gum. These plug labrets are the common fashion for everyday wear, and at the present day, as in Dr. Simpson's time, are almost without exception made of stone. Granite or syenite, porphyry, white marble, and sometimes coal (rarely jade) are used for this purpose.

One of the Nunatañimiu wore a glass cruet-stopper for a labret, and many natives of Utkiavwñ took the glass stopples of Worcestershire sauce bottles, which were thrown away at the station, and inserted them in the labret holes for everyday wear, sometimes grinding the round top into an oblong stud. There is one specimen of the plug labret in the collection. Labrets of all kinds are very highly prized, and it was almost impossible to obtain them.² Though we repeatedly asked for them and promised to pay a good price, genuine labrets that had been worn or that were intended for actual use were very rarely offered for sale, though at one time a large number of roughly made models or imitations were brought in. The single specimen of the plug labret (tu'tø) is No. 89700 [1163] (figured in Point Barrow Report, Ethnology, Pl. v, Fig. 3). It is a cylindrical plug of hard, bright green stone (jade or hypochlorite), 1.1 inches long and 0.6 in diameter at the outer end, which is rounded off, tapering slightly inward and expanded at the base into an elliptical disk 1.2 inches long and 0.9 broad, slightly concave on the surface which rests against the teeth and gum. The specimen is old and of a material very unusual at Point Barrow. Fig. 92, No. 89719 [1166], from Nuwñk, may also be called a plug labret, but is of a very unusual pattern, and said to be very old. It has an oblong stud of walrus ivory surmounted by a large, transparent, slightly greenish glass bead, on top of which is a small, translucent, sky-blue bead. The beads are held on by a short wooden peg, running through the perforations of the beads and a hole drilled through the ivory. There is a somewhat similar labret in the Museum collection (No. 48202)



FIG. 92.—Labret of beads and ivory.

¹ Alaska, p. 140.

² The men whom Thomas Simpson met at or near Barter Island sold their labrets, but demanded a hatchet or a dagger for a pair of them (Narrative, p. 119).

from Cape Prince of Wales, also very old. It is surmounted by a single oblong blue bead.

I saw but one other labret made of whole beads, and this had three good sized oval blue beads, in a cluster, projecting from the hole. It was worn by a man from Nuwük. This may be compared with a specimen from the Mackenzie district, No. 7714, to which two similar beads are attached in the same way. The disk labret is the pattern worn on full-dress occasions, seldom when working or hunting. One disk and one plug labret are frequently worn. Disk labrets are made of stone, sometimes of syenite or porphyry, but the most fashionable kind is made of white marble, and has half of a large, blue glass bead cemented on the center of the disk. These are as highly prized as they were in Dr. Simpson's time, and we consequently did not succeed in procuring a specimen.

I obtained one pair of syenite disk labrets, No. 56716 [197] (figured in Point Barrow Rept., Ethnology, Pl. v, Fig. 2). Each is a flat circular disk (1.7 and 1.6 inches in diameter, respectively) of rather coarse-grained black and white syenite, ground very smooth, but not polished. On the back of each is an elliptical stud, like that of a sleeve-button, 1.2 and 1.1 inches long and 0.8 and 0.6 broad, respectively.

Fig. 93, No. 2083, is one of the blue and white disks said to come from the Anderson River. This is introduced to represent those worn at Point Barrow, which are of precisely the same pattern. The disk is of white marble, 1½ inches in diameter, and in the center of it is cemented,



FIG. 93.—Blue and white labret from Anderson River.

apparently with oil dregs, half of a transparent blue glass bead, three-quarters of an inch in diameter, around the middle of which is cut a shallow groove. Similar marble disks without the bead are sometimes worn. These

blue and white labrets appear to be worn from Cape Bathurst to the Kaniag peninsula, including the Diomed Islands (see figure on p. 140 of Dall's Alaska). There are specimens in the Museum from the Anderson River and from the north shore of Norton Sound and we saw them worn by the Nunatafiun, as well as the natives of Point Barrow and Wainwright Inlet. The beads, which are larger than those sold by the American traders, were undoubtedly obtained from Siberia, as Kotzebue, in 1816, found the people of the sound which bears his name wearing labrets "ornamented with blue glass beads."¹ The high value set on these blue-bead labrets has been mentioned by Franklin² and T. Simpson,³ as well as by Dr. Simpson.⁴ The last named seems to be the

¹ Voyage, vol. 1, p. 210. Labrets of precisely the same pattern as the one described are figured in the frontispiece of this volume. (See also Choris, Voyage Pittoresque).

² 2d Exp., p. 118.

³ Narrative, p. 119.

⁴ Op. cit., p. 239.

first to recognize that the disks were made of marble. All previous writers speak of them as made of walrus ivory.

There are still at Point Barrow a few labrets of a very ancient pattern, such as are said to have been worn in the middle of the lip. These are very rarely put on, but are often carried by the owners on the belt as amulets. All that we saw were of light green translucent jade, highly polished. I obtained one specimen, No. 89705 [866] (figured in Point Barrow Rept., Ethnology, Pl. v, Fig. 1), a thin oblong disk of light green, translucent, polished jade, 2.6 inches long, 1.1 wide in the middle, and 0.8 wide at the ends, with the outer face slightly convex. On the back is an oblong stud with rounded ends, slightly curved to fit the gums.

Labrets of this material and pattern do not seem to be common anywhere. Beechey saw one in Kotzebue Sound 3 inches long and 1½ wide,¹ and there is a large and handsome one in the Museum brought by Mr. Nelson from the lower Yukon. A similar one has recently been received from Kotzebue Sound.

Fig. 94, No. 89712 [1169], from Sidaru is a labret of similar shape, 3 inches long and 1½ broad, but made of compact bone, rather neatly carved and ground smooth. It shows some signs of having been worn. There are marks on the stud where it appears to have been rubbed

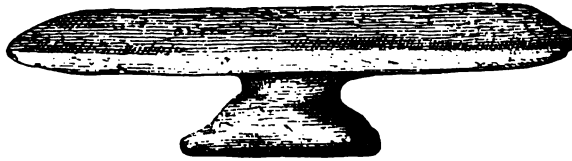


FIG. 94.—Oblong labret of bone.

against the teeth, and it is probably genuine. The purchase of this specimen apparently started the manufacture of bone labrets at Utkiavwñ, where no bone labrets, old or new, had previously been seen. For several days after we bought the specimen from Sidaru the natives continued to bring over bone labrets, but all so newly and clumsily made



FIG. 95.—Oblong labret of soapstone.

that we declined to purchase any more than four specimens. About the same time they began to make oblong labrets out of soapstone (a material which we never saw used for genuine labrets), like Fig. 95, No. 89707

[1215]. The purchase of three specimens of these started a wholesale manufacture of them, and we stopped purchasing.

The oblong labret appears to have been still in fashion as late as 1826, for Elson saw many of the men at Point Barrow wearing oblong labrets of bone (*cf.* No. 89712 [1169] and stone, 3 inches long and 1 broad.² Unfortunately, he does not specify whether they were worn in pairs or

¹ Voyage, p. 249.

² Beechey's Voy., p. 308.

singly, and if singly, as would be natural from their size and shape, whether in the middle of the lip or at one side.

Nos. 89304 [1713], 89716 [1042], and 89717 [1031] (Fig. 96) are very old labrets, which are interesting from their resemblance to the ancient Aleutian single labrets found by Dall in the cave on Amaknak Island.¹ No. 89304 [1713] is an elliptical plug of bituminous coal, with a projecting flange round the base, which is slightly concave to fit the curve of the jaw. This labret is very old and was said to have been found in one of the ruined houses in Utkiavwñ. The other two labrets are of walrus ivory and of similar shape, but have the flange only at the ends of the base. All of these three are large, the largest being 2·2 inches wide and



FIG. 96.—Ancient labrets.

0·7 thick, and the smallest 1·3 by 0·5, so that they required a much larger incision in the lip than is at present made. In connection with what has been said of the ancient habit of wearing labrets in the middle of the lip, it is interesting to note that Nordenskiöld saw men at Port Clarence who had, besides the ordinary labret holes, “a similar hole forward in the lip.”² The various portraits of natives previously inserted show the present manner of wearing the labrets at Point Barrow.

NECK ORNAMENTS.

Most of the women and girls wear necklaces made of strings of beads, large or small, frequently strung together with much taste. The tobacco pouch is often attached to this necklace.

ORNAMENTS OF THE LIMBS.

Bracelets.—The women all wear bracelets, which are sometimes strings of beads, but more commonly circles of iron, brass, or copper wire, of which several are often worn on the same wrist, after the fashion of bangles. The men also sometimes wear bracelets. These consist of cir-

¹ See Contrib., etc., vol. 1, p. 89, and the two upper figures on the plate opposite.

² Vega, vol. 2, p. 233.

cles of narrow thong, upon which are strung one or two large beads or a couple of *Dentalium* shells (pû'tû).¹

We brought home one pair of men's bracelets (newly made), one of which (89388 [1355]) is figured in Point Barrow Rept. Ethnology, Pl. I, Fig. 4. They are made of strips of seal thong 0.2 inch broad, bent into rings (9.4 and 8.6 inches in circumference, respectively), with the ends slightly overlapping and sewed together. On each is strung a cylindrical bead of soapstone about one-half inch long and of the same diameter. A single bracelet is generally worn.

Finger-rings.—Both sexes now frequently wear brass finger-rings, called katû'kqlërûñ, from katû'kqlûñ, the middle finger, upon which the ring is always worn.

MISCELLANEOUS ORNAMENTS.

Beads.—In addition to the ornaments already described, the women use short strings of beads, buttons, etc., to ornament various parts of the dress, especially the outer side of the inner frock (i'lupa), and strings of beads are often attached to various objects, such as pipes, tobacco pouches, etc. One or two women were also observed to wear large bunches of beads and buttons attached to the inner girdle in front so as to hang down between the legs inside of the pantaloons. A similar strange custom was observed by Beechey at Hotham Inlet, where a young woman wore a good-sized metal bell in the same uncomfortable manner.² These people appear to have attempted the manufacture of beads in former times, when they were not so easily obtained as at present. There is in the collection a string of four small beads made from amber picked up on the beach (Fig. 97, No. 89700 [1716]). They are of dark honey-colored transparent amber, about one-third inch long and one-half inch diameter at the base. Such beads are very rare at the present day. The above specimens were the only ones seen.



FIG. 97.—Beads of amber.

TOILET ARTICLES.

The only object in use among these people that can be considered a toilet article is the small hair comb (i'lai'utfn), usually made of walrus ivory.

The collection contains ten specimens, from which No. 56566b [182] (Fig. 98a) has been selected as the type. It is made of walrus ivory (from near the root of the tusk). When in use, it is held with the tip of the forefinger in the ring, the thumb and middle finger resting on each

¹ There is in the collection a bunch of five of these shells (No. 89530 [1357]), which are scarce and highly valued as ornaments. Mr. R. E. C. Stearns, of the U. S. National Museum, has identified the species as *Dentalium Indianorum* Cpr. (probably = *D. pretiosum* Sby.), called "alkotei'k" by the Indians of northwest California, and "hiqua" (J. K. Lord) or "hya-qua" (F. Whympfer) by the Indians round Queen Charlotte Sound.

² Voyage, p. 295.

side of the neck. This is perhaps the commonest form of the comb, though it is often made with two curved arms at the top instead of a ring, as in Fig. 98*b*, No. 56569 [194], or sometimes with a plain top, like No. 56572 [210] (Fig. 98*c*). Nine of the ten combs, all from Utkiavwīn, are of walrus ivory, but No. 89785 [1006], which was the property of Ilū'bwga, the Nunatañmiun, who spent the winter of 1882-'83 at Utki-

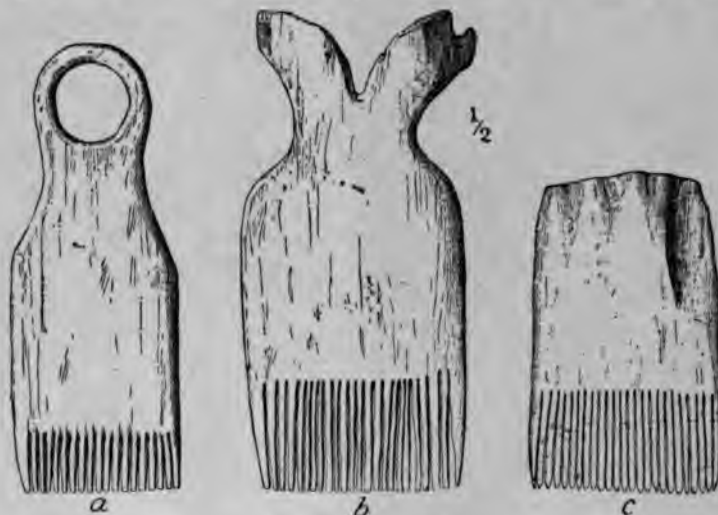


FIG. 98.—Hair combs.

avwīn, is made of reindeer antler. This was probably made in the interior, where antler is more plentiful than ivory. All these combs are made with great care and patience. The teeth are usually cut with a saw, but on one specimen the maker used the sharp edge of a piece of tin, as we had refused to loan him a fine saw. This kind of comb is very like that described by Parry from Iglulik.¹

IMPLEMENTS FOR GENERAL USE.

TOOLS.

Knives.—All the men are now supplied with excellent knives of civilized manufacture, mostly butcher knives or sheath knives of various patterns, which they employ for numerous purposes, such as skinning and butchering game, cutting up food, and rough whittling. Fine whittling and carving is usually done with the "crooked knife," to be described further on. In whittling the knife is grasped so that the blade projects on the ulnar side of the hand and is drawn toward the workman. A pocketknife, of which they have many of various patterns, is used in the same way. I observed that the Asiatic Eskimo at Plover Bay held the knife in the same manner. Capt. Lyon, in describing a mau whit-

¹2nd Voyage, p. 194, Fig. 12, Pl. opp. p. 548.

ting at Winter Island, says: "As is customary with negroes, he cut toward the left hand and never used the thumb of the right, as we do, for a check to the knife."¹ This apparently refers to a similar manner of holding the knife. Before the introduction of iron, knives appear to have been always made of slate, worked by grinding. We obtained twenty-six more or less complete knives, most of which are genuine old implements, which have been preserved as heirlooms or amulets. These knives are either single or double edged, and the double-edged knives may be divided into four classes, according to their shape. The first class consists of rather small knives with the edges straight or only slightly curved, tapering to a sharp or truncated point, with the butt terminating in a short broad tang slightly narrower than the blade, which is inserted in the end of a straight wooden haft, at least as long as the blade. The commonest material is a hard, dark purple slate, though some are of black or dark gray slate. Of this class we have three complete knives and five blades without the haft.

No. 89584 [1107] (figured in Point Barrow Rept., Ethnology, Pl. III, Fig. 3), will represent this class. It is a blade of dark purple slate, ground smooth, 3.5 inches long, tapering from a width of 1.3 inches at the butt, with curved edges to a sharp point, and beveled on both faces from the middle line to the edges, and the flat tang is inserted into a cleft in the end of a straight haft of spruce. The blade is secured by a whipping of about fifteen turns of sinew braid lodged in a

broad shallow groove round the end of the haft. In a hole in the other end of the haft is looped a short lanyard of seal thong. Fig. 99a, No. 89581 [1011], is a knife of the same class and about the same size, having a haft 4 inches and a blade 3 inches long. The blade is secured by two lashings, of which the first is a narrow strip of whalebone, and the other of sinew braid. The materials of blade and haft are the same as before. No. 89585 [1710] (Fig. 99b), has a blade of dark gray slate, and the haft, which appears to be of cottonwood, is in two longitudinal sections. The

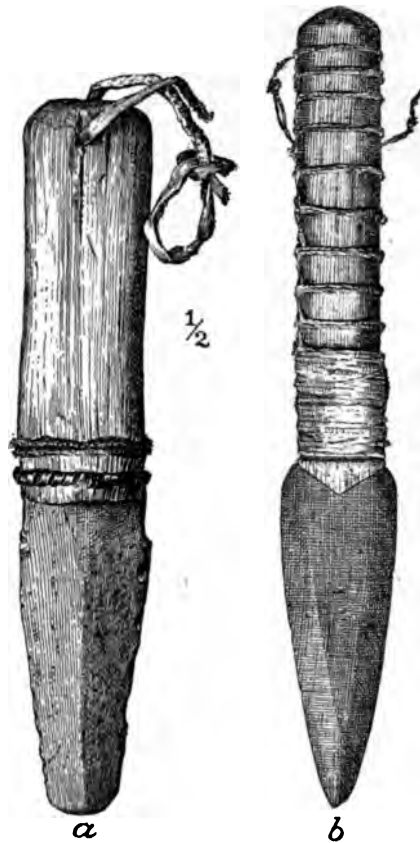


FIG. 99.—Slate knives.

¹Journal, p. 92.

lashing which holds these two sections together is of braided sinew. Of the blades, the only sharp-pointed one, No. 56684 [228] (Fig. 100), is like the blade of 89584 [1107], but rather larger. The others all have rounded or truncated points and are not over $3\frac{1}{2}$ inches long, including the tang, but otherwise closely resemble the blades already described. They all show signs of considerable age and several of them are nicked and gapped on the edge from use. Knives of this class are not like any in use at the present day, and it was not possible to learn definitely whether this shape served any special purpose. We were, however, given to understand that the sharp-pointed ones were sometimes, at least, used for stabbing. Perhaps they were used specially for cutting up the smaller animals.



FIG. 100.—Slate knife-blade.

The second class, of which there are four specimens, is not unlike the first, but the blade is short and broad, with strongly curved edges, and always sharp pointed, while the haft is always much longer than the blade. Instead of being evenly beveled off on both faces from the middle line to the edges, they are either slightly convex, worked down gradually to the edge, or flat with narrowly beveled edges. They are all small knives, the longest being 8.3 inches long, with the blade projecting 3.1 inches from the haft, and the shortest 4.9 inches, with the blade projecting only 1.4 inches.

Fig. 101, No. 89583 [1305], is a knife of this class, with the blade a nearly equilateral triangle (1.4 inches long and 1.3 inches wide at the base), with

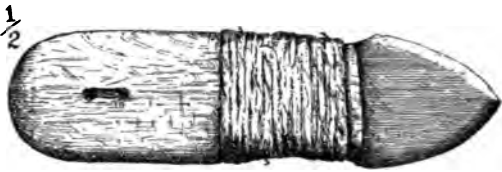


FIG. 101.—Slate knife.



FIG. 102.—Slate knife.

102, No. 89591 [1016], is another form of the same class. The blade is secured by a single rivet of wood.

The third class consists of large knives, with long, broad, lanceolate blades, and short straight hafts. There is only one complete specimen, No. 89592 [1002], Fig. 103.



FIG. 103.—Slate hunting-knife.

This has a blade of soft, light green-

ish slate, 6 inches long and 2.6 inches broad, with the edges broadly beveled on both faces. The haft of spruce is in two longitudinal sections, put together so as to inclose the short tang of the blade, and is secured by a tight whipping of eighteen turns of fine seal twine, and painted with red ochre. This knife is new and was made for sale, but is undoubtedly a correct model of an ancient pattern, as No. 56676 [204] (Fig. 104), which is certainly ancient, appears to be the blade of just such a knife. We were told that the latter was intended for cutting blubber. This perhaps means that it was a whaling knife. Mr. Nelson brought home a magnificent knife of precisely the same pattern, made of light green jade.



FIG. 104.—Blade of slate hunting-knife.

The two knives, representing the fourth class, are both new and made for sale, having blades of soft slate. As we obtained no genuine knives of this pattern, it is possible that they are merely commercial fabrications. The two knives are very nearly alike, but the larger, No.



FIG. 105.—Large slate knife.

89590 [984] (Fig. 105), is the more carefully made. The blade is of light greenish gray slate, 6.2 inches long and 2 inches broad, and is straight nearly to

the tip, where it curves to a sharp point, making a blade like that of the Roman gladius. The haft is a piece sawed out of the beam of an antler, and has a cleft sawed in one end to receive the short broad tang of the blade. The whipping is of sinew braid.

The single-edged knives were probably all meant specially for cutting food, and are all of the same general pattern, varying in size from a blade only 2½ inches long to one of 7 inches. The blade is generally more strongly curved along the edge than on the back and is usually sharp-pointed. It is fitted with a broad tang to a straight haft, usually shorter than the blade. There are in the collection four complete knives and five unhafted blades. No. 89597 [1052] (Fig. 106) is a typical knife of this kind. The blade is of black slate, rather rough, and



FIG. 106.—Large single-edged slate knife.

is 5.6 inches long (including the tang). The tang, which is about one-half inch long and the same breadth, is lashed *against* one end of the flat haft of bone which is cut away to receive it, with five turns of stout seal thong. No. 89594 [1053] differs from the preceding only in having the tang inserted in a cleft in the end of the haft, and No. 89589a

[1054] has the back more curved than the edge, the haft of antler and the lashing of whalebone. All three are of very rude workmanship. No. 89587 [1587] is a small knife with a truncated point and the tang imbedded without lashing in the end of a roughly made haft of bone.

Most of the blades are those of knives similar to the type, more smoothly finished, but No. 56712 [226] (Fig. 107*a*) is noticeable for the



FIG. 107.—Blades of knives.

extreme "belly" of the edge and the smoothness with which the faces are beveled from back to edge. Such knives approach the woman's round knife (*ulu*, *ulu'ra*). No. 89601 [776] (Fig. 107*b*) is almost double-edged, the back being rounded off. Fig. 108, No. 89631 [1081], is a very remarkable form of slate knife, of which this was the only specimen seen. In shape it somewhat resembles a hatchet, having a broad triangular blade with a strongly curved cutting edge, along the back of which is fitted a stout haft of bone $12\frac{1}{2}$ inches long. The blade is of soft, dark purple slate, ground smooth, and resembles the modern knives in having the sharp cutting edge beveled almost wholly on one face. The haft is the foreshaft of an old whale harpoon, and is made of whale's bone. The back of the blade is fitted into a deep narrow saw cut, and held on by three very neat lashings of narrow strips of whalebone, each of which passes through a hole drilled through the blade close to the haft and through a pair of vertical holes in the haft on each side of the blade. These holes converge towards the back of the haft and are joined by a deep channel, so that the lashing is countersunk below the surface of



FIG. 108.—Peculiar slate knife.

the haft. This implement was brought down from Nuwük and offered for sale as a knife anciently used for cutting off the blubber of a whale. The purchaser got the impression that it was formerly attached to a long pole and used like a whale spade. On more careful examination after our return it was discovered that the haft was really part of an old harpoon and that the lashings and holes to receive them were evidently newer than the haft.

It is possible that the blade may have been long ago fitted to the haft and that the tool may have been used as described. That knives of this sort were occasionally used by the Eskimo is shown by a specimen in the Museum from Norton Sound. This is smaller than the one described but has a slate blade of nearly the same shape and has a haft, for hand use only, put on in the same way.

With such knives as these the cut is made by *drawing* the knife toward the user instead of pushing it away, as in using the round knife. We found no evidence that these Eskimo ever used knives of ivory (except for cutting snow) or ivory knives with bits of iron inlaid in the edge, such as have been observed among those of the East.

Fig. 109, No. 89477 [1422], is a very extraordinary implement, which was brought down from Point Barrow and which has evidently been exposed alongside of some corpse at the cemetery. The blade is a long, flat, thin piece of whalebone wedged between the two parts of the haft, which has been sawed lengthwise for $6\frac{1}{2}$ inches to receive it.

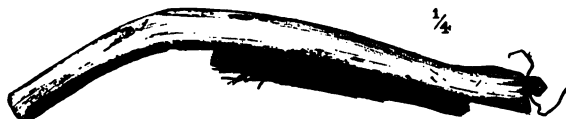


FIG. 109—Knife with whalebone blade.

The haft is a slender piece of antler. No other specimens of the kind were seen, nor have similar implements, to my knowledge, been observed elsewhere. The natives insisted that it was genuine, and was formerly used for cutting blubber.

I have introduced four figures of old iron or steel knives, of which we have six specimens, in order to show the way in which the natives in early days, when iron was scarce, utilized old case-knives and bits of tools, fitting them with hafts of their own make. All agree in having the edge beveled on the upper face only. All the knives which they obtain from the whites at the present day are worked over with a file so as to bring the bevel on one face only. Fig. 110, No. 89296 [970], from



FIG. 110—Small iron knife.

Nuwük, has a blade of iron, and the flat haft is made of two longitudinal sections of reindeer antler, held together

with four large rivets nearly equidistant. The two which pass through the tang are of brass and the other two of iron. The blade is 3.6 inches long, the haft 4.1 long and 0.9 broad. Fig. 110, No. 89294 [901], from Utkiavwñ, has a short, thick, and sharp-pointed blade, and is hafted in the same way with antler, one section of the haft being cut out to receive the short, thick tang. The first two rivets are of iron, the other three of brass and not quite long enough to go wholly through the haft. The blade is barely 2 inches long. Fig. 111a, No. 89297 [1125], from Nuwük, has a short blade, $2\frac{1}{2}$ inches long, and the two sections of the

haft are held together, not by rivets, but by a close spiral lashing of stout seal thong extending the whole length of the haft. No. 89293 [1330], Fig. 111*b*, from Utkiavwñ, has a peculiarly shaped blade, which is a bit of some steel tool imbedded in the end of a straight bit of antler 4 inches long. One of these knives, not figured, is evidently part of the blade of an old-fashioned curved case knife. It is stamped



FIG. 111.—Small iron knives.

with the name "Wilson," and underneath this are three figures, of which only \diamond can be made out. This may be a table knife bought or stolen from the *Plover* in 1852-'54.

There is in the collection one large double-edged knife (Fig. 112, No. 89298 [1162]) of precisely the same form as the slate hunting knife (Fig. 103) and Mr. Nelson's jade knife previously mentioned. The blade is of thick sheet iron, which has in it a couple of rivet holes, and the haft of reindeer antler in two sections, held together by a large copper rivet

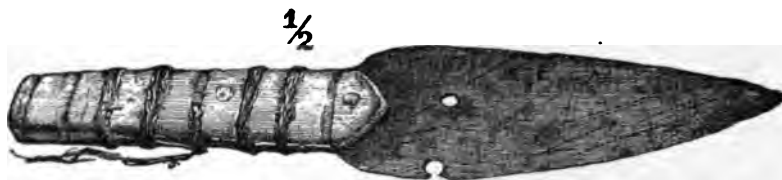


FIG. 112.—Iron hunting knife.

at each end and a marline of sinew braid. Each edge has a narrow bevel on one face only, the two edges being beveled on opposite faces. There are a small number of such knives still in use, especially as hunting knives (for cutting up walrus, one man said). They are considered to be better than modern knives for keeping off evil spirits at night. As is not unusual, the antiquity of the object has probably invested it with a certain amount of superstitious regard. These knives are undoubtedly the same as the "double-edged knives (pan'-na)" mentioned by Dr.

Simpson (*op. cit.*, p. 266) as brought for sale by the Nunatañmim, who obtained them from the Siberian natives, and which he believes to be carried as far as the strait of Fury and Hecla. It would be interesting to decide whether the stone hunting knives were an original idea of the Eskimo, or whether they were copies, in stone, of the first few iron knives obtained from Siberia; but more material is needed before the matter can be cleared up.

The natives of Point Barrow, in ordinary conversation, call all knives *savik*, which also means *iron*, and is identically the same as the word used in Greenland for the same objects. If, then, there was a time, as these people say, when their ancestors were totally ignorant of the use of iron—and the large number of stone implements still found among them is strongly corroborative of this—the use of this name indicates that the first iron was obtained from the east, along with the soap-stone lamps, instead of from Siberia. Had it first come from Siberia, as tobacco did, we should expect to find it, like the latter, called by a Russian or Siberian name.

Like all the Eskimo of North America from Cape Bathurst westward, the natives of Point Barrow use for fine whittling and carving on wood, ivory, bone, etc., "crooked knives," consisting of a small blade, set on the under side of the end of a long curved haft, so that the edge, which is beveled only on the upper face, projects about as much as that of a spokeshave. The curve of blade and haft is such that when the under surface of the blade rests against the surface to be cut the end of the haft points up at an angle of about 45°. This knife differs essentially from the crooked carving knife so generally used by the Indians of North America. As a rule the latter has only the blade (which is often double edged) curved and stuck into the end of a straight haft. These knives are at the present time made of iron or steel and are of two sizes, a large knife, *m'dllñ*, with a haft 10 to 20 inches long, intended for working on wood, and a small one, *savigro'n* (lit. "an instrument for shaving"), with a haft 6 or 7 inches long and intended specially for cutting bone and ivory. Both sizes are handled in the same way. The knife is held close to the blade between the index and second fingers of the right hand with the thumb over the edge, which is toward the workman. The workman draws the knife toward him, using his thumb as a check to gauge the depth of the cut. The natives use these knives with very great skill, taking off long and very even shavings and producing very neat workmanship.¹

There are in the collection four large knives and thirteen small ones. No. 89278 [787] (Fig. 113) will serve as the type of the large knives. The haft is a piece of reindeer antler, flat on one face and rounded on the other, and the curve is toward the rounded face. The flat face is hollowed out by cutting away the cancellated tissue from the bend to

¹ Compare this with what Capt. Parry says of the workmanship of the people of Iglulik (2d Voy., p. 336). The almost exclusive use of the double-edged *pan'na* is the reason their work is so "remarkably coarse and clumsy."

the tip, and the lower edge is sloped off so that the end of the haft is flat and narrow, with a slight twist. The blade is riveted to the flat face of the haft with three iron rivets, and is a piece of a saw counter-sunk flush with the surface of the haft, so that it follows its curvature. The cutting edge is beveled only on the upper face. The lower edge of the haft, from the blade to the place where it begins to narrow, is pierced with eleven equidistant holes, through which is laced a piece of seal-skin thong, the two parts crossing like a shoe-lacing, to prevent the



FIG. 113.—Large crooked knife.

hand from slipping. The ornamental pattern on the upper face of the haft is incised and was originally colored with red ocher, but is now filled with dirt.

Fig. 114, No. 89780 [1004*d*], is a very long hafted knife (the haft is 12.3 inches long), but otherwise resembles the type, though not so elaborately ornamented. The blade is also a bit of a saw. It is provided with a sheath $3\frac{1}{4}$ inches long, made of black sealskin with the black side out, doubled over at one side, and sewed "over and over" down the other side and round one end. To the open end is sewed a bit of thong with a slit in the end of it, into which one end of a lanyard of seal twine 15 inches long is fastened with a becket-hitch. When the



FIG. 114.—Large crooked knife, with sheath.

sheath is fitted over the blade the lanyard is passed through a hole in the haft and made fast by two or three turns around it. Such sheaths are often used by careful workmen. This particular knife was the property of the "inlander" Ilû'bwge, previously mentioned. No. 89283 [967], from Nuwük, is interesting as being the only left-handed tool we obtained. The fourth knife has a blade with a cutting edge of $3\frac{1}{2}$ inches, while that of each of the others is 3 inches.

The small knife differs little from the m'ðliñ except in having the haft very much shorter and not tapered off at the tip. Fig. 115*a*, No. 56552 [145], from Utkiavwñ, shows a common form of this kind of knife, though the blade usually has a sharp point like those of the large

knives, projecting beyond the end of the haft. This knife has a blade of iron riveted on with two iron rivets to a haft of reindeer antler. The edges of the haft close to the blade are roughened with crosscuts to prevent slipping.

The blades of the small knives are frequently inserted into a cleft in the edge of the haft, as in Fig. 115*b*, 89632 [827], and 89277 [1172]. The blade, in such cases, is secured by wedging it tightly, with sometimes the addition of a lashing of thong through a hole in the haft and round the heel of the blade. The blade is usually of steel, in most cases a bit of

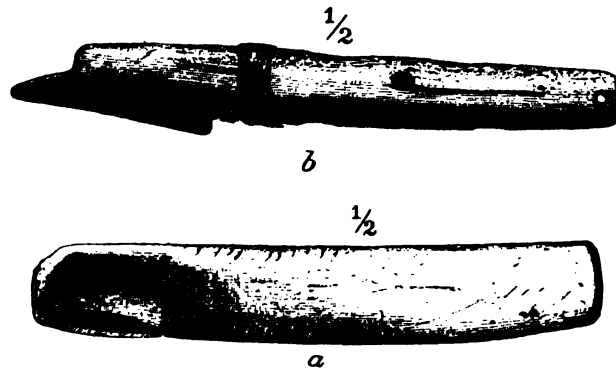


FIG. 115.—Small crooked knives.

a saw and the haft of reindeer antler, generally plain, unless the circular hollows, such as are to be seen on No. 89277 [1172], which are very common, are intended for ornament. Fig. 116, No. 89275 [1183], from Utkiavwīn, is a rather peculiar knife. The haft, which is the only one seen of walrus ivory, is nearly straight, and the unusually long point of the blade is strongly bent up. The rivets are of copper. This knife, the history of which we did not obtain, was very likely meant both for wood and ivory. It is old and rusty and has been long in use.



FIG. 116.—Crooked knife.

All of the crooked knives in the collection are genuine implements which have been actually in use, and do not differ in type from the crooked knives in the Museum from the Mackenzie district, Kotzebue Sound, and other parts of Alaska. Similar knives appear to be used among the Siberian Eskimo and the Chukches, who have adopted their habits. Hooper (*Tents, etc.*, p. 175), mentions "a small knife with a bent blade and a handle, generally made of the tip of a deer's horn," as one in general use at Plover Bay, and handled in the same skillful way

as at Point Barrow.¹ Among the Eskimo of the central region they are almost entirely unknown. The only mention I have seen of such tools is in Parry's Second Voyage (p. 504), where he speaks of seeing at Iglulik "several open knives with crooked wooden handles," which he thinks "must have been obtained by communication alongshore with Hudson Bay." I can find no specimen, figure, or description of the *sa'nat* ("tool"), the tool par excellence of the Greenlanders, except the following definition in Kleinschmidt's "Grønlandsk Ordbog": "2. Specially a narrow, long-hafted knife, which is sharpened on one side and slightly curved at the tip (and which is a Greenlander's chief tool)." This seems to indicate that this knife, so common in the West, is equally common in Greenland.²

Whether these people used crooked knives before the introduction of iron is by no means certain, though not improbable. Fig. 117a, No. 89633 [1196], from Utkiavwñ, is a knife made by imbedding a flake of gray flint in the lower edge of a haft of reindeer antler, of the proper shape and curvature for a *mídlñ* handle. The haft is soiled and



FIG. 117.—Crooked knives, flint bladed.

undoubtedly old, while the flaked surfaces of the flint do not seem fresh, and the edge shows slight nicks, as if it had been used. Had this knife been followed by others equally genuine looking, I should have no hesitation in pronouncing it a pre-

historic knife, and the ancestor of the present steel one. The fact, however, that its purchase gave rise to the manufacture of a host of flint knives all obviously new and more and more clumsily made, until we refused to buy any more, leads me to suspect that it was fabricated with very great care from old material, and skillfully soiled by the maker.

Ten of these knives of flint were purchased within a fortnight before we detected the deceit. Fig. 117b, No. 89636 [1212] is one of the best of these counterfeits, made by wedging a freshly flaked flint blade into the haft of an old *savigrón*, which has been somewhat trimmed to receive the blade and soiled and charred to make it look old. Other more carelessly made ones had clumsily carved handles of whale's bone, with roughly flaked flints stuck into them and glued in with oil dregs. All of these came from Utkiavwñ. Another suspicious circumstance is that a few days previously two slate-bladed crooked knives had been brought down from Nuwñk and accepted without question as ancient. On examining the specimens since our return, I find that while the hafts are certainly old, the blades, which are of soft slate easily worked,

¹ Lisiansky also mentions "a small crooked knife" (Voyage, p. 181), as one of the tools used in Kadiak in 1805.

² A specimen has lately been received at the National Museum. It is remarkably like the Indian knife in pattern.

are as certainly new. Fig. 118*a*, 118*b*, represent these two knives (89580 [1062], 89586 [1061]), which have the blades lashed on with deer sinew. It is worthy of note in this connection that there are no stone knives of this pattern in the museum from any other locality.

The women employ for all purposes for which a knife or scissors could be used a semicircular knife of the same general type as those described by every writer from the days of Egede, who has had to deal with the

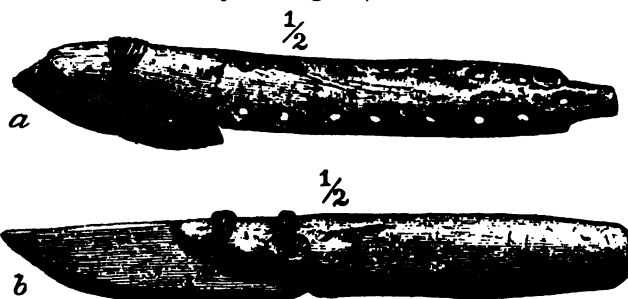


FIG. 118.—Slate-bladed crooked knives.

Eskimo. The knives at the present day are made of steel, usually, and perhaps always, of a piece of a saw blade, which gives a sheet of steel of the proper breadth and thickness, and are manufactured by the natives themselves. Dr. Simpson says¹ that in his time they were brought from Kotzebue Sound by the Nunatañmiun, who obtained them from the Siberian Eskimo. There are in the collection three of these steel knives, all of the small size generally called ulúræ ("little úlu"). No. 56546 [14] has been picked out for description (Fig. 119).

The blade is wedged into a handle of walrus ivory. The ornamentation on the handle is of incised lines and dots blackened. The cutting edge of the blade is beveled on one face only. This knife represents the general shape of knives of this sort, but is rather smaller than most of them. I have seen some knives with blades fully 5 or 6 inches long and deep in proportion. The handle is almost always of walrus ivory and of the shape figured. I do not remember ever seeing an úlu blade secured otherwise than by fitting it tightly into a narrow slit in the handle, except in one case, when the handle was part of the original handle of the saw of which the knife was made, left still riveted on.



FIG. 119.—Woman's knife, steel blade.

It is not necessary to specify the various purposes for which these knives are used. Whenever a woman wishes to cut anything, from her food to a thread in her sewing, she uses an úlu in preference to anything else. The knife is handled precisely as described among the eastern Eskimo, making the cut by pushing instead of drawing,² thus differing from the long-handled round knife mentioned above. Knives of this

¹Op. cit., p. 266.

²See for example, Kumlien, op. cit., p. 26.

pattern are very generally used among the western Eskimo, but in the east the blade is always separated from the handle by a short shank, as in our micing knives.

The natives of Point Barrow used round knives long before the introduction of iron. There are in the collection twenty-three more or less complete round knives of stone, most of which are genuine implements that have been used. Of these a few, which are perhaps the more recent ones, have blades not unlike the modern steel knife. For instance, No. 89680 [1106] Fig. 120, has a blade of hard gray mica slate of almost precisely the modern shape, but both faces are gradually worked down to the cutting edge without a bevel on either. The handle is very large and stout and made of coarse whale's bone.



FIG. 120.—Woman's knife, slate blade.

This knife was said to have come from the ruined village at Pernye. Fig. 121, No. 89679 [971], from Nuwük, was made for sale, but is perhaps a model of a form sometimes used. The shape of the blade is quite different from those now in use, in having the cutting edge turned so strongly to the front. The handle is of oak and the blade of rather hard, dark purple slate. Fig. 122, 89689 [985], also from Nuwük, and made for the market, is introduced to show a method of hafting which may have been formerly employed. The haft is of reindeer



FIG. 121.—Woman's knife, slate blade.

antler in two longitudinal sections, between which the blade is wedged. These two sections are held together by lashings of sinew at each end, passing through holes in each piece and round the ends. These lashings being put on wet, have shrunk so that the blade is very tightly clasped between the two parts of the handle. The commoner form of these stone knives, however, has the back of the blade much longer, so that the sides are straight instead of oblique and usually round off gradually at the ends of the cutting edge without being produced into a point at either end. No. 89682 [958] is a form intermediate between this and the modern shape,



FIG. 122.—Woman's knife, slate blade.

having a blade with a long back, but produced into a sharp point at one end. The handle is of reindeer antler and the blade rather soft black slate. This specimen is a very cleverly counterfeited antique.

No. 89636 [1122], Fig. 123, approaches yet nearer the ancient shape, but still has one end slightly produced. The handle is also of reindeer antler, which seems to have been very commonly used with the slate blades. The lashing round the blade close to the handle is of seal



FIG. 123.—Woman's knife, slate blade.

thong, with the end wound spirally round all the parts on both sides and neatly tucked in. It seems to serve no purpose beyond enlarging the handle so as to make it fit the hand better. One beautiful blade of light olive green, clouded jade, No. 89675 [1170], belonged to a knife of this pattern. The older pattern is represented by No. 89676 [1586], a small knife blade from Ukiavwñ, which has been kept as an amulet. No. 56660 [129], is a blade of the same type, but elongated, being $7\frac{1}{2}$ inches

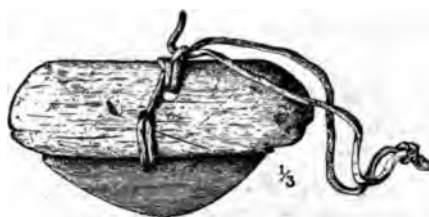


FIG. 124.—Woman's ancient slate-bladed knife.

long and 2 broad. This is a very beautiful implement of pale olive jade, ground smooth. The bevel along the back of each of these blades indicates that they were to be fitted into a narrow slit in a long haft, like that of No. 89684 [886], Fig. 124, from Nuwük. Though both blade and handle of this specimen are very old, and have been put together in their



FIG. 125.—Ancient bone handle for woman's knife.

present shape for a long time, the handle, which is of whale's bone, evidently belonged to a longer blade, which fitted in the cleft without the need of any lashing. Fig. 125, No. 89693 [874], shows a form of handle evidently of very great antiquity, as the specimen shows signs of great age. It was purchased from a native of Utkiavwñ. It is made of a single piece of coarse whale's bone. It was intended for a blade at least 7 inches long.

Fig. 126, No. 56672 [191], from Utkiavwñ, is a very crude, large knife, intended for use without a handle. It is of rough, hard, dark purplish



FIG. 126.—Large knife of slate.

slate. The upper three-quarters of both faces are almost untouched cleavage surfaces, but the lower quarter is pretty smoothly ground down to a semicircular cutting edge, which is somewhat nicked from use.

The angular grooves on the two faces were evidently begun with the intention of cutting the knife in two. We were told that this large knife was specially for cutting blubber. It is a genuine antique.

While ground slate is a quite common material for round knives, flint appears to have been rarely used. We obtained only three of this material. No. 89690 [1311] is a flint knife hafted with a rough, irregular lump of coarse whale's bone. The blade is a rather thin "spall" of light gray flint, flaked round the edges into the shape of a modern ulûrv blade, with a very strongly curved cutting edge. Though the handle is new, the flaking of the blade does not seem fresh, so that it is possibly a genuine old blade fitted with a new haft for the market. A similar flint blade, more neatly flaked, was brought from Kotzebue Sound by Lieut. Stoney, U. S. Navy, in 1884. The other two flint knives are interesting from being made for use without handles.

No. 89691 [1360], Fig. 127, from Sidaru, is an oblong, wedge-shaped spall of gray flint, of which the back still preserves the natural surface of the pebble. It is slightly shaped by coarse flaking along the back and one end, and the edge is finely flaked into a curved outline rounding up at the ends. The specimen is old and dirty, and was probably preserved as a sort of heirloom or amulet. No. 89692 [1178] is a similar



FIG. 127.—Woman's knife of flaked flint.

spall from a round pebble. Such knives as these are evidently the first steps in the development of the round knife. The shape of the spalls, produced by breaking a round or oval pebble of flint, would naturally suggest using them as knives, and the next step would be to improve the edge by flaking. The greater adaptability of slate, from its softness and easy cleavage, for making such knives would soon be recognized, and we should expect to find, as we do, knives like No. 56672 [191]. The next step would naturally be to provide such a knife with a haft at the point where the stone was grasped by the hand, while reducing this haft so as to leave only just enough for the grasp and cutting away the superfluous corners of the blade would give us the modern form of the blade. Round knives of slate are not peculiar to Point Barrow, but have been collected in many other places in northwestern America.¹

The relationship between these knives and the semilunar slate blades found in the North Atlantic States has already been ably discussed by Dr. Charles Rau.² It must, however, be borne in mind that while these are sufficiently "fish-cutters" to warrant their admission into a book on fishing, the cutting of fish is but a small part of the work they do. The name "fish-cutter," as applied to these knives, would be no more

¹ See, especially, Dall, *Contrib.*, vol. 1, pp. 59 and 79, for figures of such knives from the caves of Unalakka.

² *Prehistoric Fishing*, pp. 183-188.

distinctive than the name "tobacco-cutter" for a Yankee's jack-knife.¹

Adzes (ullimau).—Even at the present day the Eskimo of Point Barrow use no tool for shaping large pieces of woodwork, except a short-handled adz, hafted in the same manner as the old stone tools which were employed before the introduction of iron. Though axes and hatchets are frequently obtained by trading, they are never used as such, but the head is removed and rehafted so as to make an adz of it. This habit is not peculiar to the people of Point Barrow. There is a hatchet head, mounted in the same way, from the Anderson River, in the Museum collection, and the same thing was noted in Hudson's Strait by Capt. Lyon² and at Iglulik by Capt. Parry.³ Mr. L. M. Turner informs me that the Eskimo of Ungava, on the south side of Hudson's Strait, who have been long in contact with the whites, have learned to use axes. The collection contains two such adzes made from small hatchets. No. 89873 [972], Fig. 128, is the more typical of the two. The blade is the head of a small hatchet or tomahawk lashed to the haft of oak with a stout thong of seal hide. The lashing is one piece, and

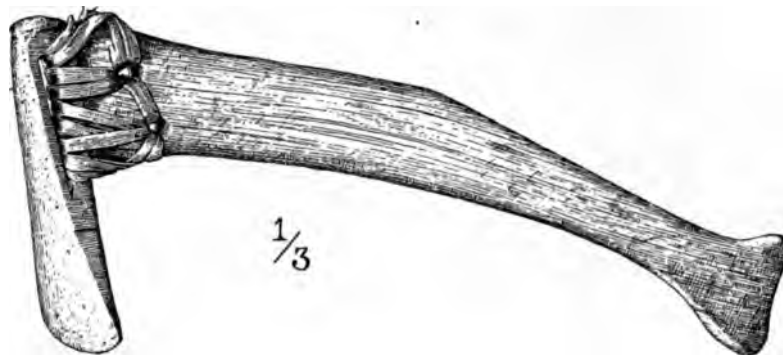


FIG. 128.—Hatchet hafted as an adz.

is put on wet and shrunk tightly on. This tool is a little longer in the haft than those commonly used, and the shape and material of the haft is a little unusual, it being generally elliptical in section and made of soft wood.

Fig. 129, No. 56638 [309], from Utkiavwîñ, is a similar adz, but the head has been narrowed by cutting off pieces from the sides (done by filing part way through and breaking the piece off), and a deep transverse groove has been cut on the front face near the butt. Part of the lashing is held in this groove as well as by the eye, the lower half of which is filled up with a wooden plug. The haft is peculiar in being a

¹It is but just to Dr. Rau to say that he recognized the fact that these implements are not exclusively fish-cutters, and applies this name only to indicate that he has treated of them simply in reference to their use as such. The idea, however, that these, being slightly different in shape from the Greenland *olu* or *ulu*, are merely fish knives, has gained a certain currency among anthropologists which it is desirable to counteract.

²Journal, p. 28.

³2d Voyage, p. 536, and pl. opp. p. 548, fig. 3.

piece of reindeer antler which has been reduced in thickness by sawing out a slice for 8 inches from the butt and bringing the two parts together with four stout wooden treenails about $1\frac{1}{2}$ inches apart. This is preferable to trimming it down to a proper thickness from the surface, as the latter process would remove the compact tissue of the outside and expose the soft inside tissue. The whipping of seal thong just above the flange of the butt helps to give a better grip and, at the same time, to hold the parts together. As before, there are two large holes for the lashing. Adzes of this sort are used for all large pieces of wood work, such as timbers for boats, planks, and beams for houses, etc. After roughly dressing these out with the adz they are neatly smoothed off with the crooked knife, or sometimes, of late years, with the plane. The work of "getting out" the large pieces of wood is almost always done where the drift log lies on the beach. When a man wants a new stem or sternpost for his umiak, or a plank to repair his house, he searches along the beach until he finds a suitable piece of driftwood,

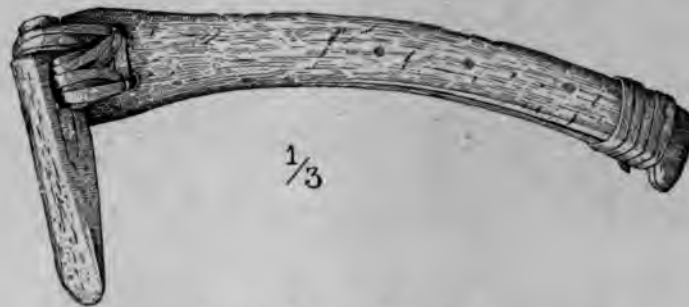


FIG. 129.—Hatchet hafted as an adz.

which he claims by putting a mark on it, and sometimes hauls up out of the way of the waves. Then, when he has leisure to go at the work, he goes out with his adz and spends the day getting it into shape and reducing it to a convenient size to carry home, either slung on his back or, if too large, on a dog-sled. A man seldom takes the trouble to carry home more of a piece of timber than he actually needs for the purpose in hand.

The adz was in general use long before the introduction of iron. There is in the collection a very interesting series of ancient tools, showing the gradual development of the implement from a rude oblong block of stone worked down to a cutting edge on one end, to the steel adzes of the present day. They have, however, not even yet learned to make an eye in the head of the tool in which to insert the haft, but all tools of this class—adzes, hammers, picks, and mattocks—are lashed, with one face resting against the expanded end of the haft. Firmness is obtained by putting the lashing on wet and allowing it to shrink tight. Nearly all these ancient adzes are of jade, a material well adapted for the purpose by its hardness, which, however, renders

it difficult to work. Probably the oldest of these adzes is No. 56675 [69], Fig. 130, which has been selected as the type of the earliest form we have represented in the collection. This is of dark olive green, almost black, jade, 7.2 inches long, 2.8 wide, and 1.3 thick, and smoothly ground on the broader faces. The cutting edge is much broken from long use. One broad face is pretty smoothly ground, but left rough at the butt end. The other is rather flatter, but more than half of it is irregularly concave, the natural inequalities being hardly touched by grinding. Like the other dark-colored jade tools, this specimen is very much lighter on a freshly fractured surface. The dark color is believed to be due to long contact with greasy substances.



FIG. 130.—Adz-head of jade.



FIG. 131.—Adz-head of jade.

No. 89662 [900], from Nuwūk, is an exceedingly rough adz of similar shape, but so slightly ground that it is probably one that was laid aside unfinished. From the battered appearance of the ends it seems to have been used for a hammer. It is of the same dark jade as the preceding. No. 89689 [792], from Utkiawwīn, is of rather light olive, opaque jade and a trifle better finished than the type, while No. 89661 [1155], Fig. 131, also from Utkiawwīn, is a still better piece of workmanship, the curve of the faces to the cutting edge being very graceful. The interesting point about this specimen is that a straight piece has been cut off from one side by sawing down smoothly from each face almost to the middle and breaking the piece off. We were informed that this was done to procure rods of jade for making knife sharpeners. We were informed that these stones were cut in the same way as marble and freestone are cut with us, namely, by sawing with a flat blade of iron and sand and water. A thin lamina of hard bone was probably used before the introduction of iron. Possibly a reindeer scapula, cut like the one made

into a saw (No. 89476 [1206], Fig. 147), but without teeth, was used for this purpose.

That such stone blades were used with a haft is shown by the only hafted specimen, No. 56628 [214], Fig. 132, from Nuwük. This is a rather small adz. The head of dark green jade differs from those already de-



FIG. 132.—Hafted jade adz.

scribed only in dimensions, being 4 inches long, 2.1 wide, and 1.7 thick. The haft is of reindeer antler and in shape much like that of No. 56638 [309], but has only one hole for the lashing. The lashing is of the usual stout seal thong and put on in the usual fashion. No. 89673 [1423] is an old black adz from Sidaru of the same pattern as those described, but very smoothly and neatly made. About one-half of this specimen has been cut off for whetstones, etc.



FIG. 133.—Adz-head of jade and bone.

The next step is to make the lashing more secure by cutting transverse grooves on the upper face of the head to hold the thong in place. This has been done on No. 56667 [215], figured in Point Barrow Rept., Ethnology, Pl. II, Fig. 5, an adz of dark olive green jade, from Utkiavwñ, which shows two such grooves, broad and shallow, running across the upper face. Of these two classes the collection contains thirteen unhafted specimens and one hafted specimen,



FIG. 134.—Adz-head of bone and iron, without eyes.

all of jade. As cutting these grooves in the stone is a laborious process, the device of substituting some more easily worked substance for the back part of the head would naturally suggest itself.

Fig. 133, No. 89658 [1072], from Utkiavwñ, has a long blade of black stone with the butt slightly tapered off and imbedded in a body of whale's bone, which has a channel 1 inch wide, for the lashing, cut round

it and a shallow socket on the face to receive the end of the haft. Adz heads of this same type continued in use till after the introduction of iron, which was at first utilized by inserting a flat blade of iron into just such a body, as is shown in Fig. 134 (No. 89877 [752], from the cemetery at Utkiavwñ).

From this type to that shown in Fig. 135 (No. 89876 [696] brought by the natives from the ruins on the Kulugrua) the transition is easy. Suppose, for the greater protection of the lashings, we *inclose* the chan-



FIG. 135.—Adz-head of bone and iron, with vertical eyes.

nels on the sides of the head—in other words, bore holes instead of cutting grooves—we have exactly this pattern, namely, vertical eyes on each side of the head joined by transverse channels on the upper face. The specimen figured has on each side two oblong slots with a round eye between them. The blade is of iron, Fig. 136, No. 56640 [260] has two eyes on each side, and shows a different method of attaching the blade, which is countersunk flush with the upper surface of the body and secured with three stout iron rivets. The next step is to substitute horizontal eyes for the vertical ones, so as to have only one



FIG. 136.—Adz-head of bone and iron, with vertical eyes.

set of holes to thread the lashings through. This is seen in No. 89869 [878], Fig. 137, from Nuwük, which in general pattern closely resembles No. 89876 [696], but has three large horizontal eyes instead of the vertical ones. The blade is of iron and the haft of whale's bone. The lashing is essentially the same as that of the modern adz, No. 56638 [309].



FIG. 137.—Hafted bone and iron adz.

That this final type of hafting was reached before stone had gone out of use for such implements is shown by Fig. 138, No. 89839 [769], from Utkiavwñ, which, while very like the last in shape, has a blade

of hard, dark purple slate. The haft is of reindeer antler. The lashing has the short end *knotted* to the long part after making the first round, instead of being slit to receive the latter. Otherwise it is of the usual pattern. These composite adzes of bone and stone or iron seemed to have been common at the end of the period when stone was exclusively used and when iron first came into use in small quantities, and a good many have been preserved until the present day. We obtained four hafted and six unhafted specimens, besides seven jade blades for such composite adzes, which are easily recognizable by



FIG. 138.—Hafted bone and stone adz.

their small size and their shape. They are usually broad and rather thin, and narrowed to the butt, as is seen in Fig. 139, No. 56685 [71], a beautiful little adz of bright green jade 2.8 inches long and 2.3 wide, from Utkiavwñ.

No. 56670 [246] also from Utkiavwñ, is a similar blade of greenish jade slightly larger, being 3.4 inches long and 2 inches wide. No. 89670 [1092] is a tiny blade of hard, fine-grained black stone, probably oil-soaked jade, only 1.7 inches long and 1.5 wide. It is very smoothly ground. Such little adzes, we were told, were especially used for cutting bone. The implement,¹ which Nordenskjöld calls a "stone chisel," found in the ruins of an old Eskimo house at Cape North, is evidently the head of one of these little bone adzes, as is plainly seen on comparing this figure with the larger adzes figured above.

I have figured two more composite adzes, which are quite different from the rest. No. 80838 [1109], Fig. 140, has a blade of neatly flaked gray flint, but this as well as the unusually straight haft is newly

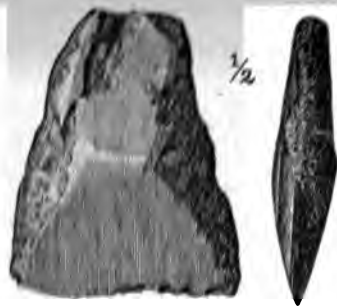


FIG. 139.—Small adz blade of green jade.

¹ Figured in the *Voyage of the Vega*, vol. 1, p. 444, Fig. 1.

made. These are fitted to a very old bone body, which when whole was not over 3 inches long, and was probably part of a little bone adz. There is no evidence that these people ever used flint adzes. Fig. 141, No. 89872 [785], is introduced to show how the native has utilized an old cooper's adz, of which the eye was probably broken, by fitting it with a bone body.

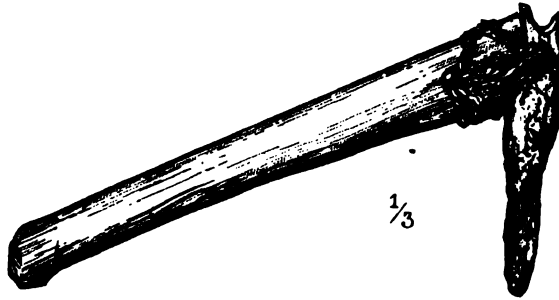


FIG. 140.—Hafted adz of bone and flint.

While the adzes already described appear to have been the predominating types, another form was sometimes used. Fig. 142, No. 89874 [964], from Nuwūk, represents this form. The haft is of whale's rib, 1 foot long, and the head of *bone*, apparently whale's scapula, 5.6 inches long and 2.8 inches wide on the edge. There is an adze in the Museum from the Mackenzie River region with a *steel* blade of precisely the same pattern. That adzes of this pattern sometimes had stone blades is



FIG. 141.—Old cooper's adz, rehafted.

probable. No. 89840 [1317], is a clumsily made *commercial* tool of this type, with a small head of greenish slate. It has an unusually straight haft, which is disproportionately long and thick.

All these adzes, ancient and modern, are hafted upon essentially the same pattern. The short curved haft, the shape of which is sufficiently well indicated by the figures, seems to have been generally made of whale's rib or reindeer antler, both of which have a natural curve suited

to the shape of the haft. A "branch" of a reindeer's antler is particularly well suited for the haft of a small adze. Not only does it have naturally the proper dimensions and a suitable curve, but it is very easy, by cutting out a small segment of the "beam" where the "branch" starts from it, to make a flange of a convenient shape for fitting to the head. Antler is besides easily obtained, not only when the deer is killed for food, but by picking up shed antlers on the tundra, and is consequently employed for many purposes. The haft usually has a knob at the tip to keep the hand from slipping, and the grip is sometimes roughened with cross cuts or wound with thong. There are usually as many holes for the lashing as there are eyes in the head, though there are two holes when the head has only one large eye. On the bone heads, the surfaces to which the haft is applied and the channels for the lashings are roughened with cross cuts to prevent slipping. The lashing always follows the same general plan, though no two adzes are lashed exactly alike. The plan may be summarized as follows: One end of the

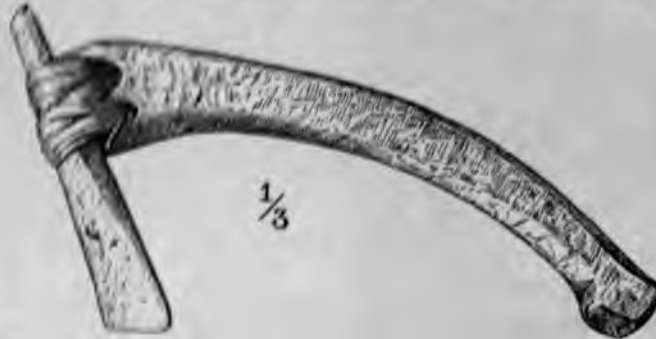


FIG. 149.—Adz with bone blade.

thong makes a turn through one of the holes in the haft, and around or through the head. This turn is then secured, usually by passing the long end through a slit in the short end and hauling this loop taut, sometimes by knotting the short end to the long part, or by catching the short end down under the next turn. The long part then makes several turns round or through the head and through the haft, sometimes also crossing around the latter, and the whole is then finished off by wrapping the end two or three times around the turns on one side and tucking it neatly underneath. This is very like the method of lashing on the heads of the mauls already described, but the mauls have only one hole in the haft, and there are rarely any turns around the latter.

Jade adz blades, like those already described, have been brought by Mr. Nelson from Kotzebue Sound, the Diomedes, St. Michaels, etc., and one came from as far south as the Kuskokwim River.

Chisels.—We collected a number of small short handled chisels, resembling the implements called "trinket makers," of which there are so many in the National Museum. We never happened to see them in actual use but were informed that they were especially designed for working

on reindeer antler. Of the eight specimens collected No. 89302 [884], Fig. 143, has been selected as a type of the antler chisel (*ki'ūnusa*). The blade is of steel, and the haft is of reindeer antler, in two longitudinal sections, put together at right angles to the plane of the blade, held together by a stout round bone treenail $2\frac{1}{2}$ inches from the butt. The square tip of the blade is beveled on both faces to a rough cutting edge. Fig. 144 (No. 89301) [1000] has a small blade with an oblique tip *not* beveled to an edge, and a haft of walrus ivory yellowed from age, and ornamented with rows of rings, each with a dot in the center, all incised and colored with red ocher. The two parts of the haft are fastened together by a stout wooden treenail and a *stitch* of whalebone.

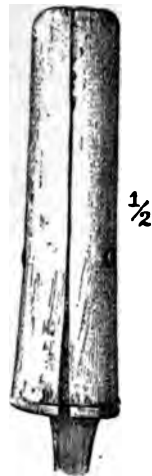


FIG. 143. — Antler chisel.

The rest of the steel-bladed chisels, four in number, are all of about the same size and hafted with antler. The blades are somewhat irregular in shape, but all have square or oblique tips and no sharp edge. Three of them have

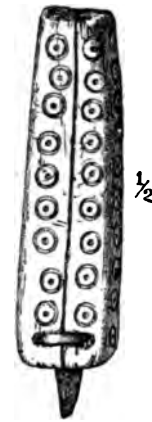


FIG. 144. — Antler chisel.

the sections of the haft put together as described, and fastened by a treenail and a whipping of seal twine or sinew braid at the tip. One has the two sections put together in the plane of the blade and fastened with a large copper rivet, which also passes through the butt of the blade, and three stout iron ones. The hafts of all these tools show signs of much handling. The remaining two specimens have blades of black flint. No. 89637 [1207], has a haft of walrus ivory, of the usual pattern, fastened together by a bone treenail and two stitches, one of sinew braid and one of seal thong. The lashing of seal twine near the tip serves to mend a crack. The haft is old and rusty about the slot into which the blade is fitted, showing that it originally had an iron blade. The flint blade was probably put in to make it seem ancient, as there was a special demand for prehistoric articles. No. 89653 [1290], Fig. 145, is nothing but a fanciful tool made to meet this demand. The haft is of light-brown mountain sheep horn, and the blade of black flint. Such flint-bladed tools may have been used formerly, but there is no proof that they were.



FIG. 145. — Spurious tool, flint blade.

Whalebone shares.—There is in use at Point Barrow, and apparently not elsewhere among the Eskimo, a special tool for shaving whalebone, a substance which is very much used in the form of long, thin strips for fastening together boat timbers, whipping spear shafts, etc. The

thin, long shavings which curl up like "curled hair," are carefully saved and used for the padding between stocking and boot. Whalebone is also sometimes shaved for this special purpose. The tool is essentially a little spokeshave about 4 inches long, which is held by the index and second finger of the right hand, one on each handle, with the thumb pressed against one end, and is drawn toward the workman. The collection contains three specimens of the ordinary form (*sávigé*), represented by No. 89306 [885] (figured in Point Barrow Report, *Ethnology*, PL III, Fig. 6). This has a steel blade and a haft of walrus ivory. The upper face of the haft is convex and the under flat, and the blade, which is beveled only on the upper face, is set at a slight inclination to the flat face of the haft. The edge of the blade projects 0.2 inch from the haft above and 0.3 below. The hole at one end of the haft is for a lanyard to hang it up by. The other two are of essentially the same pattern, but have hafts of reindeer antler.

The collection also contains six tools of this description, with stone blades, but they are all new and very carelessly made, with hafts of coarse-grained bone. The shape of the tools is shown in Fig. 146, No. 89649 [1213], from Utkiavwñ, which has a rough blade of soft, light greenish slate. The other five have blades of



FIG. 146.—Whalebone shave, slate blade.

black or gray flint, roughly flaked. All these blades are glued in with oil drega. No. 89652 [1225] is like the others in shape, but more neatly made, and is peculiar in having a blade of hard, compact bone. This is inserted by sawing a deep, narrow slit along one side of the haft from end to end. The blade is wedged into the middle of the slit, the ends of which are neatly filled in with slips of the same material as the haft. This was the only tool of the kind seen. It is very probable that shaves of stone were formerly used, though we obtained no genuine specimens. The use of oblong chips of flint for this purpose would naturally suggest itself to a savage, and the convenience of fitting these flakes into a little haft would soon occur to him. No. 89616 [1176] is such an oblong flint, flaked to an edge on one face, which is evidently old, and which was said to have been used for shaving whalebone. The material is black flint. Whalebone is often shaved nowadays with a common knife. The slab of bone is laid upon the thigh and the edge of the knife pressed firmly against it, with the blade perpendicular to the surface of the slab, which is drawn rapidly under it.

Saws.—If the Eskimo had not already invented the saw before they became acquainted with the whites they readily adopted the tool even when they had scanty materials for making it. Crantz¹ speaks of "a little lock saw" as one of a Greenlander's regular tools in his time, and Egede² mentions handsaws as a regular article of trade. Capt. Parry³

¹ History of Greenland, vol. 1, p. 149.

² Greenland, p. 175.

³ 2d Voyage, p. 536.

found the natives of Iglulik, in 1821-1823, using a saw made of a notched piece of iron. On our asking Nĭkawa'alu, one day, what they had for tools before they got iron he said that they had drills made of seal bones and saws made of the shoulder blade of the reindeer. Some time afterwards he brought over a model of such a saw, which he said was exactly like those formerly used. Fig. 147, No. 89476 [1206], represents this specimen. It



FIG. 147.—Saw made of deer's scapula.

is made by cutting off the anterior edge of a reindeer's scapula in a straight line parallel to the posterior edge and cutting fine saw teeth on this thin edge. The spine is also cut off nearly flat. This makes a tool very much like a carpenter's backsaw, the narrow part of the scapula forming a convenient handle.

Fig. 148, No. 56559 [15], shows how other implements were utilized before it was easy to obtain saws in plenty. It is a common case knife stamped on the blade, "Wilson, Hawksworth, ———n & Co., Sheffield,"

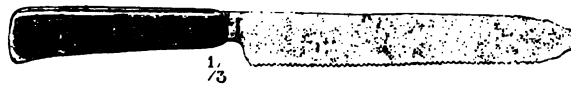


FIG. 148.—Saw made of a case-knife.

which perhaps came from the *Plover*, with saw teeth cut on the edge. It was picked up at the Utkiavwĭ cemetery, where it

had been exposed with a corpse. Saws are now a regular article of trade, and most of the natives are provided with them of various styles and makes. The name for saw is uluä'ktun.

Drills and borers.—The use of the bow drill appears to be universal among the Eskimo. Those at present employed at Point Barrow do not differ from the large series collected at the Mackenzie and Anderson rivers by MacFarlane. The drill is a slender rod of steel worked to a drill point and imbedded in a stout wooden shaft, which is tapered to a rounded tip. This fits into a stone socket imbedded in a wooden block, which is held between the teeth, so that the point of the drill can be pressed down against the object to be drilled by the head, leaving both hands free to work the short bow, which has a loose string of thong long enough to make one turn round the shaft. The collection contains ten of these modern steel or iron drills, fifteen bows, and seven mouthpieces. No. 89502 [853], figured in Point Barrow Rept., *Ethnology*, Pl. II, Fig. 1, has been selected as a typical drill (niä'ktun). The drill is a cylindrical rod of steel beaten out into a small lanceolate point, which is filed sharp on the edges. The shaft is made of hard wood. The remaining drills are of essentially the same pattern, varying in total length from about 11 inches to 16½.

Fig. 149, No. 89499 [968] shows a somewhat unusual shape of shaft. The lashings round the large end are to keep it from splitting any more

than it has done already. The drill is of iron and the shaft of spruce, which was once painted with red ocher.

No. 89497 [819] (Fig. 150) has a ferrule of coarse-grained bone neatly pegged on with two small pegs of the same material. This is unusual

with steel drills. The shaft is of spruce and of the same shape as in the preceding specimen. No. 89595 [875] (Fig. 151) is figured to show the way in which the shaft has been mended. A wedge-shaped piece $3\frac{1}{2}$ inches long and 0.3 to 0.4 inch wide has been split out of the large end and replaced by a fresh piece of wood neatly fitted in and secured by two tight whippings of sinew braid, each in a deep groove.

No. 89515 [861], figured in Point Barrow Report, Ethnology, Pl. II, Fig. 2, is a typical bow (*piziksua*) for use with these drills. It is of walrus ivory, 16 inches long and oval in section. Through each end is drilled a transverse hole. A string of seal thong 21 inches long is looped into one of these holes by passing one end of the thong through the hole, cutting a slit in it, and passing the other end through this. The other end is passed through the other hole and knotted at the tip.

These bows vary slightly in dimensions, but are not less than a foot or more than 16 inches long, and are almost always of walrus ivory. No. 89508 [956] (Fig. 152), is an old and rudely made bow of whalebone, which is more strongly arched than usual, and has the string attached to notches at the ends instead of into holes. This was said to belong with an old bone drill, No. 89498 [956]. Both came from Nuwuk. These bows are often highly ornamented both by carving and with incised patterns colored with red ocher or soot. The following figures are introduced to show some of the different styles of ornamentation.

Fig. 153a, No. 56506 [298] is unusually broad and flat and was probably made for a handle to a tool bag. Such handles, however, appear



FIG. 149.—Bow drill.



FIG. 150.—Bow drill and mouth-piece.

to be also used for drill bows. The tips of this bow represent seals heads, and have good sized sky-blue glass beads inserted for eyes. The rest of the ornamentation is incised and blackened. Fig. 153*b*, No. 89421 [1260], from Utkiavwīñ, is a similar bow, which has incised on the back figures of men and animals, which, perhaps, tell of some real event. Mr. L. M. Turner informs me that the natives of Norton Sound keep a regular record of hunting and other events engraved in this way upon their drill bows, and that no one ever ventures to falsify these records. We did not learn definitely that such was the rule at Point Barrow, but we have one bag-handle marked with whales, which we were told indicated the number killed by the owner. Fig. 153*c*, No. 89425 [1732], from Utkiavwīñ, is a similar bow, ornamented on the back with simply an incised border colored red. On the other side are the figures of ten bearded seals, cross-hatched and blackened. These are perhaps a "score." Fig. 153*d*, No. 89509 [914], from Nuwūk, is a bow of the common pattern, but ornamented by carving the back into a toothed keel.

Fig. 153*e*, No. 89510 [961], from Utkiavwīñ, is ornamented on one side only with an incised pattern, which is blackened. Fig. 153*f*, No. 89511 [961], also from Utkiavwīñ, has, in addition to the incised and blackened pattern, a small transparent sky-blue glass bead inlaid in the middle of the back. Fig. 153*g*, No. 89512 [836], from the same place, is a flat bow with the edges carved into scallops. The incised line along the middle of the back is colored with red ocher. The string is made of sinew braid.

Fig. 154, No. 89777 [1004*b*], which belongs in the "kit" of Ilá'bw'ga, the Nunatañmīun, previously mentioned, is interesting from having been lengthened $3\frac{1}{4}$ inches by riveting on a piece of reindeer antler at one end. The two pieces are neatly joined in a "lap splice" about 2 inches long and fastened with three iron rivets. The owner appears to have concluded that his drill bow was too short when



FIG. 151.—
Bow drill.

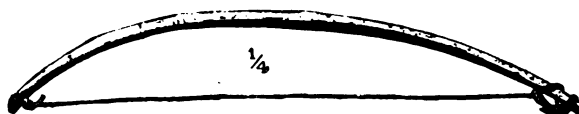


FIG. 152.—Drill bow.

he was at home, in the interior, where he could obtain no walrus ivory. The incised pattern on the back is colored with red ocher.

The mouthpiece (kī'ñmia) consists of a block of hard stone (rarely iron), in which is hollowed out a round cup-like socket, large enough to receive the tip of the drill shaft, imbedded in a block of wood of a suitable size to hold between the teeth. This block often has curved flanges

on each side, which rest against the cheeks. Such mouthpieces are common all along the coast from the Anderson River to Norton Sound, as is shown by the Museum collection. No. 89500 [800], figured in Point Barrow Report, Ethnology, Pl. II, Fig. 3, is a type of the flanged mouthpiece. The block is of pine, carved into a thick, broad arch, with a large block on the inside. Into the top of the arch is inlaid a piece of gray

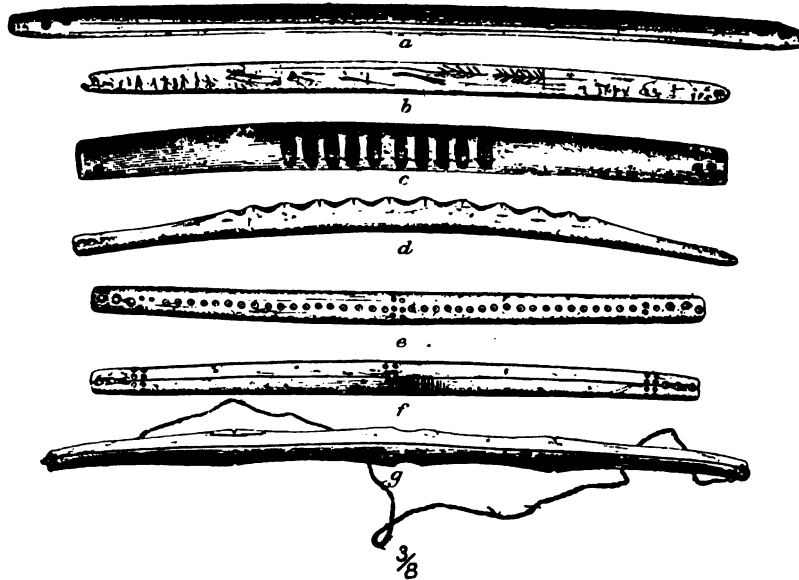


FIG. 153.—Drill bows.

porphyry with black spots, which is slightly convex on the surface, so as to project a little above the surface of the wood. In the middle of the stone is a cup-shaped cavity one-half inch in diameter and of nearly the same depth. This is a rather large mouthpiece, being 6 inches across from one end of the arch to the other.

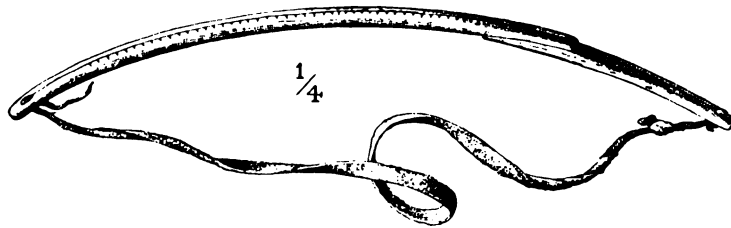


FIG. 154.—Spliced drill bow.

There are two other specimens of the same pattern, both rather smaller. No. 89503 [891], Fig. 150, from Nuwūk, has the stone of black and white syenite. This specimen is very old and dirty, and worn through to the stone on one side, where the teeth have come against it. No. 89787 [1004c], Fig. 155, is almost exactly the same shape as the type, but has

for a socket a piece of iron 1·1 inches square, hollowed out as usual. The outside of the wood has been painted with red ocher, but this is mostly worn off. This mouthpiece belonged to Ilû'bw'ga.

Fig. 156, No. 89505 [892], from Utkiavwñ, represents the pattern which is perhaps rather commoner than the preceding. The wood, which holds the socket of black and white syenite, is simply an elliptical block of spruce. The remain-

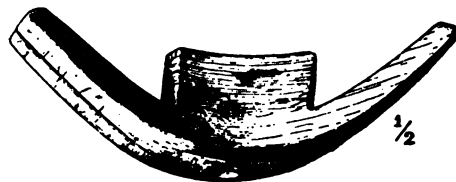


FIG. 155.—Drill mouthpiece, with iron socket.

ing three specimens are of the same pattern and of the same material as the last, except No. 89507 [908], from Nuwük, in which the wood is oak. As it appears very old, this wood may have come from the *Plover*.

When not in use, the point of the drill is sometimes protected with a sheath. One such sheath was obtained, No. 89447 [1112], figured in Point Barrow Report, Ethnology, Pl. II, Fig. 1. It is of walrus ivory, 3·6 inches long. The end of a piece of thong is passed through the eye and the other part fastened round the open end with a marline-hitch, catching down the end. This leaves a lanyard 9¼ inches long, which is hitched or knotted round the shaft of the drill when the sheath is fitted over the point.

The drills above described are used for perforating all sorts of material, wood, bone, ivory, metal, etc., and are almost the only boring implements used, even awls being unusual. Before the introduction of iron, the point was made of one of the small bones from a seal's leg. We obtained four specimens of these bone drills, of which two, at least, appear to be genuine. No. 89498 [956], Fig. 157, is one of these, from Nuwük. The shaft is of the

ordinary pattern and made of some hard wood, but the point is a roughly cylindrical rod of bone, expanding at the point, where it is convex on one face and concave on the other and beveled on both faces into two cutting edges, which meet in an acute angle. The larger end of the shaft has been split and mended by whipping it for about three-quarters of an inch with sinew braid. No. 89518 [1174], is apparently also genuine, and is like the preceding, but beveled only on the concave face of the point, which is rather obtuse. No. 89519 [1258] was made for the market. It has a rude shaft of whale's bone, but a carefully made bone point of precisely the pattern of the modern iron ones. No. 89520 [1182] has no shaft, and appears to be an old unfinished drill fitted into a carelessly made bone ferrule.



FIG. 156.—Drill mouthpiece with out wings.



FIG. 157.—Bone-pointed drill.

The drill at the present day is always worked with a bow, which allows one hand to be used for steadying the piece of work. We were informed, however, that formerly a cord was sometimes used without the bow, but furnished with a transverse handle at each end.

We collected six little handles of ivory, carved into some ornamental shape, each with an eye in the middle to which a thong could be attached. All were old, and we never saw them in use. The first two were collected at an early period of our acquaintance with these people, and from our imperfect knowledge of the language we got the impression that they were handles to be attached to a harpoon line.

We were not long, however in finding out that the harpoon has no such appendage, and when the other four came in a year later, at a time

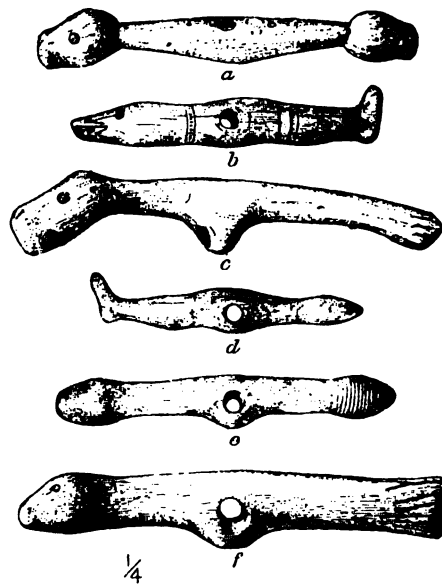


FIG. 158.—Handles for drill cords.

when the press of other work prevented careful inquiry into their use, we supposed that they were meant for handles to the lines used for dragging dead seals, as they somewhat resemble such an implement. On our return home, when I had opportunities for making a careful study of the collection, I found that none of the drag lines, either in our own collection or in those of the Museum, had handles of this description. On the other hand, I found many similar implements in Mr. Nelson's collection labeled "drill-cord handles," and finally one pair (No. 36319, from Kashunuk, near Cape Romanzoff), still attached to the drill cord. These handles are almost identical in shape with No. 89458 [835], from Utkiavwîñ. This leaves no doubt in my mind that the so-called "drag-line handles" in our collection are nothing more than handles for drill cords, now wholly obsolete and supplanted by the bows already described. I have figured all six of these handles to show the different patterns of ornamentation. They are all made of walrus ivory, and are all "odd" handles, no two being mates. Fig. 158*a* (No. 56526) [86], is 5.2 inches long, and light blue beads are inserted for eyes in the seal's heads. The eye for the drill cord is made by boring two median holes at the middle of one side so that they meet under the surface and make a longitudinal channel.

Fig. 158*b* (No. 56527 [23] from Utkiavwîñ), is 4.3 inches long, and is very accurately carved into the image of a man's right leg and foot, dressed in a striped deerskin boot. The end opposite to the foot is the

when the press of other work prevented careful inquiry into their use, we supposed that they were meant for handles to the lines used for dragging dead seals, as they somewhat resemble such an implement. On our return home, when I had opportunities for making a careful study of the collection, I found that none of the drag lines, either in our own collection or in those of the Museum, had handles of this description. On the other hand, I found many similar implements in Mr. Nelson's collection labeled "drill-cord handles," and finally one pair (No. 36319, from Kashunuk, near Cape Romanzoff), still attached to the drill cord. These handles are almost identical in shape with No.

head of some animal, perhaps a wolf, with bits of dark wood inlaid for eyes. The eye is a simple large transverse hole through the thigh.

Fig. 158*c* (No. 89455 [929] from Nuwük), is 5.9 inches long. The eye is drilled lengthwise through a large lump projecting from the middle of one side. Small blue beads are inlaid for the eyes, and one to indicate the male genital opening.

Fig. 158*d* (No. 89456 [930] from Nuwük) is like No. 56527 [23], but represents the left foot and is not so artistically carved. It is 3.7 inches long.

Fig. 158*e* (No. 89457 [925] from Nuwük) is 4.7 inches long, and resembles No. 89455 [929], but has instead of the seal's tail and flippers a large ovoid knob ornamented with incised and blackened rings. The "eye" is bored transversely.

Fig. 158*f* (No. 89458 [835] from Utkiavwīñ) differs from No. 89455 [925] in having a transverse eye, and being less artistically carved. Bits of lead are inlaid for the eyes. It is 4.4 inches long. The name of this implement is kûñ-i.

We obtained six specimens of an old flint tool, consisting of a rather long thick blade mounted in a straight haft about 10 inches long, of which we had some difficulty in ascertaining the use. We were at last able to be quite sure that they were intended for drilling, or rather reaming out, the large cavity in the base of the ivory head of a whale harpoon, which fits upon the conical tip of the fore-shaft. The shape of the blade is well fitted for this purpose. It is not unlikely that such tools, worked as these are, by hand, preceded the bone drills for boring all sorts of objects, and that the habit of using them for making the whale harpoon was kept up from the same conservatism founded on superstition which surrounds the whole whale fishery. (See under "Whale fishing," where the subject will be more fully discussed.) No. 89626 [870], figured in Point Barrow Report, *Ethnology*, Pl. II, Fig. 4, is a typical implement of this class (itaun, i'tûgetsau'). The blade is of black flint, flaked, 2 inches long, imbedded in the end of a haft of spruce, 10.5 inches long. The blade is held in place by whipping the cleft end of the haft with sinew braid.

Two of the other specimens, No. 89627 [937] and No. 89628 [912], are of essentially the same pattern and material, but have rounded hafts. No. 89629 [960] and No. 89630 [1068], Figs. 159*a*, 159*b*, have blades of the same pattern, but have hafts fitted for use with the mouthpiece and bow, showing that sometimes, at least in later times, these tools were so used. No. 89625 [1217] (Fig. 160) has no haft, but the blade, which is rather narrow in proportion to its length (2.3 inches by 0.5), is fitted into a short ferrule of antler, with a little dovetail on the edge for attaching it to the haft.

Of awls we saw only one specimen, which, perhaps, ought rather to be considered a little hand drill. This is No. 89308 [1292], Fig. 161, from Utkiavwīñ. The point is the tip of a common three-cornered file,

sharpened down. It is imbedded in a handle of fossil ivory which has turned a light yellowish brown from age. Its total length is 2·8 inches.

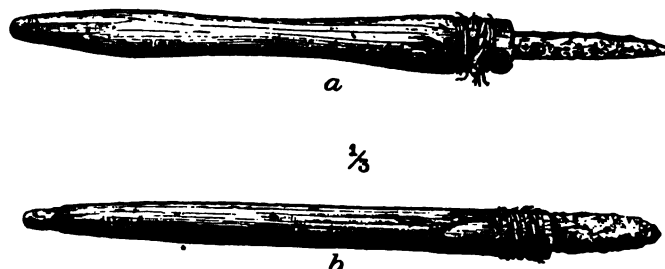


FIG. 159.—Flint-bladed reamers.

Hammers.—At the present day nearly every man has been able to procure an iron hammer of some kind, which he uses with great handiness. Before the introduction of iron, in addition to the bone and stone mauls above described as bone crushers, unhafted pebbles of convenient shape were also employed. No. 56661 [274] is such a stone. It is an ovoid water-worn pebble of greenish gray quartzite, $3\frac{1}{2}$ inches long. The ends are battered, showing how it had been used. It was brought from one of the rivers in the interior by one of the natives of Utkiav-wiñ.

Files.—Files of all kinds are eagerly sought after by the natives, who use them with very great skill and patience, doing nearly all their metal work with these tools. For instance, one particularly ingenious native converted his Winchester rifle from a rim fire to a central fire with nothing but a file. To do this he had to make a new firing pin, as the firing pin of the rim-fire gun is too short to reach the head of the cartridge. He accomplished this by accurately cutting off, to the proper length, an old worn-out three-cornered file. He then filed off enough of each edge so that the rod fitted evenly in the cylindrical hole where the firing pin works. The work was done so carefully that the new firing pin worked perfectly, and he had only to complete the job by cutting off his central fire cartridge shells to a proper length to fit the chamber of the gun.



FIG. 160.—Flint-bladed reamer.

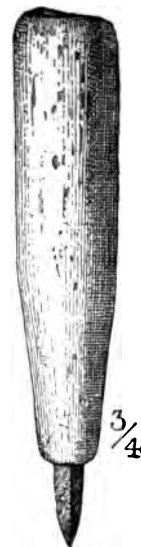


FIG. 161.—Awl.

They have almost no knowledge of working metal with the aid of heat, as is natural from the scarcity of fuel. I have, however, seen them roughly temper small articles, such as fire steels, etc., by heating them in the fire and quenching them in cold

water. One native very neatly mended a musket barrel which had been cracked by firing too heavy a charge. He cut a section from another old barrel of somewhat larger caliber, which he heated until it had expanded enough to slip down over the crack, and then allowed it to shrink on.

Whetstones (ipiksaun).—Knives are generally sharpened with a file, cutting a bevel, as before mentioned, on one face of the blade only. To “set” or “turn” the edge they use pieces of steel of various shapes, generally with a hole drilled in them so that they can be hung to the breeches belt by a lanyard. One man, for instance, used about half of

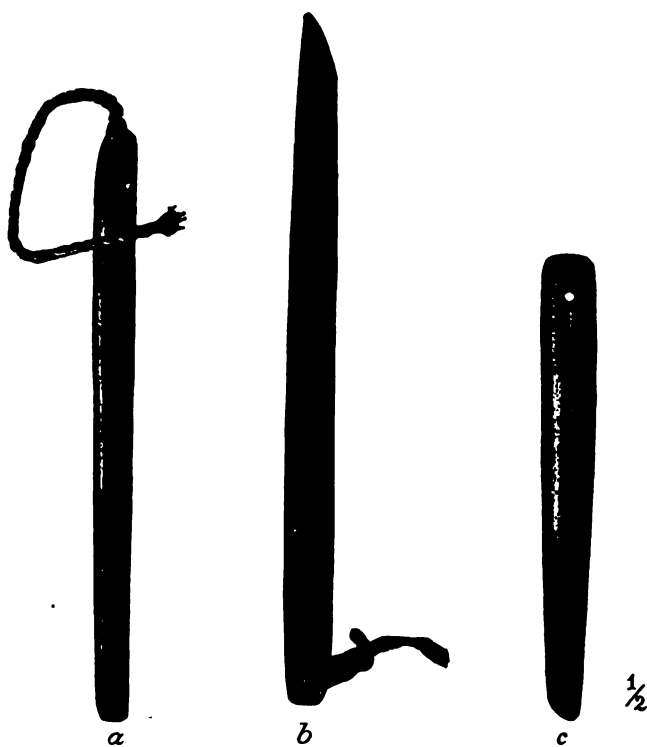


FIG. 162.—Jade whetstones.

a razor blade for this purpose, and another a small horseshoe magnet. In former times they employed a very elegant implement, consisting of a slender rod of jade from 3 to 7 inches long, with a lanyard attached to an eye in the larger end. These were sometimes made by cutting a piece from one of the old jade adzes in the manner already described. There are a few of these whetstones still in use at the present day, and they are very highly prized. We succeeded in obtaining nine specimens, of which No. 89618 [801], Fig. 162*a*, has been selected as the type. It is of hard black stone, probably jade, 6.3 inches long. Through the wider end is drilled a large eye, into which is neatly spliced one end of a stout flat braid of sinew $4\frac{3}{4}$ inches long.

The remaining whetstones are of very much the same pattern. I have figured five of them, to show the slight variations. Fig. 162*b* (No. 56662 [393], from Utkiavwīñ) is of light grayish green jade, smoothly polished and 4.1 inches long. It is chamfered only on the small end at right angles to the breadth, and has the eye prolonged into ornamental grooves on the two opposite faces. The long lanyard is of common sinew braid. No. 56663 [229] (from the same village) is of olive green, slightly translucent jade, 6.8 inches long, and elliptical in section, also chamfered only at the small end. The lanyard, which is a strip of seal thong 9 inches long, is secured in the eye, as described before, with two slits, one in the standing part through which the end is passed and the other in the end with the standing part passed through it. No. 89617 [1262] (from Sidaru) is of olive green, translucent jade, 6.1

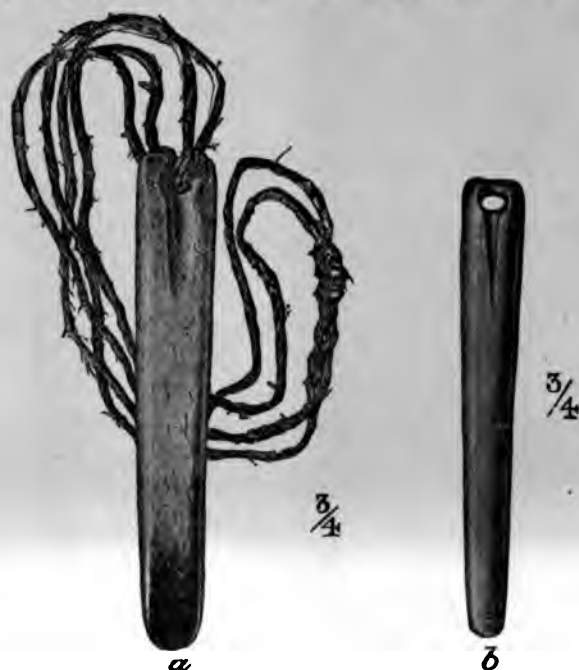


FIG. 163.—Jade whetstones.

inches long, and shaped like the type, but chamfered only at the small end. The lanyard of seal thong is secured in the eye by a large round knot in one end. No. 89619 [837] (from Utkiavwīñ) is of bright green, translucent jade, 5.1 inches long, and unusually thick, its greatest diameter being 0.6 inch. The tip is gradually worked off to an oblique edge, and it has ornamental grooves running through the eye like No. 56662 [393].

No. 89620 [865] (from Nuwūk) is shaped very much like the type, but has the tip tapered off almost to a point. It is of olive green, slightly translucent jade and is 7 inches long. The lanyard is a piece of sinew

braid with the ends knotted together and the bight looped into the eye. A large sky-blue glass bead is slipped on over both parts of the lanyard and pushed up close to the loop. Fig. 163*a* (No. 89621 [757], from Utkiavwīñ) is very short and broad (3·6 inches by 0·6), is chamfered at both ends, and has the ornamental grooves at the eye. The material is a hard, opaque, bluish gray stone, veined with black.

A whetstone of similar material was brought by Lieut. Stoney from Kotzebue Sound. The long lanyard is of sinew braid. Fig. 163*b* (No. 89622 [951], also from Utkiavwīñ) is a very small, slender whetstone, 3·3 inches long, of dark olive green semitranslucent jade, polished. The tip is not chamfered, but tapers to a blunt point. It has the ornamental grooves at the eye. These are undoubtedly the "stones for making . . . whetstones, or these ready-made" referred to by Dr. Simpson (Op. cit., p. 266) as brought by the Nunatañmiun from the people of

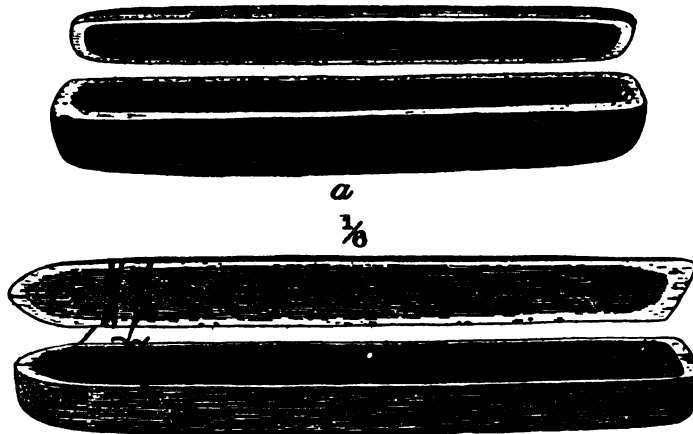


FIG. 164.—Wooden tool boxes.

the "Ko-wak River." A few such whetstones have been collected on other parts of the northwest coast as far south as the northern shore of Norton Sound. The broken whetstone mentioned above is of a beautiful bluish green translucent jade. Bits of stone are also used for whetstones, such as No. 89786 [1004*f*], which belong in Ilû'bw'ga's tool bag. They are two rough, oblong bits of hard dark gray slate, apparently split off a flat, weathered surface.

Tool boxes and bags.—We collected six specimens of a peculiarly shaped long, narrow box, carved from a single block of wood, which we were informed were formerly used for holding tools. They have gone out of fashion at the present day, and there are but few of them left. No. 89860 [1152], Fig. 164*a*, represents the typical shape of this box. It is carved from a single block of pine. The cover is slightly hollowed on the under side and is held on by two double rings of twine (one of seal twine and the other of sinew braid), large enough to slip over the

end. Each ring is made by doubling a long piece of twine so that the two parts are equal, passing one end through the bight and knotting it to the other. The box and cover seem to have been painted inside and out with red ocher. On the outside this is mostly faded and worn off and covered with dirt, but inside it has turned a dark brown. Fig. 164*b* (No. 89858 [1319], from Utkiavwīñ,) is a similar box, 21·1 inches long. The cover is held on by a string passing over little hooked ivory studs close to the edge of the box. There were originally five of these studs, two at each end and one in the middle of one side. The string started from one of these studs at the pointed end. This stud is broken and the string fastened into a hole close to it. To fasten on the cover the string was carried over and hooked under the opposite stud, then crossed over the cover to the middle stud, then across to the end stud on the other side, and the loop on the end hooked onto the last stud.

No. 89859 [1318] is a smaller box (19 inches long) of the same pattern, with only four studs. The cover has three large blue glass beads,



FIG. 165.—Large wooden tool boxes.

like those used for labrets, inlaid in a line along the middle. No. 89858 [1144], from Utkiavwīñ, is the shape of the type, but has a thicker cover and six stud holes in the margin. No. 89861 [1151], Fig. 165*a*, from the same place, is shaped something like a violin case, 22·2 inches long. The cover has been split and “stitched” together with whalebone, and a crack in the broader end of the box has been neatly mended by pegging on, with nine little wooden treenails, a strap of reindeer antler of the same width as the edge and following the curve of its outline. There are four studs, two at each end. The string is made fast to one at the smaller end, carried over to the opposite one, then crossed to the opposite stud at the other end and back under the last one, a bight of the end being tucked under the string between the two last-mentioned studs. The string is made of sinew braid, rope-yarns, and a long piece of seal thong. It was probably at first all of sinew

braid, and, gradually growing too short by being broken and knotted together again, was lengthened out with whatever came to hand.

No. 89862 [1593], Fig. 165*b*, is a large box, of a very peculiar shape, best understood from the figure. The outside is much weathered, but appears to have been roughly carved, and the excavation of the box and cover is very rudely done, perhaps with a stone tool. A hole in the larger end is mended by a patch of wood chamfered off to fit the hole and sewed on round the edges with "over-and-over" stitches of whalebone. The string is arranged in permanent loops, under which the cover can be slipped off and on.

The arrangement, which is rather complicated, is as follows: On one side of the box, one-half inch from the edge and about 7 inches from each end, are two pairs of holes, one-half inch apart. Into each pair is fastened, by means of knots on the inside, a loop of very stout sinew braid, 3 inches long, and similar loops of seal thong, 5 inches long, are

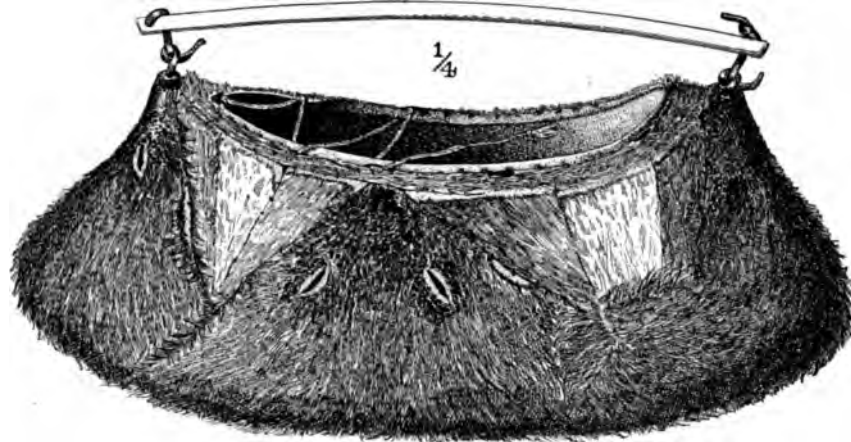


FIG. 166.—Tool bag of wolverine skin.

fastened into corresponding pairs of holes on the other side. A piece of seal thong is fastened with a becket-hitch into the loop of seal thong at the small end of the box, passes through both braid loops on the other side, and is carried over through the loop of seal thong at the large end. The end of the thong is knotted into one of the pairs of holes left by the breaking away of a stitch at the edge of the wooden patch above mentioned.

All these boxes are very old and were painted inside with red ocher, which has turned dark brown from age. Tools are nowadays kept in a large oblong, flat satchel, *Ikqûxbwîñ*, which has an arched handle of ivory or bone stretched lengthwise across the open mouth. These bags are always made of skin with the hair out, and the skins of wolverines' heads are the most desired for this purpose. The collection contains four such bags. No. 89794 [1018], Fig. 166, is the type of these bags. The bottom of the bag is a piece of short-haired brown deerskin, with

[43], from Utkiavwñ is a handle of different material (reindeer antler) and of somewhat different pattern. One end is neatly carved into an exceedingly accurate image of the head of a reindeer which has shed

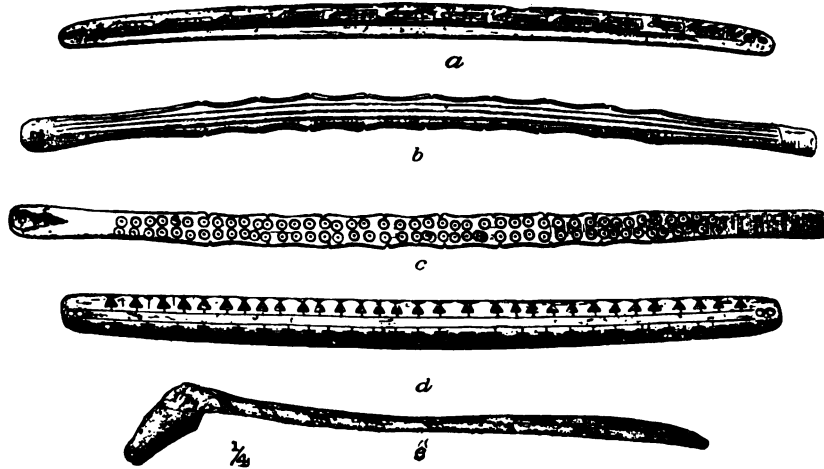


FIG. 170.—Bag handles.

its antlers, with small blue beads inlaid for the eyes. The back of the handle is ornamented with an incised pattern colored with red ocher. We were told that such handles were sometimes fitted to the wooden buckets, but I never saw one so used.

No. 89798 [1075], Fig. 171, is a bag of rather unusual pattern, the only one of the kind we saw. The bottom is a single round piece, 9



FIG. 171.—Bag of leather.

inches in diameter, of what seems to be split skin of the bearded seal, flesh side out, and the rest of the bag is of white-tanned seal leather. The sides are of five broad pieces (6, 4½, 4, 5½, and 5 inches broad at the bottom, respectively, narrowing to 2½, 1½, 1¼, 2, and 2¼, respectively, at the top), alternating with five straight strips, respectively 1½, 1, 1¼, 1¼, and 1½ inches broad. The edges of these strips overlap the edges of the broad pieces, and are neatly stitched with two

threads, as on the soles of the waterproof boots. The outer thread, which is caught in the loop of each stitch of the other, is a slender filament of black whale-bone. This produces a sort of embroidery. The neck is stitched to the bag with the same seam, but the hem at the mouth is merely "run" round with sinew. This bag was probably for holding small tools and similar articles.

WEAPONS.

As would naturally be expected from what has been said of the peaceful character of these people, offensive weapons, specially intended for use against men, are exceedingly rare. In case of quarrels between individuals or parties the bows, spears, and knives intended for hunting or general use would be turned against their enemies. Even their rifles, nowadays, are kept much more for hunting than as weapons of offense, and the revolvers of various patterns which many of them have obtained from the ships are chiefly carried when traveling back and forth between the two villages as a protection against a possible bear. We, however, obtained a few weapons which were especially designed for taking human life. One of these was a little club (t'glun) (No. 89492 [1310], Fig. 172, from Utkiavwū) made of the butt end of an old pickax head of whale's bone, with the point cut down to a blunt end. It is 6.4 inches long and meant to be clenched in the hand like a dagger, and used for striking blows, probably at the temple. The transverse grooves for hafting give a good hold for the fingers. This was the only weapon of the kind seen.



FIG. 172.—Little hand-club.

We collected a single specimen of a kind of slung



FIG. 173.—Slungshot made of walrus jaw.

shot, No. 89472 [905] (Fig. 173), made of a roughly ovoid lump of heavy bone, the symphysis of the lower jaw of a walrus, 3½ inches long. At the smaller end two large holes are bored in obliquely so as to meet under the surface and form a channel through which is passed a slip of white seal skin about 15 inches long, the ends of which fasten together with two slits, so as to make a loop. This may be compared with the stone balls used by the ancient Aleuts for striking a man on the temple.

The commonest weapon of offense was a broad dagger made of a bone of the polar bear. This was said to be especially meant for killing a "bad man," possibly for certain specified offenses or perhaps in cases of insanity.

Insane persons were sometimes killed in Greenland, and the act was considered "neither decidedly admissi-

ble nor altogether unlawful."¹ The use of bears' bones for these weapons points to some superstitious idea, perhaps having reference to the ferocity of the animal. We collected five specimens of these daggers, of which No. 89484 [767], Fig. 174, has been selected as the type. It is the distal end of the ulna of a polar bear, with the neck and condyles forming the hilt, and the shaft split so as to expose the medullary cavity and cut into a pointed blade. It is very old, blackened, and crumbling on the surface, and is a foot long.

Fig. 175*a*, No. 89475 [988], from Nuwük, is made of a straight splinter from the shaft of one of the long bones, $9\frac{3}{4}$ inches long. No. 89480 [1141], from Utkiavwñ, has a roughly whittled hilt and a somewhat twisted blade, rather narrow, but widened to a sharp lanceolate point. It is 12 inches long. No. 89481 [1175], from the same place,

has the roughly shaped hilt whipped with two turns of sinew. No. 89482 [1709], Fig. 175*b*, also from Utkiavwñ, is dirk-shaped, having but one edge and a straight back. The hilt, as before, is roughly sawed from the solid head of the bone. No. 89485 [965], Fig. 176, from Nuwük, was also said to be a dagger, but could not have been a very effective weapon. It is of whale's bone, 5 inches long. It is rather rudely carved, old, and dirty, but the notches on the haft are newly cut.

Dirks or daggers of bear's bone, like those described, are really rather formidable weapons, as it is easy to give the splinter of bone a very keen point. The Museum contains a bone dagger curiously like these Eskimo weapons, but made of the bone of the



FIG. 174.—Dagger of grizzly bear, and used by the Indians of the McCloud River, northern California.



FIG. 175.—Bone daggers.

grizzly bear, and used by the Indians of the McCloud River, northern California. They believe that the peculiar shape of the point, having a hollow (the medullary cavity) on one face, like the Eskimo daggers, causes the wound to bleed internally.

¹ Rink, *Tales and Traditions*, p. 35.

PROJECTILE WEAPONS.

Firearms.—When Dease and Simpson first met these people, in 1837, they had no firearms, but the next party of whites who came in contact with them (Pullen and Hooper, in 1849) found the “chief” in possession of an old shaky musket of English make, with the name “Barnett” on the lock.¹ Hooper believed this to be the gun lost by Sir John Franklin’s party in 1826.² This gun was, however, often seen by the people of the *Plover* (in fact, Capt. Maguire kept it on board of the *Plover* for some time³), and was found to have on the lock, besides the name “Barnett,” also the date, “1843,” so that of course it was not lost in 1826. Armstrong⁴ also mentions seeing this gun, which, the natives told him, they had procured “from the other tribes to the south ward.” In the summer of 1853 they began to purchase guns and ammunition from the eastern natives. Yûksîña and two other men each bought a gun this year.⁵

As the whalers began to go to Point Barrow in 1854, the opportunity for obtaining firearms has been afforded the natives every year since then, so that they are now well supplied with guns, chiefly of American manufacture. That all their firearms have not been obtained from this source is probable from the fact they have still in their possession a number of smoothbore percussion guns, double and single barreled, of Russian manufacture. They are all stamped in Russian with the name of Tula, a town on the Oopa, 105 miles south of Moscow, which has received the name of the “Sheffield and Birmingham of Russia,” from its vast manufactory of arms, established by Peter the Great. These guns must have come from the “Nunatañmiun,” who obtained them either from the Siberian traders or from the Russians at Norton Sound through the Malemiut. Both smoothbore and rifled guns are in general use. The smoothbores are of all sorts and descriptions, from an old flintlock musket to more or less valuable single and double percussion fowling-pieces. Three of the natives now (1883) have cheap double breechloaders and one a single breechloader (made by John P. Lovell, of Boston). Guns in general are called “cupûñ,” an onomatopœic word in general use in western America, but many of the different kinds have special names. For instance, a double gun is called *madro’liñ* (from *madro*, *two*). The rifles are also of many different patterns. The kind preferred by the natives is the ordinary Winchester brass-mounted 15-shot repeater, which the whalers and traders purchase cheaply at wholesale. This is



FIG. 178.—So-called dagger of bone.

¹ Hooper, *Tents*, etc., p. 239.
² Franklin, *2d Exp.*, p. 148. In the hurry of leaving Barter Island “one of the crew of the *Reliance* left his gun and ammunition.”
³ See McClure’s *N. W. Passage*, p. 390.
⁴ *Narrative*, p. 109.
⁵ Maguire, *Further Papers*, p. 907.

called *akīmiulū* ("that which has fifteen," sc., shots). The whalers are also in the habit of buying up all sorts of cheap or second-hand guns for the Arctic trade, so that many other kinds of guns are also common. Of breechloaders, we saw the Sharpe's rifle, *savigro'lū* (from a fancied resemblance between the crooked lever of this gun and the crooked knife, *savigro'n*); other patterns of Winchester; the Spencer repeater, *kai'psuallū* (from *kaipsī*, cartridge); the peculiar Sharps-Hankins, once used in the U. S. Navy, and which was the favorite weapon of the rebel Boers in South Africa; the Peabody-Martini, made in America for the Turkish Government, marked on the rear sight with Turkish figures, and, exposed with a corpse at the cemetery, one English Snider. The regulation Springfield rifles belong to the post, which were often loaned to the natives for the purpose of hunting, were called *mūkpara/liū* (from *mūkpara'*, book, referring to the breech action, which opens like a book).

They formerly had very few muzzle-loading rifles, but of late years, since the law against trading arms to the natives has been construed to refer solely to breech-loading rifles, whalers have sold them *yāger* rifles, of the old U. S. Army pattern, and Springfield rifles, ship's muskets with the Tower mark on them, and a sort of bogus rifle made especially for trade, in imitation of the old-fashioned Kentucky rifle, but with grooves extending only a short distance from the muzzle. They of course depend on the ships for their supplies of ammunition, though the *Nunataūmiun* sometimes bring a few cartridges smuggled across from Siberia. They naturally are most desirous to procure cartridges for the rim-fire Winchester guns, as these are not intended to be used more than once. They have, however, invented a method of priming these rim-fire shells so that they can be reloaded. A common "G. D." percussion cap is neatly fitted into the rim of the shell by cutting the sides into strips which are folded into slits in the shell, **a little hole being drilled under the center of the cap to allow the flash to reach the powder.** This is a very laborious process, but enables the natives to use a rifle which would otherwise be useless. Such cartridges reloaded with powder and home-made bullets—they have many bullet molds and know how to use them—are tolerably effective. Great care must be taken to insert the cartridge right side up, so that the cap shall be struck by the firing pin, which interferes with using the gun as a repeater.

They are very careless with their rifles, allowing them to get rusty, and otherwise misusing them, especially by firing small shot from them in the duck-shooting season. As a rule they are very fair shots with the rifle, but extremely lavish of ammunition when they have a supply. The only economy is shown in reloading cartridges and in loading their shotguns, into which they seldom put a sufficient charge. In spite of this some of them shoot very well with the shotgun, though many of them show great stupidity in judging distance, firing light

charges of shot at short rifle range (100 to 200 yards). Though they mold their own bullets, I have never known any of them to attempt making shot or slugs. This, which they call *kăkrúra* (little bullets, from *kă'kru*, originally meaning *arrow* and now used for *bullet* as well) is always obtained from the whites. The gun is habitually carried in a case or holster long enough to cover the whole gun, made of sealskin, either black-tanned or with the hair on the outside. This, like the bow case, from which it is evidently copied, is slung across the back by a thong passing round the shoulders and across the chest. This is the method universally practiced for carrying burdens of all sorts. The butt of the gun is on the right side, so that it can be easily slipped out of the holster under the right arm without unslinging it. Revolvers are also carried slung in holsters on the back in the same way. Ammunition is carried in a pouch slung over the shoulder. They are careless in handling firearms and ammunition. We knew two men who shot off the tip of the forefinger while firing cartridges which had failed to explode in the gun.

Whaling guns.—In addition to the kinds of firearms for land hunting above described a number of the natives have procured from the whalers, either by purchase or from wrecks, whaling guns, such as are used by the American whalers, in place of the steel lance for dispatching the whale after it is harpooned. These are of various patterns, both muzzle and breech loading, and they are able to procure nearly every year a small supply of the explosive lances to be shot from them. They use them as the white men do for killing harpooned whales, and also, when the leads of open water are narrow, for shooting them as they pass close to the edge of the ice.

Bows (piz'ksě).—In former times the bow was the only projectile weapon which these people possessed that could be used at a longer range than the "dart" of a harpoon. It was accordingly used for hunting the bear, the wolf, and the reindeer, for shooting birds, and in case of necessity, for warfare. It is worthy of note, in this connection, as showing that the use of the bow for fighting was only a secondary consideration, that none of their arrows are regular "war arrows" like those made by the Sioux or other Indians; that is, arrows to be shot with the breadth of the head horizontal, so as to pass between the horizontal ribs of a man. Firearms have now almost completely superseded the bow for actual work, though a few men, too poor to obtain guns, still use them.

Every boy has a bow for a plaything, with which he shoots small birds and practices at marks. Very few boys, however, show any great skill with it. We never had an opportunity of seeing an adult shoot with the bow and arrow; but they have not yet lost the art of bow-making. The newest boys' bows are as skillfully and ingeniously constructed as the old bows, but are of course smaller and weaker. The bow in use among these people was the universal sinew-backed bow of

the Eskimo carried to its highest degree of efficiency.¹ It was of what I have called the "Arctic type," namely, a rather short bow of spruce, from 43 to 52 inches in length, nearly elliptical in section, but flatter on the back than on the belly, and slightly narrowed and thickened at the handle. The greatest breadth was usually about $1\frac{1}{4}$ inches and the thickness at the handle about three-fourths of an inch. The ends were often bent up as in the Tatar bow, and were sometimes separate pieces mortised on. Strength and elasticity was given to the brittle spruce by applying a number of strands of sinew to the back of the bow in such a way that drawing the bowstring stretched all these elastic cords, thus adding their elasticity to that of the wood. This backing was always a continuous piece of a three-ply braid of sinew, about the size of stout pack thread, and on a large bow often 40 or 50 yards long. It began, as on all Eskimo bows which I have been able to examine (ex-



FIG. 177.--Boy's bow from Utkiavwif.

cept those from St. Lawrence Island and the mainland of Siberia—my "western type"), with an eye at one end of the cord looped over one nock of the bow, usually the upper. The cord was then laid on the back of the bow in long strands running up and down and round the nocks, as usual on the other types of bow, but after putting on a number of these, began running backward and forward between the bends (if the bow was of the Tatar shape), or between corresponding points **on a straight bow, where they were fastened with complicated hitches** around the bow in such a way that the shortest strands came to the top of the backing, which was thus made to grow thicker gradually toward the middle of the bow, where the greatest strength and elasticity were needed. When enough strands had been laid on they were divided into two equal parcels and twisted from the middle into two tight cables, thus greatly increasing the tension to be overcome in drawing the bow. These cables being secured to the handle of the bow, the end of the cord was used to seize the whole securely to the bow.

This seizing and the hitches already mentioned served to incorporate the backing very thoroughly with the bow, thus equalizing the strain and preventing the bow from cracking. This made a very stiff and powerful bow, capable of sending an arrow with great force. We were told by a reliable native that a stone-headed arrow was often driven by

¹See the writer's paper on the subject of Eskimo bows in the Smithsonian Report for 1884, Part II, pp. 307-316.

one of these bows wholly through a polar bear, "if there was no bone." Three bows only were obtained: One from Nuwük, one from Utkiavwĩĩ (a lad's bow), and one from Sidaru.

The bow from Utkiavwĩĩ, No. 89904 [786] (Fig. 177), though small, is in some respects nearer the type than the other two, and has been selected for description. The body of the bow is a single piece of the heart of a log of spruce driftwood 36½ inches long, elliptical in section, flattened more on the back than on the belly. It is tapered to the nocks, which are small club-shaped knobs, and narrowed and thickened at the handle. The backing is of round three-ply braid of sinew in one continuous piece. The string is a round four-ply braid with a loop at each end, made by tying a single knot in the standing part, passing the end through this and taking a half hitch with it round the standing part (Fig. 178). The upper loop is a little the larger.

No. 89245 [25] (Fig. 179), from Nuwük, is a full-sized man's bow, which is old and has been long in use. It is of the same material, and is 47.3 inches long. Its greatest breadth is 1½ inches, and it is 0.8 inch thick at the handle. It is slightly narrowed

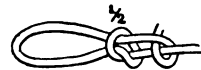


FIG. 178.—Loop at end of bowstring.

and thinned off from the broadest part to about 6 inches from each tip, and is then gradually thickened to the nocks and bent up so that the ends make an angle of about 45° with the bow when unstrung. The ends are separate pieces fitted on at the bends. The ends of the body are chamfered off laterally to a wedge which fits into a corresponding notch in the end piece, making a scarf 3¼ inches long, which is strengthened by a curved strap of antler, convex above and thickest in the middle, fitting into the bend on the back. The joint is held together wholly by the backing.

We never saw bows of this pattern made and consequently did not learn how the bending was accomplished. The method is probably the same as that seen by Capt. Beechey in 1826, at Kotzebue Sound (Voyage, p. 575). The bow was wrapped in wet shavings and held over the fire, and then pegged down on the ground (probably on one side), into shape. A strip of rawhide (the split skin of the bearded seal, with the grain side out), 1 inch wide, runs along the back from bend to bend under the backing. The chief peculiarity of this bow is the third cable, above the other two, and the great and apparently unnecessary complication of the hitches.

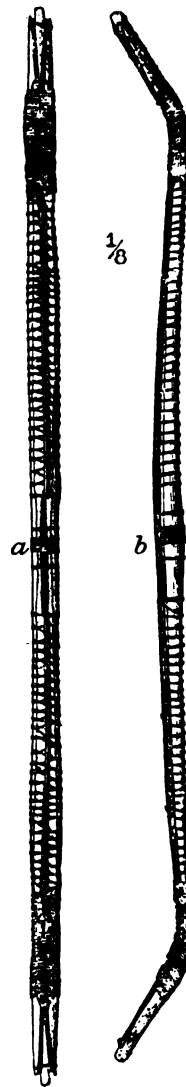


FIG. 179.—Large bow from Nuwük.

No. 72771 [234], from Sidaru (Fig. 180*a* and *b*), is a bow with bent ends like the last, but all in one piece and smaller. Its length is $43\frac{1}{2}$ inches and its greatest breadth $1\frac{1}{4}$. The backing has only two cables, and its chief peculiarity is in having the loose end of the last strand twisted into one of the cables, while the seizing, of the same pattern as in the last bow, is made of a separate piece. The workmanship of this



FIG. 180.—Large bow from Sidaru.

bow is particularly neat, and it is further strengthened with strips of rawhide (the skin of the bearded seal, split), under the backing. The method of making the string is very ingenious. It appears to have been made on the bow, as follows: Having the bow sprung back one end of a long piece of sinew twine was made fast temporarily to the upper nock, leaving an end long enough to finish off the bowstring. The other end was carried round the lower nock and the returning strand half-hitched round the first snugly up to the nock, and then carried round the upper nock and back again. This was repeated, each strand being half-hitched round all the preceding at the lower nock until there were eight parallel strands, and an eye fitted snugly to the lower nock. The bight was then slipped off the upper nock, the end untied and the whole twisted tight. This twisted string is now about 2 inches too long, so the upper eye is made by doubling over 2 inches of the end and stopping it down with the free end mentioned above, thus making a long eye of seven strands. With the end, six similar strands are added to the eye, each being stopped to the twist with a half hitch. The end is neatly tucked in and the strands of the eye twisted tightly together.

In my paper on Eskimo bows, already mentioned, I came to the conclusion that the bows formerly used by the Eskimo of western North America and the opposite coast of Asia were constructed upon three well defined types of definite geographical distribution, and each easily recognized as a development of a simple original type still to be found in Baffin Land in a slightly modified form. These three types are:

I. The Southern type, which was the only form used from the island of Kadiak to Cape Romanzoff, and continued in frequent use as far as Norton Sound, though separated by no hard and fast line from

II. The Arctic type, to which the bows just described belong, in use

from the Kaviak peninsula to the Mackenzie and Anderson rivers; and
 III. The Western type, confined to St. Lawrence Island and the mainland of Siberia.

I have shown how these three types differ from each other and from the original type, and have expressed the opinion that these differences result from the different resources at the command of the people of different regions. I have also endeavored to account for the fact that we find sporadic examples of the Arctic type, for instance as far south as the Yukon, by the well known habits of the Eskimo in regard to trading expeditions.

Outside of the region treated in my paper above referred to, there is very little material for a comparative study of Eskimo bows, either in the Museum or in the writings of travelers. Most writers have contented themselves with a casual reference to some of the more salient peculiarities of the weapon without giving any detailed information. Beginning at the extreme north of Greenland, we find that the so-called "Arctic Highlanders" have hardly any knowledge of the bow. Dr. Kane saw none during his intercourse with them, but Dr. Bessels¹ mentions seeing one bow, made of pieces of antler spliced together, in the possession of a man at Ita. In Danish Greenland, the use of the bow has been abandoned for many years. When Crantz² wrote it had already gone out of use, though in Egede's³ time it was still employed. It appears to have been longer than the other Eskimo bows. Nordenskiöld⁴ reproduces a picture of a group of Greenlanders from an old painting of the date of 1654 in the Ethnographical Museum of Copenhagen. The man holds in his left hand a straight bow, which appears to have the backing reaching only part way to the ends like a western bow without the end cables, and yet twisted into two cables. If this representation be a correct one, this arrangement of the backing, taken in connection with what Crantz and Egede say of the great length of the bow, would be an argument in favor of my theory that the St. Lawrence Island bow was developed from the primitive form by lengthening the ends of the bow without lengthening the backing. The addition of the end cables would then be an after invention, peculiar to the western bow. In Baffin Land the bow is very rudely made, and approaches very closely to my supposed primitive form. Owing to the scarcity of wood in this region the bow was frequently made of reindeer antler, a substance still more unsuitable for the purpose than the soft coniferous woods used elsewhere. There are in the Museum three specimens of such antler bows, brought from Cumberland Gulf by Mr. Kumlien.

¹Naturalist, vol 8, No. 9, p. 869.

²"In former times they made use of bows for land game; they were made of soft fir, a fathom in length, and to make it the stiffer it was bound round with whalebone or sinews." *History of Greenland*, vol. 1, p. 146.

³"Their Bow is of an ordinary Make, commonly made of Fir Tree, . . . and on the Back strengthened with Strings made of Sinews of Animals, twisted like Thread." "The Bow is a good fathom long." *Greenland*, p. 101.

⁴*Voyage of the Vega*, vol. 1, p. 41.

The first mention of the Eskimo bow with sinew backing will be found in Frobisher's account of his visit to *Meta Incognita* in 1577:¹ "Their bowes are of wood of a yard long, sinewed on the back with strong sinewes, not glued too, but fast girded and tyed on. Their bowe strings are likewise sinewes."

Of the bow used at the straits of Fury and Hecla we have a most excellent figure in Parry's *Second Voyage* (Pl. opposite p. 550, Fig. 22), and the most accurate description to be found in any author. It is, in fact, as exact a description as could be made from an external examination of the bow. From the figure the bow appears to have been almost of the arctic type, having an unusual number of strands (sometimes sixty, p. 511) which are not, however, twisted, but secured with a spiral wrapping, as on southern bows. The backing is stopped to the handle, but not otherwise seized. It appears to have been rather a large bow, as Parry gives the length of one of their best bows, made of a single piece of fir, as "4 feet 8 inches" (p. 510). "A bow of one piece is, however, very rare; they generally consist of from two to five pieces of bone of unequal lengths, fastened together by rivets and treenails" (p. 511). Parry also speaks of the use of wedges for tightening the backing. Schwatka² speaks of the Netyllk of King Williams Land as using bows of spliced pieces of musk-ox horn or driftwood, but gives no further description of them. Ellis³ describes the bow in use at Hudson's Strait in 1746 as follows:

Their greatest Ingenuity is shown in the Structure of their Bows, made commonly of three Pieces of Wood, each making a part of the same Arch, very nicely and exactly joined together. They are commonly of Fir or Larch, which the English there call Juniper, and as this wants Strength and Elasticity, they supply both by bracing the Back of the Bow with a kind of Thread or Line made of the Sinew of their Deer, and the Bowstring of the same material. To make them draw more stiffly, they dip them into Water, which causes both the Back of the Bow and the String to contract, and consequently gives it the greater force.⁴

Ellis's figure (plate opposite p. 132) shows a bow of the Tatar shape, but gives no details of the backing, except that the latter appears to be twisted.

We have no published descriptions of the bows used in other regions.

As far as I have been able to ascertain, the practice of backing the bow with cords of sinew is peculiar to the Eskimo, though some American Indians stiffen the bow by gluing flat pieces of sinew upon the back.

One tribe of Indians, the "Loucheux" of the Mackenzie district, however, used bows like those of the Eskimos, but Sir Alexander Mackenzie⁵ expressly states that these were obtained from the Eskimo.

¹ Hakluyt's *Voyages*, 1589, p. 628.

² *Science*, vol. 4, 98, p. 543.

³ *Voyage to Hudson's Bay*, p. 138.

⁴ Compare what I have already said about the backing being put on wet.

⁵ *Voyages from Montreal . . . to the Frozen and Pacific Oceans*, p. 48.

Arrows.—With these bows were used arrows of various patterns adapted for different kinds of game. There are in the collection fifty-one arrows, which are all about the same length, 25 to 30 inches. In describing these arrows I shall employ the terms used in modern archery¹ for the parts of the arrow. The greatest variation is in the shape and size of the pile. The stele is almost always a straight cylindrical rod, almost invariably 0.4 inch in diameter, and ranging in length from 20 to 28 inches. Twenty-five inches is the commonest length, and the short steles, when not intended for a boy's bow, are generally fitted with an unusually long pile. From the beginning of the feathering the stele is gradually flattened above and below to the nock, which is a simple notch almost always 0.2 inch wide and of the same depth. The stele is sometimes slightly widened just in front of the nock to give a better hold for the fingers. The feathering is 6 or 7 inches long, consisting of two, or less often, three feathers. (The set of sixteen arrows from Sidaru, two from Nuwtik, and one from Utkiavwîñ, have three feathers. The rest of the fifty-one have two.) The shaft of the feather is split and the web is cut narrow, and tapered off to a point at each end (Fig. 181). The ends of the feathers are fastened to



FIG. 181.—Feathering of the Eskimo arrow.

the stele with whippings of fine sinew, the small end of the feather which, of course, comes at the nock, being often wedged into a slit in the wood (with a special tool to be described below), or else doubled back over a few turns of the whipping and lashed down with the rest. The small end of the feather is almost always twisted about one turn, evidently to make the arrow revolve in flight, like a rifle ball. Generally, if not universally, the feathering was made of the feathers of some bird of prey, falcon, eagle, or raven, probably with some notion of giving to the arrow the death-dealing quality of the bird. Out of the fifty-one arrows in the collection, only nine are feathered with gull's feathers, and of these all but two are new, or newly feathered for sale to us.² Dr. Simpson³ says that in his time "feathers for arrows and head-dresses," probably the eagles' feathers previously mentioned, were obtained in trade from the "Nunatañmiun."

Four kinds of arrows were used: the bear arrow, of which there were three varieties, the deer arrow, the arrow for geese, gulls, and other large fowl, and the blunt headed arrow for killing small birds without mangling them.

¹ Encyclopædia Britannica, 9th edition, article Archery.

² On this subject of using the feathers of birds of prey for arrows, compare Crantz, *History of Greenland*, i, p. 146, "the arrow . . . winged behind with a couple of raven's feathers." Bessels, *Naturalist*, vol. 13, pt. 9, p. 869 (the three arrows at Ita had raven's feathers). Parry, *2d Voyage*, p. 511, "Toward the opposite end of the arrow are two feathers, generally of the spotted owl, not very neatly lashed on;" and Kumlien, *Contributions*, p. 37, "The feather-vanes were nearly always made from the primaries of *Strix scandiaca* or *Graculus carbo*." The last is the only mention I find of using any feathers except those of birds of prey.

³ Op. cit., p. 266.

Bear arrows.—These are of three kinds, all having a broad, sharp pile, often barbed. The first kind has a pile of flaked flint, called *kūki* (“claw” or “nail”), and was known as *kuk'ksadlīn* (“provided or fitted with claw material”). Of this kind we have eight complete arrows and one shaft.

No. 89240 [25], Fig. 182, will serve as the type. The pile is of black flint, double edged and sharp pointed, 2 inches long, with a short tang inserted into a cleft in the end of the stele, and secured by a whipping of about fifteen turns of fine sinew. The stele is of spruce, $25\frac{1}{8}$ inches

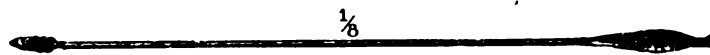


FIG. 182.—Flint-headed arrow (*kuk'ksadlīn*).

long and four-tenths inch in diameter, and painted with red ocher from the feathering to 5 inches from the pile. The three feathers, apparently those of the gyrfalcon, have their ends simply whipped to the stele.

They are 6 inches long. This is one of the two arrows from Nuwūk with three feathers.

No. 72780 [234 *a*], from Sidaru, is feathered with three raven feathers, of which the small ends are wedged into slits in the wood. The pile is of brown jasper, long and lancet-tipped, expanding into rounded wings at each side of the base. The stele is peculiar only in being slightly widened in front of the nock. It is of pine, 26.8 inches long, and painted with two rings, one red and one green, at the middle of the feathering.

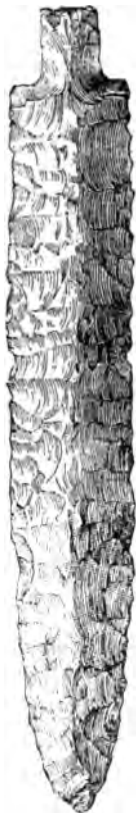


FIG. 183.—Long flint pile.



FIG. 184.—Short flint pile.

The only variations of importance in these arrows are in the shape of the pile, which is made of black or gray flint, or less often of jasper, mostly variegated, brown and gray. There are four patterns to be found in the series of eight arrows and twenty-two stone piles. The first is long and narrow, like No. 56704 [232], Fig. 183, from Utkiavwīn, which is of gray flint. The next is similar in shape, but shorter, as shown in Fig. 182 (No. 89240 [25], from Nuwūk), which is only 2 inches long, exclusive of the tang. The third pattern, which is less common than the others, is about the size of the last, but rhomboidal in shape (Fig. 184, No. 56691*c* [64*c*], from Utkiavwīn, of dark grayish brown flint, rather coarsely flaked). The fourth kind is very short, being not over $1\frac{1}{2}$ inches, including the half-inch tang, but is 1 inch broad, thick and convex on both faces. It is triangular, with a square base and curved edges (Fig. 185, No. 56702*b* [113*b*], from Utkiavwīn, newly made for sale).

No stone arrow or dart heads made by these people have anything like barbs except the square shoulders at the base. They seem never to have attained to the skill in flint-working which enabled many other savages to make the beautiful barbed heads so often seen. To keep the flint-headed arrow from dropping out of the wound they hit upon the contrivance of mounting it not directly in the stele but in a piece of bone upon which barbs could be cut, or, as is not unlikely, having already the deer arrow with the barbed head of antler, they added the flint head to this, thus combining the penetration of the flint arrow with the holding power of the other. I was at first inclined to think that this piece of bone bore the same relation to the rest of the arrow as the fore shaft of many Indian arrows, and was to be considered as part of the stele. Considering, however, that its sole function is to furnish the pile with barbs, it evidently must be considered as part of the latter. I shall designate it as "after-pile." Arrows with this barbed "after-pile" form



FIG. 185.—Heart-shaped flint pile.

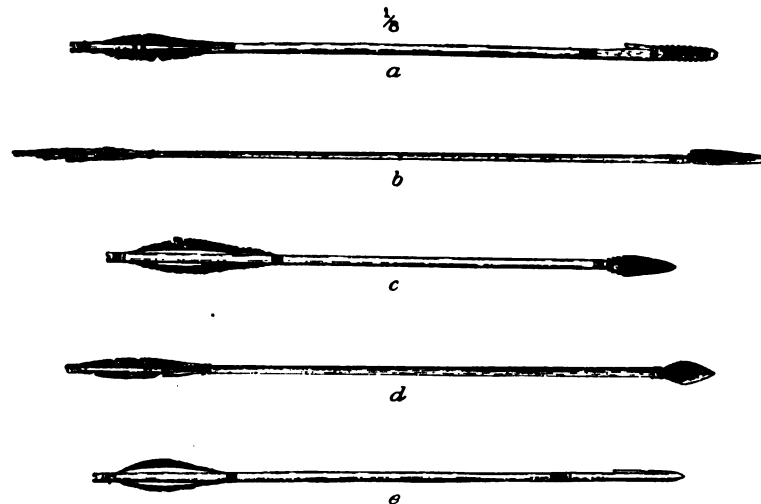


FIG. 186.—Arrows: (a) Arrow with "after-pile" (ipudll'gallin); (b) arrow with iron pile (savidlin); (c) arrow with iron pile (savidlin); (d) arrow with copper pile (savidlin); (e) deer-arrow (n'atkodlin).

the second kind of bear arrows, which are called ipudll'gallin ("having the ipu'dll'ge" [Gr. ipuligak, the similar bone head of a seal lance with iron tip]). After the introduction of iron, metal piles sometimes replaced the flint in arrows of this kind. We collected eight with flint and two with metal piles. No. 72787 [234a], Fig. 186a, has been selected to illustrate this form of arrow. This pile is of gray flint with the tang wedged by a slip of sealskin into the tip of the after-pile, which is cleft to receive it and kept from splitting by a whipping of sinew. The after-pile is fitted into the tip of the stele with a rounded sharp-pointed tang, slightly enlarged just above the tip. It is of reindeer

antler. The rest of the arrow does not differ from those previously described. The stele is of pine and is feathered with three gyrfalcon feathers.

Two others from Sidaru have only a single barb on the after-pile, but the other four have two, one behind the other on the same side. No. 89237 [164], from Utkiavwñ, differs in no respect from the single-barbed flint arrows from Sidaru, but No. 72763 [164], from the same village, has four small barbs on the after-pile, which is unusually (nearly 7 inches) long, and a pile of sheet brass. This has the basal angles on each side cut into three small, sharp, backward-pointing teeth. The total length of this arrow is 28 inches.

The after-piles of all arrows except one were of reindeer antler, which is another reason for supposing that this form of arrow is a modification of the deer arrow. After the introduction of iron, this metal or copper was substituted for the flint pile of the kuki'ksadlñ, making the third and last form of bear arrow, the sa'vidlñ ("fitted with iron"). This arrow differs from the others only in the form of the pile, which is generally broad and flat, and either rhomboidal, with the base cut into numerous small teeth, or else triangular, with a shank. The barbs are usually bilateral.

No. 72758 [25], from Nuwük, represents the first form. The pile is of iron, rough and flat, $2\frac{1}{2}$ inches long. No. 72770 [241*b*], from Utkiavwñ, is of the same form. No. 72760 [165], Fig. 186*c*, from Utkiavwñ, has a similar pile 3.3 inches long, but has each of the under edges cut into four sharp, backward-pointing teeth. No. 72778 [234*b*], Fig. 186*d*, has a pile of sheet copper 2.3 inches long, of the same shape, but with six teeth. This arrow came from Sidaru. No. 72765 [25], from Nuwük, is a long, narrow iron pile with three bilateral barbs, all simple.

Nos. 72755 [25], from Nuwük, 72759 [25], also from Nuwük, and 72764 [165], from Utkiavwñ, show the shanked form. The first is triangular, with a flat shank and a simple barb at each angle of the base. It is of steel (piece of a saw) and 2.8 inches long. The second resembles No. 72760 [165], with more teeth, mounted on a slender cylindrical shank $1\frac{1}{2}$ inches long. It is of iron and 3.9 inches long. The third is a long pile with a sinuate outline and one pair of simple bilateral barbs, and a flat shank one-half inch long. Nos. 72757 [25] (Fig. 186*b*) and 72762 [25], both from Nuwük, are peculiar in being the only iron-pointed arrows with unilateral barbs. The piles are made of the two blades of a pair of large scissors, cut off at the point, with enough of the handle left to make a tang. The unilateral barb is filed out on the back of the blade, which has been beveled down on both faces to a sharp edge. All of these broadheaded arrows have the breadth of the pile at right angles to the plane of the nock, showing that they are not meant to fly like the Sioux war arrows. Although iron makes a better material for arrow piles and is more easily worked than flint, the quivers which some men still carry at Point Barrow contain flint as well as iron headed arrows. They are probably

kept in use from the superstitious conservatism already mentioned. It is certain that the man who raised a couple of wolf cubs for the sake of their fur was obliged by tradition to have a flint-headed arrow to kill them with. These arrows, we were informed, were especially designed for hunting "nä'nu," the polar bear, but of course they also served for use against other dangerous game, like the wolf and brown bear, and

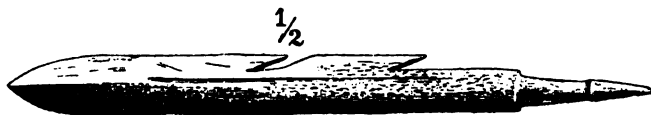


FIG. 187.—Pile of deer arrow (nütkäñ).

there is no reason to believe that they were not also shot at reindeer, though the hunter would naturally use his deer arrows first.

Deer arrows have a long trihedral pile of antler from 4 to 8 inches long, with a sharp thin-edged point slightly concaved on the faces like the point of a bayonet. Two of the edges are rounded, but the third is sharp and cut into one or more simple barbs. Behind the barb the pile takes the form of a rounded shank, ending in a shoulder and a sharp rounded tang a little enlarged above the point.

No. 72768 [162], Fig. 186*e* from Utkiavwñ, has a pile $3\frac{1}{2}$ inches long with two barbs. The pile of No. 89238 [162] from the same village is $3\frac{1}{2}$ inches long and has but one barb, while that of No. 89241*a* [162] is 7·8 inches long and has three barbs. The rudely incised figure on the shank of No. 89238 [162] represents a wolf, probably a talisman to make the arrow as fatal to the deer as the wolf is. No. 56588 [13], Fig. 187, is a pile for one of these arrows slightly peculiar in shape, being elliptical in section, with one edge sharp and two-barbed and a four-sided point. The figure shows well the shape of the tang. The peculiarity of these arrows is that the pile is not fastened to the shaft, but can easily be detached.¹ When such an arrow was shot into a deer the shaft would easily be shaken out, leaving the sharp barbed pile in the wound.

The Eskimo told us that a deer wounded in this way would "sleep once and die," meaning, apparently, that death would ensue in about twenty-four hours, probably from peritonitis. The bone pile is called nütkäñ, whence comes the name of the arrow, nütko'dliñ. We collected ten arrows and three piles of this pattern. No. 89460 [1263], Fig. 188, is a peculiar bone arrow pile, perhaps intended for a deer arrow. It is 7 inches long and made of one of the long bones of some large bird, split lengthwise so that it is rounded on one side and deeply concave on the other, with two thin rounded edges tapered to a sharp point. Each



FIG. 188.—
"Kóñmá-
dliñ" ar-
row pile.

¹Compare the passage in Frobisher's Second Voyage (Hakluyt, 1589, p. 628). After describing the different forms of arrowheads used by the Eskimo of "Meta Incognita" (Baffin Land) in 1577 he says: "They are not made very fast, but lightly tyed to, or else set in a nocke, that upon small occasion the arrowe leaveth these heads behind them."

edge has three little barbs about the middle of the pile. This was the only arrowhead of the kind seen at Point Barrow, and the native who sold it said it was a "Kûnmûd'liñ" arrow. I was pleased to find the truth of this corroborated by the Museum collection. There are two arrows from the Mackenzie region (Nos. 1106 and 1906) with bone piles of almost the same form.

For shooting gulls, geese, and other large fowl they used an arrow with a straight polygonal pile of walrus ivory, 5 or 6 inches long and about one-half inch in diameter, terminating in a somewhat obtuse polygonal point, and having one or more unilateral barbs. These piles are generally five-sided, though sometimes trihedral, and have a long, rounded tang inserted into the end of the shaft. Fig. 189a (No. 89349 [119]

from Utkiavwñ), represents one of these arrows with a five-sided pile 5.5 inches long, with four simple barbs. The rest of the arrow does not differ from the others described. No. 89238 [25], from Nuwûk, has a trihedral pile 6.6 inches long, with a single barb. Another from Nuwûk (No. 89241 [25]) has a trihedral pile 5.3 inches long, with two barbs, and one from Utkiavwñ (No. 89241 [119]) has a five-sided pile with three barbs. The remaining three, from Sidaru, all have five-sided piles with one barb.

Arrows of this pattern are called tuga'liñ (from tu'ga, walrus ivory). There are also in the collection two small arrows of this pattern suited for a boy's bow. They are only 25 inches long, and have roughly trihedral sharp-pointed ivory piles about 4 inches long, without barbs. (No. 89904a [786] from Utkiavwñ). These arrows are new and rather carelessly made, and were intended for the lad's bow (No. 89904 [786]) already described. The three kinds of arrows which have been described all have the pile secured to the stele by a tang fitting into a cleft or hole in the end of the latter, which is kept from splitting by whipping it with sinew for about one-half inch.

The fourth kind, the blunt bird arrow (ki'xodwain), on the other hand, has the pile cleft to receive the wedge-shaped tip of the stele and secured by a whipping of sinew.

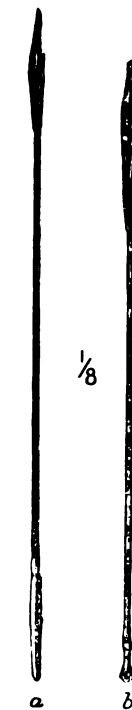


FIG. 189.—Arrows: (a) fowl arrow (tuga'liñ); (b) bird arrow (ki'xodwain).

The four arrows of this kind in the collection are almost exactly alike, except that three of them, belonging to the set from Sidaru, have three feathers. Fig. 189b, No. 72773 [234e] from Sidaru represents the form of arrow. The pile is of hard bone 2.3 inches long. A little rim at each side of the butt keeps the whipping of sinew from slipping off. The rest of the arrow differs from the others described only in having the end of the stele chamfered down to a wedge-shaped point to fit into the pile.

This is the kind of arrow mostly used by the boys, whose game is almost exclusively small birds or lemmings. Nowadays the bone pile

is often replaced by an empty cartridge shell, which makes a very good head. I have seen a phalarope transfixated at short range by one of these cartridge-headed arrows. An assortment of the different kind of arrows is usually carried in the quiver. The lot numbered 25, from Nuwük, which I believe to be a fairly average set, contains two flint-headed bear arrows, one barbed bear arrow with a steel pile, six bear arrows with iron piles, one deer arrow, two fowl arrows, and one bird arrow.

As I have already said, all these arrows are flattened above and below at the nocks. This indicates that they were intended to be held to the string and let go after the manner of what is called the "Saxon release," namely, by hooking the ends of the index and second fingers round the string and holding the arrow between them, the string being released by straightening the fingers. This is the "release" which we actually saw employed both by the boys and one or two men who showed us how to draw the bow. This method of release has been observed at Cumberland Gulf¹ and at East Cape, Siberia, and is probably universal among the Eskimo, as all the Eskimo arrows in the National Museum are fitted for this release. There is ample material in the Museum collections for a comparative study of Eskimo arrows, which I hope some day to be able to undertake, when the material is in a more available condition. One or two references to other regions will not, however, be out of place. The arrow with a barbed bone after-pile seems a very general form, being represented in the Museum from most of the Alaskan regions, as well as from the Mackenzie. Scoresby mentions finding the head of one of these at the ancient settlements in east Greenland.² The arrow, however, described by Capt. Parry³ has a real foreshaft of bone, not a barbed after pile. One of these arrows from the Mackenzie has the after pile barbed on both sides, the only instance, I believe, in the Museum of a bilaterally-barbed Eskimo arrow where the pile is not wholly of metal.

Bow cases and quivers.—The bow and arrows were carried in a bow case and quiver of black sealskin, tied together side by side and slung across the back in the same manner as the gun holster already described. We obtained one case and quiver which belong with the bow and arrows (No. 25, from Nuwük) and a single quiver with the bow and arrows (No. 234, from Sidaru.) The case, No. 89245 [25], Fig. 190a (pizl'ksizax), is of such a shape that the bow can be carried in it strung and ready for use. It is made by folding lengthwise a piece of black sealskin with the flesh side in and sewing up one side "over and over" from the outside. The bag is wide enough—6 inches at the widest part—to allow the bow to slip in easily when strung, and the small end

¹"In shooting this weapon the string is placed on the first joint of the first and second fingers of the right hand." (Kumlien, Contributions, p. 37.)

"Beim Spannen wird der Pfeil nicht zwischen Daumen und Zeigefinger, sondern zwischen Zeige- und Mittelfinger gehalten." Krause Brothers, Geographische Blätter, vol. 5, p. 33.

²Voyage to the Northern Whale Fishery, p. 187.

³2d Voyage, p. 511, and figured with the bow (22) on Pl. opposite p. 550.

is bent up into the shape of the end of the bow. Along the folded edge are three round holes about 10 inches apart, through which a round stick was formerly thrust, coming out from the inside through the first hole, in through the second and out through the third again. This served to hold the case in shape when the bow was withdrawn, and to its ends were fastened the thong for slinging it across the shoulders. It was gone from the specimen before we obtained it.

The quiver (No. 89240-1 [25], Fig. 190*b*) is a long, straight bag of the same material, open at one end, with a seam down one side, and the



FIG. 190.—Bow case and quivers.

edge of the mouth opposite to the seam forming a rounded flap 2 inches long. The other end is closed by an elliptical cap of white tanned seal skin, turned up about 2 inches all round, and crimped round the ends like a boot sole. Its extreme length is 30 inches, and its circumference 1 foot. Inside along the seam is a roughly rounded rod of wood about $\frac{1}{2}$ inch in diameter, with one end, which is pointed, projecting about $1\frac{1}{2}$ inches through a hole in the bottom, and the other projecting about 1

inch beyond the mouth, where it is secured by a bit of thong knotted through a couple of small holes in the bag close to the edge and passing round a notch on the stick. The stick serves to stiffen the quiver when there are no arrows in it. A bit of thong is knotted round the middle, one end being hitched into a loop on the other, for tightening up the quiver and confining the arrows.

The quiver from Sidaru (No. 72788 [234] Fig. 190*c*) is like the preceding, but larger at the bottom than at the mouth. The latter is $8\frac{1}{2}$ inches in circumference and the former $12\frac{3}{4}$, and the seam is left open for about $7\frac{1}{2}$ inches from the mouth to facilitate getting at the arrows. The stiffening rod is made of pine, and does not project through the bottom or reach the edge of the mouth. It is held in by two pieces of thong about 10 inches long, which also serve to fasten it to the bow case. This quiver is nearly new.

It is probable that the form of the bow case and quiver varied but little, among the American Eskimo at least. Those figured by Capt. Lyon¹ are almost exactly like the ones we collected at Point Barrow, even to the crimped cap on the bottom of the quiver. A similar set belong with a lad's bow in the Museum from Point Hope (No. 63611). Nordenskiöld, however, figures a very elaborate flat quiver,² in use at Pitlekaj, which is evidently of genuine Asiatic origin.



FIG. 191.—Quiver rod.

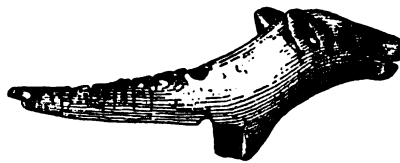


FIG. 192.—Cap for quiver rod.

Some pains seem to have been bestowed on ornamenting the quiver in former times, when the bow was in more general use. Fig. 191, No. 56505 [231], from Nuwük, represents what we understood had been a stiffening rod for a quiver or bow case. It is of reindeer antler, 17 inches long, and one end is very neatly carved into the head and shoulders of a reindeer, with small, blue glass beads inserted for the eyes. The lanceolate point at the tip was probably made with an idea of improving it for sale. The hole at the back of the neck is for a thong to fasten it on with. A similar reindeer head of antler, Fig. 192, No. 89449 [1066], also from Nuwük, seems to have been a cap for a quiver stick. The back of the neck makes a half-ferrule, in which are three holes for rivets or treenails.

Bracers.—In shooting the bow, the wrist of the bow hand was pro-

¹Parry's 2d Voyage, Pl. opposite p. 550, Fig. 24.

²Vega, vol. 2, p. 106.

tected from being chafed by the bowstring by a small shield or "bracer" of bone or horn, strapped on with a thong. We never saw these in use, as the bow is so seldom employed except by the children. Two of these, newly made, were offered for sale. I will describe one of these, No. 89410*b* [1233], Fig. 193.



FIG. 193.—Bracer.

It is of pale yellow mountain sheep horn, convex on the outer face and concave on the inner and considerably arched lengthwise. In the middle are two straight longitudinal narrow slots, which serve no apparent purpose except ornament. The short slot near the edge at the middle of each side, however, is for the thongs which strap the bracer to the wrist. One of these is short and made into a becket by fastening the ends together with double slits. One end of the other is passed through the slot, slit, and the other end passed through this and drawn taut. A knot is tied on the free end. This thong is just long enough to fasten on the bracer by passing round the wrist and catching the knot in the loop opposite. The other, No. 89410*a* [1233], is like this, but 1 inch shorter and nearly flat. The arch of the specimen figured is probably unintentional and due to the natural shape of the material, as it does not fit well to the wrist. It is probable that these people used a flat bracer, as Fig. 194, No. 89350 [1382], from Utkiavwīn, is apparently such an implement. It is a thin elliptical plate of hard bone, 2½ inches long and 1½ wide, with two rows of holes crossing at right angles in the middle. The holes at the side were probably for the thong and the others for ornament, as some of them go only part way through. Four small pebbles are lodged in the four holes around the center in the form of a cross.

Mr. Nelson collected several specimens of bracers from Kotzebue Sound and St. Lawrence Island. These are all slightly larger than our specimens, and bent round to fit the wrist. They are of bone or copper. When Beechey visited Kotzebue Sound, in 1826, he found the bracer in general use.¹ I find no other mention of this implement in the writers who have described the Eskimo.

Bird darts.—For capturing large birds like ducks or geese, sitting on the water, especially when they have molted their wing feathers so as to be unable to escape by flight, they use the universal Eskimo weapon, found from Greenland to Siberia, namely, a dart with one or more points at the tip, but carrying a second set of three ivory prongs



FIG. 194.—Bracer of bone.

¹"They buckle on a piece of ivory, called *mun-era*, about 3 or 4 inches long, hollowed out to the wrist, or a guard made of several pieces of ivory or wood fastened together like an iron-holder." *Voyage*, p. 575.

in a circle round the middle of the shaft. The object of these prongs is to increase the chance of hitting the bird if he is missed by the head of the dart. They always curve forward, so that the points stand out a few inches from the shaft, and are barbed on the inner edge in such a way that, though the neck of a fowl will easily pass in between the prong and the shaft, it is impossible to draw it back again. The weapon is in very general use at Point Barrow, and is always thrown from the boat with a handboard (to be described below). It can be darted with considerable accuracy 20 or 30 yards. We seldom saw this spear used, as it is chiefly employed in catching molting fowl, in the summer season, away from the immediate neighborhood of the station. It is called *nuiã/kpai*, which is a plural referring to the number of points, one of which is called *nuiã/kpúk* ("the great *nuiãk*").¹

No. 89244 [1325], Fig. 195, from *Utkiavwñ*, has been selected as the type of this weapon. The shaft is of spruce, 61½ inches long and 0.7 inch in diameter at the head. The end of the butt is hollowed out to fit the catch of the throwing board. The head, of white walrus ivory, is fitted into the cleft end of the shaft with a wedge-shaped tang as broad as the shaft. The head and shaft are held together by a spaced lashing of braided sinew. To the enlargement of the shaft, 22 inches from the butt, are fastened three curved prongs of walrus ivory at equal distances from each other round the shaft. The inner side of each prong is cut away obliquely for about 2 inches, so that when this edge is applied to the shaft, with the point of the prong forward, the latter is about 1 inch from the shaft. Each prong has two little ridges on the outside, one at the lower end and the other about 1 inch above this. They are secured to the shaft by three separate lashings of sinew braid, two narrow ones above the ridges just mentioned and one broad one just below the barb. In making this the line is knotted round one prong, then carried one-third of the distance round the shaft to the prong; half hitched round this, and carried round next the next prong; half hitched round this, and carried round to the starting point, and half hitched round

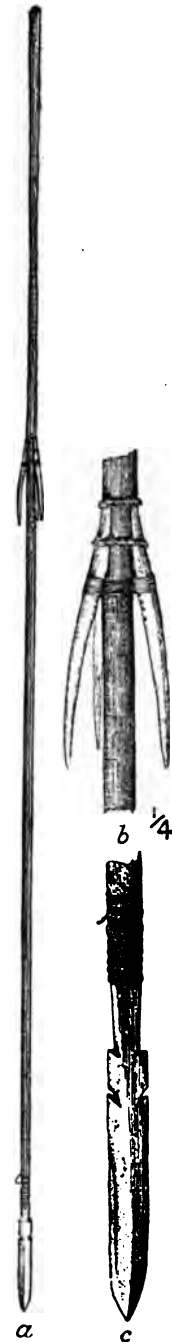


FIG. 195.—Bird dart.

¹This word appears to be a diminutive of the Greenlandic *nuek*—*nuk*, now used only in the plural, *nugñt*, for the spear. These changes of name may represent corresponding changes in the weapon in former times, since, unless we may suppose that the bird dart was made small and called the "little *nuk*," and enlarged again after the meaning of the name was forgotten, it is hard to see any sense in the present name, "big little *nuk*."

this. It goes around in this way seven times, and then is carried one prong farther, half hitched again, and the end taken down and made fast to the first narrow lashing. The shaft is painted with red ochre to within $13\frac{1}{2}$ inches (the length of the throwing board) from the butt. This is an old shaft and head fitted with new prongs, and was made by Nĭkawa'alu, who was anxious to borrow it again when getting ready to start on his summer trip to the east, where he would find young ducks and molting fowl.

The form of head seen in this dart appears to be the commonest. It is called by the same name, nū'tkãñ, as the bone head of the deer arrow.

There is considerable variation in the number of barbs, which are always bilateral, except in one instance, No. 56590 [122], Fig. 196, from Utkiavwĩñ, which has four barbs on one side only. It is $7\frac{1}{4}$ inches long exclusive of the tang. Out of eight specimens of such heads one has one pair of barbs, one two pairs, two three pairs, one four unilateral barbs, one five pairs, one six pairs, and one seven pairs. The total length of these heads is from 9 inches to 1 foot, of which the tang makes about 2 inches, and they are generally made of walrus ivory, wherein they differ from the nugfit of the Greenlanders, which, since Crantz's time¹ has always had a head of iron. Iron is also used at Cumberland Gulf, as shown by the specimens in the National Musuem. Fig. 197 represents a very ancient spearhead from Utkiavwĩñ, No. 89372 [760]. It is of compact whale's bone, darkened with age and impregnated with oil. It is 8.7 inches long and the other end is beveled off into a wedge-shaped tang roughened with cross-cuts on both faces, with a small hole for the end of a lashing as on the head of No. 89244 [1325]. This was called by the native who sold it the head of a seal spear, ă'kqlĭgúk, and it does bear some slight resemblance to the head of weapon used in Greenland and called by a similar name² (agdligak). The roughened tang, however, indicates that it was intended to be fixed permanently in the shaft, and this, taken in connection with its strong resemblance to the one-barbed head of the Greenland nugfit³ as well as to the head of the Siberian bird dart figured by Nordenskiöld⁴, makes it probable that it is really the form of bird dart head anciently used at Point Barrow. It is pos-



FIG. 196.—Point for bird dart.



FIG. 197.—Ancient point for bird dart.

¹ History of Greenland, vol. 1, p. 148.

² Crantz, vol. 1, p. 147, and Figs. 6 and 7, Pl. v.

³ Ibid., Fig. 8.

⁴ Vega, vol. 2, p. 105, Fig. 5.

sible that this pattern has been so long out of use that the natives have forgotten what this old point was made for and supposed it to belong to a seal spear.

One of the eight heads of the ordinary pattern in the collection, No. 56592 [284], a genuine one, old and dirty, is made of coarse-grained whale's bone, an unusual material. No. 89373 [948], from Utkiavwñ, an ivory head of a good typical shape, has been figured (Fig. 198) to show a common style of ornamenting these heads. A narrow incised line, colored with red ocher, runs along the base of the barbs on each side for about three-fourths the length of the blade. These heads are sometimes secured by treenails as well as by a simple lashing, as is shown by the holes through the tang of this specimen.

An improvement on this style of dart, which appears to be less common, has two prongs at the tip instead of a sharp head, so that the bird may be caught if struck on the neck with the point of the spear. No. 89905 [1326], Fig. 199, from Utkiavwñ, is one of this pattern. The two prongs are fastened on with a lashing of fine sinew braid. The rest of the dart does not differ from the one described except in the method of attaching the three prongs at the middle (Fig. 199*b*). These are fitted into slight grooves in the wood and secured by two neat lashings of narrow strips of whalebone, one just above a little ridge at the lower end of each prong and one through little holes in each prong at the top of the oblique edge. Each lashing consists of several turns with the end closely wrapped around them. There is one specimen, No. 89242 [526], in the collection which not only has not the prongs

at the middle, but lacks the enlargement of the shaft to receive them. The head is undoubtedly old and genuine, but the shaft and fittings, though dirty, look suspiciously fresh. I am inclined to believe that this head was mounted for sale by a man who had no prongs ready made, and was in too much of a hurry to get his price to stop to make them. Imperfect or unfinished objects were frequently offered for sale.

The bird darts used at Point Barrow, and by the western Eskimo generally, are lighter and better finished than those used in the east. The latter have a heavy shaft, which is four-sided in Baffin Land, and the prongs are crooked and clumsy.¹

¹See Crants's figure referred to above; also one in Parry's second voyage, Pl. opposite p. 550, Fig. 19, and Rink, *Tales*, etc., Pl. opposite p. 12.



FIG. 198.—
Point for
bird dart.



FIG. 199.—Bird dart
with double point.

Fig. 200, No. 89380 [793], is a fragment of a very ancient narwhal ivory spearhead, dark brown from age and shiny from much handling, which appears to have been worn as an amulet. It was said to have come from the east and to belong to a bird dart, though it does not resemble any in use at the present day in this region. It is a slender four-sided rod, having on one side three short oblique equidistant simple barbs. The resemblance of this specimen to the bone dart heads from Scania figured by Dr. Rau¹ is very striking.



FIG. 200.—Ancient ivory dart head.

Seal darts.—The Eskimo of nearly all localities use a dart or small harpoon to capture the smaller marine animals, with a loose, barbed head of bone fitted into a socket in the end of the shaft, to which it is attached by a line of greater or less length. It is always contrived so that when the head is struck into the quarry, the shaft is detached from the head and acts as a drag upon the animal. This is effected by attaching an inflated bladder to the shaft, or else by attaching the line with a martingale so that the shaft is dragged sideways through the water. Nearly all Eskimo except those of Point Barrow, as shown in the National Museum collections and the figures in Crantz² and Rink³, use weapons of this kind of considerable size, adapted not only to the capture of the small seals (*Phoca vitulina* and *P. fatida*), but also to the pursuit of the larger seals, the narwhal and beluga. At Point Barrow, however, at the present day, they employ only a small form of this dart, not over 5 feet long, with a little head, adapted only for holding the smallest seals. That they formerly used the larger weapon is shown by our finding a single specimen of the head of such a spear, No. 89374 [1281] Fig. 201. It is of hard, compact bone, impregnated with oil, 8.1 inches long. The flat shank is evidently intended to fit into a socket. The two holes through the widest part of the shank are for attaching the line.

This is very like the head of the weapon called *agligak* (modern Greenlandic *agdligak*), figured by Crantz, and referred to above, except that the barbs are opposite each other. Mr. Lucien M. Turner tells me that it is precisely like the head of the dart used at Norton Sound for capturing the beluga. The native who sold this specimen called it “*nuiä'kpai nū'tkoa*,” “the point of a bird dart,” to which it does bear some resemblance, though the shape of the butt and the line holes indicate plainly that it was a *detachable* dart head. Probably, as in the case of the ancient bird dart point, No. 89372 [760], referred to above, this weapon has been so long disused that the natives have forgotten what it was. The name *ä'kqllgük*, evidently the same as the



FIG. 201.—Bone dart head.

¹ Prehistoric fishing, Figs. 94 and 95, p. 73.

² History of Greenland, vol. 1, p. 147, Pl. v, Figs. 6 and 7.

³ Tales, etc., Pl. opposite p. 12 (“bladder arrow”).

Greenlandic *agdligak*, is still in use, but was always applied to the old bone harpoon heads, which are, however, of the toggle-head pattern (described below). It seems as if the Point Barrow natives had forgotten all about the *ã'kqligûk* except that it was a harpoon with a bone head for taking seals. At the present time the small bladder float, permanently attached to the shaft of the harpoon, is never used at Point Barrow. That it was used in ancient times is shown by our finding in one of the ruined houses



FIG. 202.—Nozzle for bladder float.

in *Utkiavwîñ* a very old broken nozzle for inflating one of these floats. Fig. 202, No. 89720 [756], is this specimen, which was picked up by Capt. Herendeen. This is a rounded tube of fossil ivory, 1-3 inches long and about one-half inch in diameter, slightly contracted toward one end and then expanded into a stout collar. At the other is a stout longitudinal flange, three-fourths inch long, perforated with an oblong slot. Between the flange and the collar the surface is roughened with cross-cuts, and the other end is still choked with the remains of a wooden plug. This nozzle was inserted into a hole in the bladder as far as the flange and secured by tying the bladder above the collar. The whole was then secured to the shaft by a lashing through the slot, and could be inflated at pleasure and corked up with the wooden plug.

As I have already said, the only harpoon of this kind now used at Point Barrow is a small one intended only for the capture of small seals. It has no bladder, but the rather long line is attached to the shaft by a martingale which makes the shaft drag sideways through the water. Three of these little darts, which are thrown with a handboard like the bird dart, make a set. The resistance of the shafts

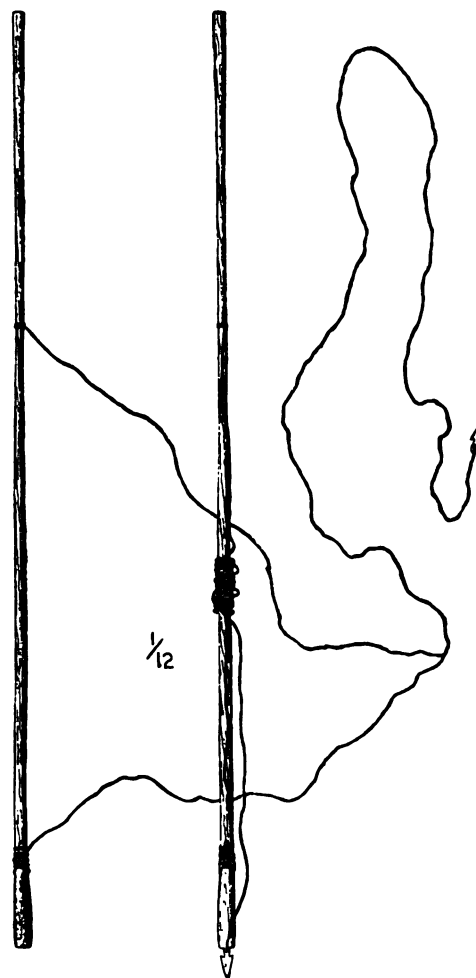


FIG. 203.—Seal dart.

As I have already said, the only harpoon of this kind now used at Point Barrow is a small one intended only for the capture of small seals. It has no bladder, but the rather long line is attached to the shaft by a martingale which makes the shaft drag sideways through the water. Three of these little darts, which are thrown with a handboard like the bird dart, make a set. The resistance of the shafts

of these three spears darted into the seal in succession is said to be sufficient to fatigue the seal so that he can be easily approached and dispatched. We never saw these weapons used, though they are very common, as they are intended only for use from the *kaiak*, which these people seldom use in the neighborhood of the villages. When in the *umiak*, shooting with the rifle is a more expeditious means of taking seals. We collected three sets of these darts (*kúkigû*).

No. 89249*b* [523], Fig. 203, has been selected for description. The shaft is of spruce, 54½ inches long, and 0.8 inch in diameter at the tip, tapering slightly almost to the butt, which is hollowed on the end to fit the catch of the throwing board. The foreshaft is of white walrus ivory 5 inches long, and is fitted into the tip of the shaft with a wedge-shaped tang. This foreshaft, which has a deep oblong slot to receive the head in the middle of its flat tip, serves the double purpose of making a strong solid socket for the head and giving sufficient weight to the end of the dart to make it fly straight. The head is a simple flat barbed arrow-head of hard bone 2.3 inches long and one-half inch broad across the barbs, with a flat tang, broadest in the middle, where there is a hole for attaching the line. This head simply serves to attach the drag of the shaft to the seal as it is too small to inflict a serious wound. It is fastened to the shaft by a martingale made as follows: One end of a stout line of sinew braid 5½ feet long is passed through the hole in the head and secured by tying a knot in the end. The other end of this line divides into two parts not quite so stout, one 3 feet long, the other 2 feet 8 inches. The latter is fastened to the shaft 18½ inches from the butt by a single marling hitch with the end wedged into a slit in the wood and seized down with fine sinew. The longer part serves to fasten the foreshaft to the shaft, and was probably put on separately and worked into the braiding of the rest of the line at the junction. The foreshaft is kept from slipping out by a little transverse ridge on each side of the tang. When the weapon is mounted for use the two parts of the bridle are brought together at the middle of the shaft and wrapped spirally around it till only enough line is left to permit the head to be inserted in the socket, and the bight of the line is secured by tucking it under the last turn. When a seal is struck with this dart his sudden plunge to escape unships the head. The catch of the martingale immediately slips; the latter unrolls and drags the shaft through the water at right angles to the line. The shaft, besides acting as a drag on the seal's motions, also serves as a float to indicate his position to the hunter, as its buoyancy brings it to the surface before the seal when the latter rises for air.

The shaft is usually painted red except so much of the end as lies in the groove of the throwing-board, in the act of darting. These darts vary but little in size and material, and are all of essentially the same pattern. They are always about 5 feet in length when mounted for use. (The longest is 64½ inches, and the shortest 57.) The head, as

well as the foreshaft, is sometimes made of walrus ivory, and the latter sometimes of whale's bone. The chief variation is in the length of the martingale, and the details of the method of attaching it. No two are precisely alike. The foreshaft is generally plain, but is occasionally highly ornamented, as is shown in Fig. 204, No. 56516 [105]. The figures are all incised and colored, some with ocher and some with soot.

Both of the kinds of darts above described are thrown by means of a hand board or throwing-board. This is a flat, narrow board, from 15 to 18 inches long, with a handle at one end and a groove along the upper surface in which the spear lies with the butt resting against a catch at the other end. The dart is propelled by a quick motion of the wrist, as in casting with a fly-rod, which swings up the tip of the board and launches the dart forward. This contrivance, which practically makes of the hand a lever 18 inches long, enables the thrower by a slight motion of the wrist to impart great velocity to the dart. The use of this implement is universal among the Eskimo, though not peculiar to them. The Greenlanders, however, not only use it for the two kinds of darts already mentioned, but have adapted it to the large harpoon.¹ This is undoubtedly to adapt the large harpoon for use from the kaiak, which the Greenlanders use more habitually than most other Eskimo. On the other hand, the people of Baffin Land and the adjoining regions, as well as the inhabitants of northeastern Siberia, use it only with the bird dart.² Throughout western North America the throwing-board is used essentially as at Point Barrow. Prof. O. T. Mason has given³ an interesting account of the different forms of throwing-board used by the Eskimo and Aleuts of North America.

FIG. 204.—Fore-shaft of seal dart.

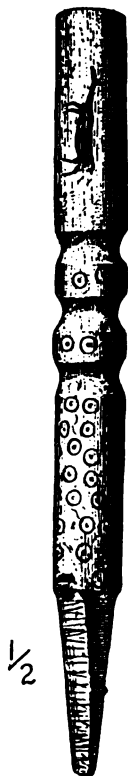


FIG. 205.—Throwing board for darts.

¹ Crantz, vol. 1, p. 146, Pl. v, Figs. 1 and 2, and Rink as quoted above, also Kane, *First Exp.*, p. 478.

² Parry, *Second Voyage*, p. 508 (Iglulik); and Nordenakiöld, *Vega*, vol. 2, p. 106, Fig. 5.

³ *Smithsonian Report for 1884*, part II, pp. 279-289.

We obtained five specimens of the form used at Point Barrow. No. 89233 [523], Fig. 205*a*, belonging to the set of seal darts bearing the same collector's number, has been selected as the type. This is made of spruce, and the hole is for the forefinger. A little peg of walrus ivory, shaped like a flat-headed nail, is driven through the middle of the tip so that the edge of the head just projects into the groove. This fits into the hollow in the butt of the dart and serves to steady it. It is painted red on the back and sides. Fig. 205*b*, No. 89235 [60], differs from this in having a double curve instead of being flat. A slight advantage is gained by this as in a crooked lever. The catch is a small iron nail. The others are essentially the same as the type. No. 89234 [528], has a small brass screw for the catch, and No. 89902 [1326], has an ivory peg of a slightly different shape, the head having only a projecting point on one side. They are generally painted with red ochre except on the inside of the groove. There appears to be no difference between throwing-boards meant for seal darts and those used with the bird dart.



FIG. 206.—Harpoon head.

Unfortunately I had no opportunity of observing accurately how the handle was grasped, but it is probably held as seen by Beechey at Eschscholtz Bay,¹ namely, with the forefinger in the hole, the thumb and middle finger clasped round the spear, and the third and little fingers clasping the handle under the spear. This seems a very natural way of holding it. Of course, the fingers release the spear at the moment of casting. All the throwing-boards from Point Barrow are right-handed.

Harpoons.—All kinds of marine animals, including the smaller seals, which are also captured with the darts just described and with nets, are pursued with harpoons of the same general type, but of different patterns for the different animals. They may be divided into two classes—those intended for throwing, which come under the head of projectile weapons, and those which do not leave the hand, but are thrust into the animal. These fall properly under the head of thrusting weapons. Both classes agree in having the head only attached permanently to the line, fitted loosely to the end of the shaft, and arranged so that when struck into the animal it is detached from the shaft, and turns under the skin at right angles to the line, like a toggle, so that it is almost impossible for it to draw out.

No. 89793 [873], Fig. 206, is a typical toggle head of this kind, intended for a walrus harpoon (*túkæ*), and will be described in full, as the names of the different parts will apply to all heads of this class. The *body* is a conoidal piece, $4\frac{1}{2}$ inches in length, and flattened laterally so that at the widest part it is 1 inch wide and 0.7 thick. On one side, which may be called the *lower*, it is cut off straight for about half the

¹ Voyage, p. 324.

longer diameter, while the upper side is produced into a long, four-sided spur, the *barb*. The *line hole* is a round hole about one-fourth inch in diameter, a little back of the middle of the body, at right angles to its longer diameter. From this, on each side, run shallow *line grooves* to the base of the body, gradually deepening as they run into the line hole. In the middle of the base of the body is the deep, cup-shaped *shaft-socket*, which fits the conical tip of the shaft or fore shaft. In the tip of the body is cut, at right angles to the longer diameter of the body, and therefore at right angles to the plane of the barb, the narrow *blade slit*, 1.1 inches deep, into which fits, secured by a single median rivet of whalebone, the flat, thin *blade* of metal (brass in this case). This is triangular, with curved edges, narrowly beveled on both faces, and is 1.9 inches long and 1 broad.



The body is sometimes cut into faces so as to be hexagonal instead of elliptical in section as in Fig. 207 (No. 89791 [873]), $\frac{1}{3}$ and intermediate forms are common. When such a head is mounted for use a bight of the line or *leader*, a short line for connecting the head with the main line, runs through the line hole so that the head is slung in a loop in the end of the line. The tip of the shaft is then fitted into the shaft socket and the line brought down the shaft with the parts of the loop on each side resting in the line grooves and is made fast, usually so that a slight pull will detach it from the shaft. When the animal is struck the blade cuts a wound large enough to allow the head to pass in beyond the barb. The struggles of the animal make the head slip off the tip of the shaft and the strain on the line immediately toggles it across the wound. The toggle head of the whale harpoon is called *kiaçron*, of the walrus harpoon, *tukæ*, and of the seal harpoon, *naulæ*. They are all of essentially the same pattern, differing chiefly in size.

FIG. 207.—
Harpoon
head.

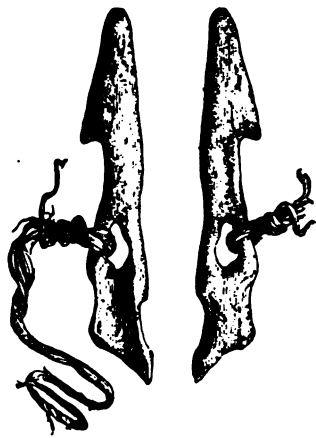


FIG. 208.—Ancient bone harpoon head.

There is in the collection an interesting series of old harpoon heads, showing a number of steps in the development of the modern pattern of harpoon head from an ancient form. These heads seem to have been preserved as amulets; in fact one of them is still attached to a belt. They are not all of the same kind, but since the different kinds as mentioned above practically differ only in size, their development was probably the same. The earliest form in the collection is No. 89382 [1383], Fig. 208, from Nuwük, which is evidently very old, as it is much worn and weathered. It is a single flat piece of fine-grained bone 3 inches long, pointed at the end and provided with a single unilateral barb. Be-

hind this it is narrowed and then widened into a broad flat base produced on one side into a sharp barb, in the same plane as the other barb, which represents the blade, but on the opposite side. The line hole is large and irregularly triangular, and there are no line grooves. Instead of a shaft socket bored in the solid body, one side of the body is excavated into a deep longitudinal groove, which was evidently converted into a socket by a transverse band, probably of sealskin, running round the body, and kept in place by a shallow transverse groove on the convex side of it. A harpoon head with the socket made by inclosing a groove with thongs was seen by Dr. Kane at Smith Sound.¹



FIG. 209.—Harpoon heads: (a) ancient bone harpoon head; (b) variant of the type.

The next form, No. 89331 [932], Fig. 209a, has two bilateral barbs to the blade part, thus increasing its holding power. Instead of an open transverse groove to hold the thong, it has two slots parallel to the socket groove running ob-

liquely to the other side, where they open into a shallow depression. Figs. 209b and 210, Nos. 89544 [1419] and 89377 [766], are variants of this form, probably intended for the larger seal, as the blade part is very long in proportion. No. 89544 [1419] is interesting from its close resemblance to the spear head figured by Nordenskiöld² from the ancient "Onkilon" house at North Cape. No. 89377 [766] is a peculiar form, which was perhaps not general, as it has left no descendants among the modern harpoon. Instead of the bilateral blade barbs it has an irregular slot on each side, which evidently served to hold a blade of stone, and the single barb of the body is replaced by a cluster of four, which are neither in the plane of the blade nor at right angles to it, but between the two. No modern harpoon heads from Point Barrow have more than two barbs on the body. The next improvement was to bore the shaft socket instead of making it by inclosing a groove with thongs. This is shown in Fig. 211 (No. 89379 [795], from Utkiavwīn), which is just like No. 89544 [1419] except in this respect. The line grooves first appear at this stage of the development.

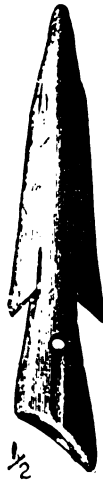


FIG. 211.—Bone harpoon head.



FIG. 210.—Bone harpoon head.

¹ Second Grinnell Exp., vol. 1, Figs. on pp. 412 and 413.

² Vega, vol. 1, p. 444, Fig. 5.

The next step was to obtain greater penetration by substituting a triangular blade of stone for the barbed bone point, with its breadth still in the plane of the body barb. This blade was either of slate (No. 89744 [969] from Nuwük) or of flint, as in Fig. 212 (No. 89748 [928], also from Nuwük). Both of these are whale harpoons, such as are sometimes used even at the present day.

Before the introduction of iron it was discovered that if the blade were inserted at right angles to the plane of the body barb the harpoon would have a surer hold, since the strain on the line would always draw it at right angles to the length of the wound cut by the blade. This is shown in Fig. 213 (No. 56620 [199], a walrus harpoon head from Utkiavwīñ), which has the slate blade inserted in this position. Substituting a metal blade for the stone one gives us the modern toggle head, as already described. That the insertion of the stone blade preceded the rotation of the plane of the latter is, I think, conclusively shown by the whale harpoons¹ already mentioned, in spite of the fact that



FIG. 213.—Harpoon head, bone and stone.

we have a bone harpoon head in the collection, No. 89378 [1261], figured in Point Barrow report, which is exactly like No. 89379 [795], except that it has the blade *at right angles* to the plane of the body barb. This is, however, a newly made model in reindeer antler of the ancient harpoon, and was evidently made by a man so used to the modern pattern that he forgot this important distinction. The development of this spear head has been carried no further at Point Barrow. At one or two places, however, namely, at Cumberland Gulf in the east² and at Sledge Island in the west (as shown in Mr. Nelson's collec-

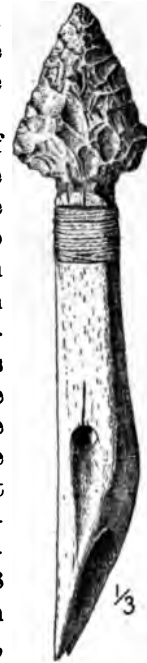


FIG. 212.—Harpoon head, bone and stone.

tion), they go a step further in making the head of the seal harpoon, body and blade, of one piece of iron. The shape, however, is the same as those with the ivory or bone body.

¹Compare, also, the walrus harpoon figured by Capt. Lyon, Parry's Second Voyage, Pl. opposite p. 550, Fig. 13.

²See Kumlien, Contributions, p. 35, and Boas, "Central Eskimo," p. 473, Fig. 393.

All of the Eskimo race, as far as I have any definite information, use toggle harpoon-heads. There are specimens in the National Museum from Greenland, Cumberland Gulf, the Anderson and Mackenzie region, and from the Alaskan coast from Point Barrow to Kadiak, as well as from St. Lawrence Island, which are all of essentially the same type, but slightly modified in different localities. The harpoon head in use at Smith Sound is of the same form as the walrus harpoon heads used at Point Barrow, but appears always to have the shaft socket made by a groove closed with thongs.¹ In Danish Greenland, however, the body has an extra pair of bilateral barbs below the blade. The Greenlanders have, as it were, substituted a metal blade for the point only of the barbed blade portion of such a bone head as No. 89379 [795].²

Curiously enough, this form of the toggle head appears again in the Mackenzie and Anderson region, as shown by the extensive collections of Ross, MacFarlane, and others. In this region the metal blade itself is often cut into one or more pairs of bilateral barbs. At the Straits of Fury and Hecla, Parry found the harpoon head, with a body like the walrus harpoon heads at Point Barrow,³ but with the blade *in the plane* of the body barb. Most of the pictures scattered through the work represent the blade in this position, but Fig. 19 on the same plate has the blade at right angles to the barb, so that the older form may not be universal. At Cumberland Gulf the form of the body is considerably modified, though the blade is of the usual shape and in the ordinary position. The body is flattened at right angles to the usual direction, so that the thickness is much greater than the width. It always has two body barbs. On the western coast the harpoon heads are much less modified, though there is a tendency to increase the number of body barbs, at the same time ornamenting the body more elaborately as we go south from Bering Strait. Walrus harpoon heads with a single barb, hardly distinguishable from those used at Point Barrow, are in the collection from the Diomedes and all along the northern shore of Norton Sound, and one also from the mouth of the Kuskoquim. They are probably also used from Point Barrow to Kotzebue Sound. At St. Lawrence Island and on the Asiatic shore they are the common if not the universal form.⁴ The seal harpoon head (nauke) at Point Barrow appears always to have the body barb split at the tip into two, and this is the case rarely with the tu'ke. This form, which appears occasionally north of Norton Sound (Port Clarence, Cape Nome), appears to be more common south of this locality, where, however, a pattern with the barb divided into three points seems to be the prevailing form. I will now proceed to the description of the different forms of harpoon with which these toggle heads are used.

¹Kane, 2d Grinnell Exp., vol. 1, pp. 412 and 413 (Fig. 1), and Bossells, Naturalist, vol. 18, pt. 9, p. 869, Figs. 6-12.

²Crantz, vol. 1, p. 146, and Pl. v, Figs. 1 and 2, and Rink Tales, etc., Pl. opposite p. 10.

³2d Voyage, Pl. opposite p. 550, Fig. 13.

⁴Museum collections and Nordenskiöld, Vega, vol. 2, p. 105, Fig. 1. This figure shows the blade *in the plane* of the barb, but none of the specimens from Plover Bay are of this form.

Throwing-harpoons are always thrown from the hand without a throwing-board or other assistance, and are of two sizes, one for the walrus and bearded seal, and one for the small seals. Both have a long shaft of wood to the tip of which is attached a heavy bone or ivory foreshaft, usually of greater diameter than the shaft and somewhat club-shaped. This serves the special purpose of giving weight to the head of the harpoon, so it can be darted with a sure aim. The native name of this part of the spear, ukumailuta (Greenlandic, okimailutak, *weight*), indicates its design. This contrivance of weighting the head of the harpoon with a heavy foreshaft is peculiar to the western Eskimo. On all the eastern harpoons (see figures referred to above and the Museum collections) the foreshaft is a simple cap of bone no larger than the shaft the tip of which it protects. Between the foreshaft and the toggle-head is interposed the *loose shaft* (i'gimû), a slender rod of bone whose tip fits into the shaft socket of the head, while its butt fits loosely in a socket in the tip of the foreshaft. It is secured to the shaft by a thong just long enough to allow it to be unshipped from the foreshaft. This not only prevents the loose shaft from breaking under a lateral strain, but by its play facilitates unshipping the head. On these harpoons intended for throwing, this loose shaft is always short. This brings the weight of the foreshaft close to the head, while it leaves space enough for the head to penetrate beyond the barb.

The walrus harpoon varies in size, being adapted to the strength and stature of the owner. Of the six in our collection, the longest, when mounted for use, is 9 feet 6 inches long, and the shortest 5 feet 8 inches. The ordinary length appears to be about 7 feet. It has a long, heavy shaft (ipua) of wood, usually between 5 and 6 feet long and tapering from a diameter of 1½ inches at the head to about 1 inch at the butt. The head is not usually fastened directly to the line, but has a leader of double thong 1 to 2 feet long, with a becket at the end into which the main line is looped or hitched. At the other end of the line, which is about 30 feet long, is another becket to which is fastened a float consisting of a whole sealskin inflated. When the head is fitted on the tip of the loose shaft the line is brought down to the middle of the shaft and hooked by means of a little becket to an ivory peg (ki'lerb-wîñ) projecting from the side of the shaft. The eastern Eskimo have, in place of the simple becket, a neat little contrivance consisting of a plate of ivory lashed to the line with a large slot in it which hooks over the catch, but nothing of the sort was observed at Point Barrow.

The harpoon thus mounted is poised in the right hand with the forefinger resting against a curved ivory projection (ti'ka) and darted like a white man's harpoon, the float and line being thrown overboard at the same time. When a walrus is struck the head slips off and toggles as already described; the line detaches itself from the catch, leaving the shaft free to float and be picked up. The float is now fastened to the walrus, and, like the shaft of the seal dart, both shows his whereabouts

and acts as a drag on his movements until he is "played" enough for the hunters to come up and dispatch him. This weapon is called *u'nakpûk*, "the great *u'na* or spear." *U'na* (*unák*, *u'nañ*) appears to be a generic term in Eskimo for harpoon, but at Point Barrow is now restricted to the harpoon used for stabbing seals as they come up to their breathing holes.

We collected six of these walrus harpoons complete and forty-two separate heads. Of these, No. 56770 [534], Fig. 214*a*, has the most typical shaft and loose shaft. The shaft is of spruce 71 inches long, roughly rounded, and tapering from a diameter of $1\frac{1}{2}$ inches at the tip to 0.8 at the butt. The foreshaft is of white walrus ivory, 6.7 inches long, exclusive of the wedge-shaped tang which fits into a cleft in the tip of the shaft. It is somewhat club-shaped, being 1.6 inches in diameter at the tip and tapering to 1.3 just above the butt, which expands to the diameter of the shaft, and is separated from the tang by a square transverse shoulder. The shaft and foreshaft are fastened together by a whipping of broad seal thong, put on wet, one end passing through a hole in the foreshaft one-quarter inch from the shaft, and kept from slipping by a low transverse ridge on each side of the tang. In the tip of the foreshaft is a deep, round socket to receive the loose shaft, which is a tapering rod of walrus ivory 4.4 inches long, shouldered off at the butt, which is 0.7 inch in diameter, to a blunt, rounded tang 0.9 inch long. It fits loosely into the foreshaft up to the shoulder, and is secured by a piece of narrow seal thong which passes through a transverse hole one-half inch above the shoulder. The end is spliced to the standing part with double slits about 6 inches from the loose shaft, and the other end makes a couple of turns outside of the lashing on the shaft mentioned above and is secured with two half-hitches.

The line catch (*ki'lerbwñ*) is a little, blunt, backward-pointing hook of ivory inserted in the shaft 17 inches from the tip and projecting about one-third inch. Ten and one-fourth inches farther back and 90

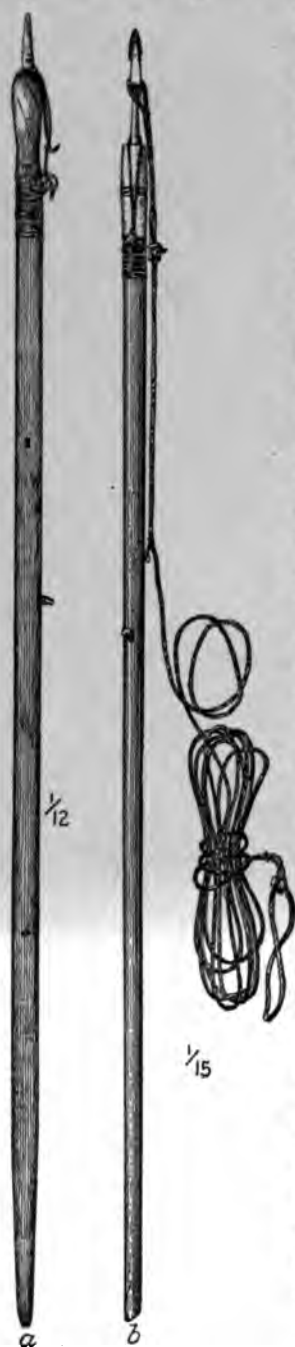


FIG. 214.—Walrus harpoons.

degrees round the shaft from the line catch is the finger rest—a conical recurved piece of ivory 1 inch high, with a flat base, resting against the shaft and secured by a lashing of whalebone, which passes through two corresponding holes, one in the rest and one in the shaft. The head and line belonging to this harpoon are intended for hunting the bearded seal, and will be described below. No. 56772 [536], Fig. 214*b*, from Utkiavwñ, is fitted with fairly typical walrus gear. The head is of the typical form, 6 inches long, with a conoidal body of walrus ivory, ornamented with incised lines colored with red ocher, and a blade of steel secured by a whalebone rivet. The “leader,” which is about 15 inches long, is made by passing one end of a piece of stout walrus-hide thong about one-quarter inch wide through the line hole and doubling it with the head in the bight, so that one part is about 6 inches the longer. The two parts are stopped together about 2 inches from the head with a bit of sinew braid. The ends are joined and made into a becket, as follows: The longer end is doubled back for 7 inches and a slit cut through both parts about 2 inches from the end. The shorter end is passed through this slit, and a slit is cut 5 inches from the end of this, through which the loop of the other end is passed and all drawn taut. The whole joint is then tightly seized with sinew braid so as to leave a becket 3 inches and a free end 4 inches long. This becket is looped into an eye $1\frac{1}{2}$ inches long at the end of the main line, made by doubling over 5 inches of the end and stopping the two parts firmly together with sinew braid. The line is of the hide of the bearded seal, about the same diameter as the leader, and 27 feet long. It is in two nearly equal parts, spliced together with double slits, firmly seized with sinew braid. There is a becket about 8 inches long at the other end of the line for attaching the float, made by doubling over the end and tying a carriek bend, the end of which is stopped back to the standing part with sinew braid. The becket to hook upon the line catch is a bit of sinew braid, fastened to the line $2\frac{1}{2}$ feet from the head, as follows: One end being laid against the line it is doubled in a bight and the end is whipped down to the line by the other end, which makes five turns round them.

I will now consider the variations of the different parts of these harpoons in detail, beginning with the head. Our series is so large, containing in all forty-eight heads, besides some spare blades, that it probably gives a fair representation of the common variations. The longest of this series is 6 inches long and the shortest $3\frac{1}{2}$, but by far the greater number are from $4\frac{1}{2}$ to 5 inches long. Their proportions are usually about as in the types figured, but the long head just figured (No. 56772 [534]) is also unusually slender. Sheet brass is the commonest material for the blade (thirty blades are of this material), though iron or steel is sometimes used, and rarely, at present, slate. There is one slate-bladed head in the series (No. 56620 [199]) figured above, and four blades for such heads. The blade is commonly of the shape of the

type figured, triangular with curved edges, varying from a rather long triangle like the slate blade just mentioned to a rather short one with very strongly curved edges like Fig. 215*a* (No. 89750 [1038]), which is peculiar as the only walrus harpoon head with a body of reindeer antler. It also has an iron blade and a rivet of iron, not seldom with rounded basal angles so as to be almost heart-shaped, like Fig. 215*b* (No. 56621 [283]). A less common shape of blade is lanceolate, with the base cut off square as in Fig. 216*a* (No. 89764 [940]). Only eight blades out of the series are of this shape. A still more peculiar shape of blade, of which we saw only one specimen, is shown in Fig. 216*b* (No. 89790 [943]). This is made of brass. It was perhaps meant for an imitation of the barbed blades used at the Mackenzie, of which I have already spoken.

FIG. 215.—Typical walrus-harpoon heads.

The blade, when of metal, is generally fastened in with a single rivet. One only out of the whole number has two rivets, and three are simply wedged into the blade slit.

The slate blades appear never to have been riveted; Nordenskiöld, however, figures a walrus harpoon from Port Clarence¹ with a jade blade riveted in. The rivet is generally made of whalebone, but other materials are sometimes used. For instance, in the series collected two have rivets of iron, two of wood, and five of rawhide. The body is generally made of white walrus ivory, (five of those collected are of hard bone, and one already mentioned and figured, No. 89750 [1038], Fig. 215*a*, is of reindeer antler), and the hexagonal shape, often with rounded edges, and the line grooves continued to the tip, as in Fig. 217*a*, No. 89757 [947], appears to be the commonest. Three out of the forty-eight have four-sided bodies. It is unusual for the body barb to be bifurcated, as is common farther south.



FIG. 216.—Typical walrus-harpoon heads.

¹ Vega, vol. 2, p. 229, Fig. 3.

Only three out of the forty-eight show this peculiarity, of which No. 56613 [53], Fig. 217*b*, is an example.

The specimens figured show the different styles of ornamentation, which always consist of incised patterns colored with red ocher or rarely with soot. These never represent natural objects, but are always conventional patterns, generally a single or double border on two or more faces with short oblique cross-lines and branches. Harpoon heads at Point Barrow are probably never ornamented with the "circles and dots," so common on other implements and on the harpoons of the southern Eskimo.

Twenty-eight of the heads still have the leaders attached to them. The object of this short line is to enable the hunter to readily detach a broken head and put on a fresh one without going to the trouble of undoing a splice, which must be made strong to keep the head from separating from the line. It is made of a stout piece of rawhide thong,

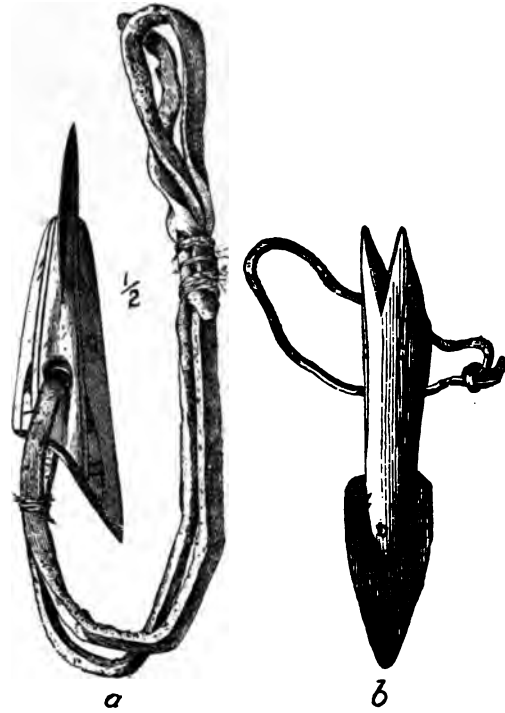


FIG. 217.—Typical walrus-harpoon heads.

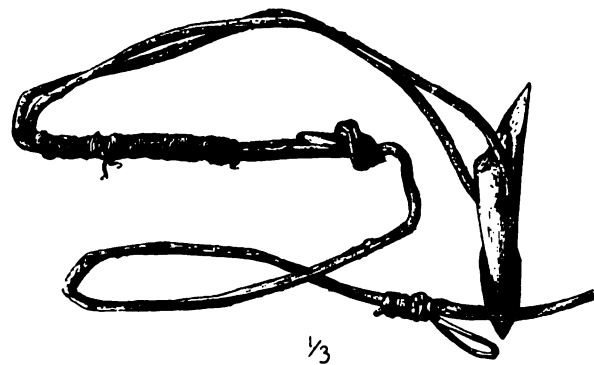


FIG. 218.—Walrus-harpoon head, with leader.

the skin of the walrus or bearded seal, about one-third inch in diameter, and usually from 2 to 3 feet long. It is always passed through the line hole, as in the specimen described, and the ends are made into a becket for attaching the line, with an end left to serve as a handle for pulling the two becketts apart when the main line ends in a becket. Occasionally (two are made this way) the longer end is simply doubled in a bight, and the three parts are then seized together with sinew braid, but it is generally made with a splice, the details of which differ slightly on the different leaders.

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The commonest method is that already described. When the longer end is doubled over, a slit is cut through both parts close to the end of this through which the shorter end is passed. A slit is then cut a few inches from the tip of this part, the bight of the becket passed through this slit and all drawn taut. This makes a very strong splice. Fourteen becketts are spliced in this way. A variation of this splice has a slit only through the end part of the longer end, the shorter end being passed through and slit as before. In one becket the standing part of the longer end is passed through the slit of the end part before going through the line hole, while the rest of the becket is made as before. A reversed splice is found on three of the leaders, which is made as follows: When the long end is doubled over, the short end is slit as usual and the longer end passed through this and slit close to the tip. Through this slit is passed the head and all drawn taut. The splice is always firmly seized with sinew braid. The main line, which serves to attach the head to the float, is always made of stout thong, preferably the skin of the bearded seal (very fine

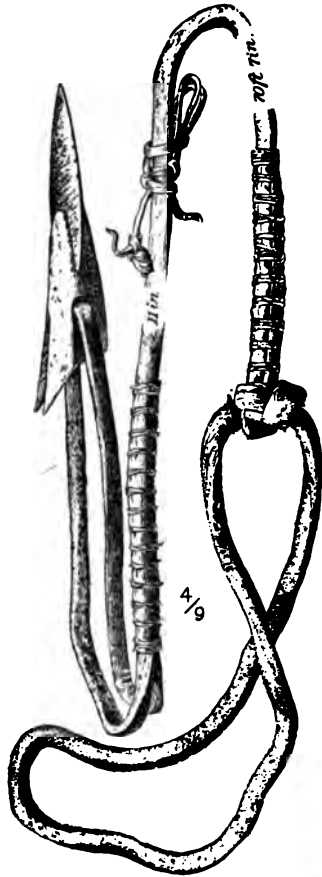


FIG. 219.—Walrus-harpoon head, with line.

lines are sometimes made of beluga skin), about one-third inch square, and, when properly made, trimmed off on the edges so as to be almost round. It is about 10 yards long. It is fastened into the becket of the leader upside down (No. 56771 [535], Fig. 218), or by means of a small becket, made either as on the specimen described (No. 56770 [536], Fig. 219), or spliced with double slits. The long becket at the other end for attach-



FIG. 220.—Walrus-harpoon head, with line.

ing the float is made either by tying a carrick bend with the end stopped back to the standing part (Fig. 220, No. 56767 [531]), or by splicing (Fig. 221, No. 56769).

The loose shaft varies very little in shape, though it is sometimes rounded off at the butt without a shoulder, but the line which secures this to the foreshaft is put on differently on each of the six spears. Five of them have the end simply passed through the hole in the loose shaft and spliced to the standing part, but two (the type figured and No. 56768 [532]) have the other end carried down and hitched round the tip of the shaft; another has it passed through a hole in the foreshaft, taken $1\frac{1}{2}$ turns round this and knotted (No. 56771 [535]); another has a loop as long as the foreshaft with the short end passed under the first turn of the shaft lashing before it is spliced, and the long end secured as on the first mentioned; and the fifth has the end passed through a hole in the foreshaft and carried down and wrapped round the shaft lashing. The sixth has one end passed through a hole in the smallest part of the foreshaft and knotted at the end, the other end carried up through the hole in the loose shaft and down to a second hole in the foreshaft close to the first, then up through the loose shaft, and down through the first hole, and tucked under the two parts on the other-side.

The foreshaft is made of walrus ivory or the hard bone of the walrus jaw and varies little in form and dimensions. It is sometimes ornamented by carving, as in No. 56772 [536], or by incised patterns, as in Fig. 222, No. 56538 [98], and generally has one or two deep longitudinal notches in the thickest part, in which the lines can be drawn snugly down. It usually is joined to the shaft by a stout, wedge-shaped tang, which fits into a corresponding cleft in the shaft, and is secured by wooden treenails and a wrapping of seal thong or sinew braid, sometimes made more secure by passing



FIG. 221.—Walrus-harpoon head, with line.

one end through holes in the foreshaft. No. 56768 [532] is peculiar in having the tang on the shaft and the corresponding cleft in the foreshaft. The shaft itself varies little in shape and proportions, and at



FIG. 222.—Foreshaft of walrus harpoon.

the present day is sometimes made of ash or other hard wood obtained from the ships. The line catch is generally a little hook of ivory or hard bone like the one described, but two specimens have small screws fastened into the shaft to serve this purpose. The finger rest is ordinarily of the same shape as on the type and fastened on in the same way, but No. 56771 [535] has this made of a knob of ivory elaborately carved into a seal's head. The eyes are represented by round bits of ivory with pupils drilled in them inlaid in the head. This is evidently the knob of a seal drag (see below) as the longitudinal perforation from chin to nape now serves no purpose. It is fastened on by a lashing of whalebone, which runs round the shaft and through a transverse hole in the knob.

Harpoons closely resembling these in type are used by the Eskimo of western North America wherever they habitually hunt the walrus. At many places this heavy spear is armed at the butt with a long sharp pick of ivory like the smaller seal spear. Two of these large harpoons appear to be rigged especially for the pursuit of the bearded seal, as they have heads which are of precisely the same shape and material as the small seal harpoons in the collection. Both these heads have lanceolate iron blades, conoidal antler bodies with double barbs, and are more slender than the walrus harpoon heads. No. 56770 [534], Fig. 219, has a head 4 inches long and 0.7 broad at the widest part, and fastened to a very long line (12 fathoms long) without a leader, the end being simply passed through the line hole and seized down to the standing part with sinew braid. This is the method of attaching the head of the small seal harpoons. This line is so long that it may have been held in the boat and not attached to a float. No. 56768 [532], however, has a leader with a becket of the ordinary style. Fig. 223, No. 56611 [89], is a head similar to those just described, and probably, from its size, intended for large seals. It is highly ornamented with the usual reddened incised pattern.

The throwing harpoon for small seals is an exact copy in miniature of the walrus harpoon, with the addition of a long bayonet-shaped pick of ivory at the butt. The line, however, is upwards of 30 yards long, and the end never leaves the hand. The line is hitched round the shaft back of the line catch, which now only serves to keep the line from slipping forward, as the shaft is never detached from the line. This harpoon is used exclu-



FIG. 223.—Harpoon head for large seals.

sively for retrieving seals that have been shot in open holes or leads of water within darting distance from the edge of the solid ice, and is thrown precisely as the walrus harpoon is, except that the end of the line is held in the left hand. In traveling over the ice the line with the head attached is folded in long hanks and slung on the gun case at the back. The rest of the weapon is carried in the hand and serves as a staff in walking and climbing among the ice, where the sharp pick is useful to prevent slipping and to try doubtful ice, and also enables the hunter to break away thin ice at the edge of the hole, so as to draw his game up to the solid floe. It can also serve as a bayonet in case of necessity. This peculiar form of harpoon is confined to the coast from Point Barrow to Bering Strait, the only region where the seal is hunted with the rifle in the small open holes of water.¹

Since my note in the *Naturalist* was written, I have learned from Mr. Henry Balfour, of the museum at Oxford, that their collection contains two or three specimens of this very pattern of harpoon, undoubtedly collected by some of the officers of the *Blossom*. Consequently, my theory that the retrieving harpoon was a modern invention, due to the introduction of firearms, becomes untenable, as the *Blossom* visited this region before firearms were known to the Eskimo. It was probably originally intended for the capture of seals "hauled out" on the ice in the early summer. There is no doubt, however, that it is at the present day used for nothing but retrieving.

Though this weapon was universally used at Point Barrow, we happened to obtain only two specimens, possibly because the natives thought them too necessary an implement to part with lightly. No. 89907 [1695], Figs. 224, 225, has a new shaft, etc., but was used several times by the maker before it was offered for sale. Such a retrieving harpoon is called *nañilga*. The shaft (*ipúa*) is of ash, 4 feet 5 inches long and 1 inch in diameter, tapering very slightly to each end. The ice pick (*túu*) of walrus ivory, 14 inches long and 1 inch wide, has a round tang fitting into a hole in the butt of the shaft. Close to the shaft a small hole is drilled in one edge of the pick, and through this is passed a bit of sea' thong, the ends of which are laid along the shaft and neatly whipped down with sinew braid, with the end wedged into a slit in the wood.

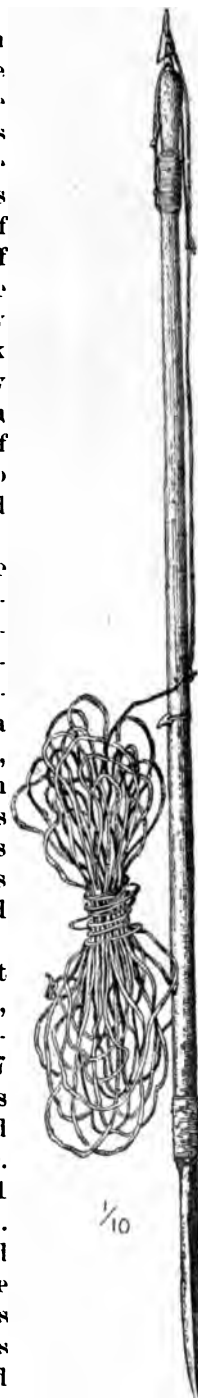


FIG. 224.—Retrieving seal harpoon.

¹ See the writer's note on this weapon. *American Naturalist*, vol. 19, p. 423.



FIG. 225. - Details of retrieving seal harpoon.

The foreshaft (*ukumailuta*) is of walrus ivory, $4\frac{1}{2}$ inches long and $1\frac{1}{2}$ inches in diameter at the thickest part, and secured to the shaft by a whipping (*ni'mxa*) of seal thong. The loose shaft (*igimú*) is also of ivory and 2 inches long and secured by a thong (*ipíuta*) spliced into a loop through the hole at the butt, as previously described. The end is hitched round the tip of the shaft with a marling hitch, followed by a clove hitch below the whipping. The ivory finger rest (*ti'ka*) is made of walrus ivory and is secured with a lashing of whip cord (*w*) passing round the shaft. The line (*terbwíñ*), which was of ivory, is like those on the walrus harpoon, and was lost in transportation. The head is only in size from those just described, but is intended for the bearded seal, except that it has a hexagonal body. It is 3.3 inches long and has a blade of iron fastened to the end of walrus ivory with a single whipping. While there is no detachable head, the head is attached by a separate piece of the same material to the line (*túkaksia*), which is 86 feet 10 inches long and made of a single piece of fine seal thong about one-eighth inch thick. This shorter piece is about 27 inches long and is passed through the line hole and doubled so that one part is a little the longer. It is fastened strongly to the end of the line by a complicated splice made as follows: A slit is cut in the end of the main line through which are passed both ends of the short line. The longer part is then slit about 2 inches from the end and the shorter part passed through the slit, and a slit cut close to the end of it, through which the longer end is passed. The whole is then drawn taut and the longer end clove hitched round the main line.

No. 89908 [1058] is one of these spears rigged ready for darting. The line is secured at about the middle of the shaft with a couple of marling hitches. This specimen, except the head, is new and was rather carelessly made for the market. It has neither line catch nor finger rest. The

foreshaft and ice pick are lashed in with sinew braid, which is first knotted round the tip of the shaft and then hitched round with a series of left-handed soldier's hitches. The end of the thong which holds the loose shaft is passed through the hole in it and knotted and the other end hitched into the pulley at the smallest part of the foreshaft. The head is like that of the preceding, but has a conoidal body of reindeer antler, a common material for seal-harpoon heads, and the line, which is of stout sinew braid



FIG. 226.—Jade blade for seal harpoon.

43 feet long, is attached to it simply by passing the end through the line hole and tying it with a clove hitch to the standing part $9\frac{1}{2}$ inches from the head. This spear is about the same size as the preceding. These weapons are all of the same general pattern, but vary in length according to the height of the owner. The heads for these harpoons, as well as for the other form of seal harpoon, are usually about 3 inches long, and, as a rule, have lanceolate blades. The body is generally conoidal, often made of reindeer antler, and always, apparently, with a double barb. It is generally plain, but sometimes ornamented like the walrus-harpoon heads.

No. 89784 [1008] was made by Ilû'bw'ga, the Nunatañmeun, when thinking of coming to winter at Utkiavwñ. He had had no experience in sealing, having apparently spent all his winters on the rivers inland, and this harpoon head seems to have been condemned as unsatisfactory by his new friends at Utkiavwñ. It looks like a very tolerable naula, but is unusually small, being only $2\frac{1}{2}$ inches long.

We saw only one stone blade for a seal harpoon, No. 89623 [1418], Fig. 226. This is of light olive green jade, and triangular, with peculiarly dull edges and point. Each face is concaved, and there is a hole for a rivet. (Compare the jade-bladed harpoon figured by Nordenskiöld and referred to above.) It is 2 inches long and 0.7 inch wide at the base. It appears to have been kept as an amulet. The other form of seal harpoon comes properly under the next head.

THRUSTING WEAPONS.

Harpoons.—For the capture of seals as they come up for air to their breathing holes or cracks in the ice a harpoon is used which has a short wooden shaft, armed, as before, with an ice pick and a long, slender, loose shaft suited for thrusting down through



FIG. 227.—Seal harpoon for thrusting.

the small breathing hole. It carries a *naúlæ* like the other harpoon, but has only a short line, the end of which is made fast permanently to the shaft. Such harpoons are used by all Eskimo wherever they are in the habit of watching for seals at their breathing holes. The slender part of the shaft, however, is not always loose.¹ The foreshaft is simply a stout ferrule for the end of the shaft. These weapons are in general use at Point Barrow and are very neatly made.

We obtained two specimens, of which No. 89910 [1694], Fig. 227, will serve as the type. The total length of this spear when rigged for use is 5 feet 3 inches. The shaft is of spruce, 20½ inches long and 1.1 inches in the middle, tapering to 0.9 at the ends. At the butt is inserted, as before, an ivory ice pick (*túu*) of the form already described, 13¾ inches long and lashed in with sinew braid. The foreshaft (*kátó*) is of walrus ivory, nearly cylindrical, 5¾ inches long and 0.9 inch in diameter, shouldered at the butt and fitted into the tip of the shaft with a round tang. The latter is very neatly whipped with a narrow strip of white whalebone, which makes eleven turns and has the end of the last turn forced into a slit in the wood and wedged with a round wooden peg. Under this whipping is the bill of a tern as a charm for good luck. (As the boy who pointed this out to me said, "Lots of seals.")

The loose shaft (*igimú*) is of bone, whale's rib or jaw, and has two transverse holes above the shoulder to receive the end of the assembling line (*sábromia*), which not only holds the loose shaft in place, but also connects the other parts of the shaft so that in case the wood breaks the pieces will not be dropped. It is a long piece of seal thong, of which one end makes a turn round the loose shaft between the holes; the other end is passed through the lower hole, then through the upper and carried down to the tip of the shaft, where it is hitched just below the whalebone whipping, as follows: three turns are made round the shaft, the first over the standing part, the second under, and the third over it; the end then is passed under 3, over 2, and under 1 (Fig. 228), and all drawn taut; it then runs down the shaft almost to the butt-lashing and is secured with the same hitch, and the end is whipped around the butt of the ice pick with five turns. The head (*naúlæ*) is of the ordinary pattern, 2.8 inches long, with a copper blade and antler body. The line (*túkaktín*) is a single piece of seal thong 9 feet long, and is fastened to the head without a leader, by simply passing the end through the line-hole, doubling it over and stopping it to the standing part so as to make a becket 21 inches long. The other end is made fast round the shaft and assembling line just back of the middle, as follows: An eye is made at the end of the line, by cutting a slit close to the tip and pushing a bight of the line through this. The end then makes a turn round the shaft, and the other end, with the head, is passed through this eye and drawn taut. When mounted for use, the head is fitted on the tip of the loose shaft as usual

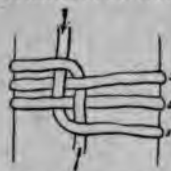


FIG. 228.—Diagram of lashing on shaft.

¹ Parry. Second Voyage, p. 507, Iglulik.

and the line brought down to the tip of the shaft and made fast by two or three round turns with a bight tucked under, so that it can be easily slipped. It is also confined to the loose shaft by the end of the assembling line, which makes one or two loose turns round it. The slack of the line is doubled into "fakes" and tucked between the shaft and assembling line.



FIG. 229.—
Model of a
seal har-
poon.

The other specimen is of the same pattern, but slightly different proportions, having a shaft $18\frac{1}{2}$ inches long and a pick 19 inches long. The loose shaft is of ivory, and there are lashings of white whalebone at each end of the shaft. The assembling line is hitched round the foreshaft as well as round the two ends of the shaft, and simply knotted round the pick. The line is of very stout sinew braid, and has an eye neatly spliced in the end for looping it round the shaft. Fig. 229, No. 89551 [1082], is a model of one of these harpoons, made for sale. It is $16\frac{1}{4}$ inches long, and correct in all its parts, except that the whole head is of ivory, even to having the ends of the shaft whipped with light-colored whalebone. The shaft is of pine and the rest of walrus ivory, with lines of sinew braid. We also collected four loose shafts for such harpoons. One of these, No. 89489 [802], is of whale's bone and unusually short, only 14 inches long. It perhaps belonged to a lad's spear. The other three are long, 20 to 25 inches, and are made of narwhal ivory, as is shown by the spiral twist in the grain.

The harpoon used for the whale fishery is a heavy, bulky weapon, which is never thrown, but thrust with both hands as the whale rises under the bows of the umiak. When not in use it rests in a large ivory crotch, shaped like a rowlock, in the bow. The shaft is of wood and 8 or 9 feet long, and there is no loose shaft, the bone or ivory foreshaft being tapered off to a slender point of such a shape that the head easily unships. This foreshaft is not weighted, as in the walrus harpoon, since this is not necessary in a weapon which does not leave the hand. The harpoon line is fitted with two inflated sealskin floats.

No complete, genuine whaling harpoons were ever offered for sale, but a man at Nuwuk made a very excellent reduced model about two-thirds the usual size (No. 89909 [1023], Fig. 230), which will serve as the type of this weapon

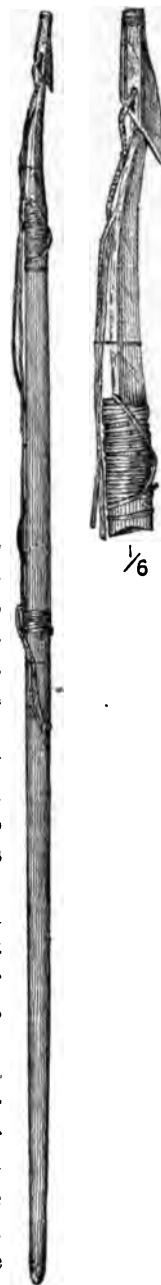


FIG. 230.—Large
model of a whale har-
poon.

(a'jyññ). This is 6 feet 11 inches in length when rigged for use. The



shaft is of pine, 5 feet 8½ inches long, with its greatest diameter (1½ inches) well forward of the middle and tapered more toward the butt than toward the tip, which is chamfered off on one side to fit the butt of the foreshaft (igimñ), and shouldered to keep the lashing in place. The foreshaft is of whale's bone, 11½ inches long, three-sided with one edge rounded off, and tapers from a diameter of 1 inch to a tapering rounded point ½ inches long, and slightly curved away from the flat face of the foreshaft. It will easily be seen that the shape of this tip facilitates the unshipping of the head. The butt is chamfered off on the flat face to fit the chamfer of the shaft, and the whole foreshaft is slightly curved in the same direction as the tip. It is secured to the shaft by a stout whipping of seal thong. The head is 7 inches long, and has a body of walrus ivory, which is ornamented with incised patterns colored red with ochre, and a blade of dark reddish brown jasper, neatly flaked. This blade is not unlike a large arrow head, being triangular, with curved edges, and a short, broad tang imbedded in the tip of the body, which is secured round with sinew braid. The body is unusually long and slender and is four-sided, with a single long, sharp barb, keeled on the outer face. The line hole and line grooves are in the usual position, but the peculiarity of the head is that the blade is inserted with its point in the plane of the body, and that the handle of the shaft has not reached the last stage of the carved part of the

the head. The handle of the shaft is not attached to the shaft, but is attached to the shaft by a stout whip of seal thong.

through the line hole, doubled in the middle, the two parts are firmly stopped together with sinew in four places, and in the ends are cut long slits for looping on the floats. When the head is fitted on the foreshaft the line is secured to the flat face of the foreshaft by a little stop made of a single strand of sinew, easily broken. About 28 inches from the tip of the shaft the line is doubled forward and the bight stopped to the shaft with six turns of seal thong, so that the line is held in place and yet can be easily detached by a straight pull. The ends are then doubled back over the lashing and stopped to the shaft with a single thread of sinew.

Fig. 231 is a toy model of the whale harpoon, No. 56562 [233], $18\frac{1}{2}$ inches long, made of pine and ivory, and shows the manner of attaching the floats, which are little blocks of spruce roughly whittled into the shape of inflated seal-skins. A piece of seal thong $13\frac{1}{2}$ inches long has its ends looped round the neck of the floats and the harpoon-line is looped into a slit in the middle of this line.



FIG. 232.—Flint blade for whale harpoon.

We collected thirteen heads for such harpoons, which have been in actual use, of which two have flint blades like the one described, two have brass blades, and the rest either blades of slate or else no blades. The flint blades are either triangular like the one described or lanceolate and are about 3 inches long exclusive of the tang. The three separate flint blades which we obtained (Fig. 232, No. 56708 [114], from Utkiavwñ, is one of these, made of black flint) are about 1 inch shorter and were perhaps intended for walrus harpoons, though we saw none of these with flint blades. They are all newly made for the market.



FIG. 233.—Slate blade for whale harpoon.

The slate blades of which we collected eleven, some old and some new, besides those in the heads, are all triangular, with curved edges, as in Fig. 233 (No. 56709 [139] from Utkiavwñ, made of soft purple slate), except one new one, No. 56697a [188a], which has the corners cut off so as to give it a rhomboidal shape. The corners are sometimes rounded off so that they are nearly heart-shaped. These blades are usually about $2\frac{3}{4}$ inches long and 2 broad; two unusually large ones are 3 inches long and nearly $2\frac{1}{4}$ broad, and one small one 2.1 by 1.6 inches, and are simply wedged into the blade slit without a rivet. The brass blades are of the same shape.

The common material for the body seems to have been rather coarse whale's bone, from the rib or jaw. Only two out of the thirteen have ivory bodies, and these are both of the newer brass-bladed pattern. The body is very long and slender, being usually about 8 or $8\frac{1}{2}$ inches long (one is $9\frac{1}{4}$ inches long) and not over $1\frac{1}{2}$ inches broad at the widest part.

It is always cut off very obliquely at the base, and the part in front of the line hole is contracted to a sort of shank, as in Fig. 234 (No. 89747 [1044]), a head with slate blade (broken) and bone body. This represents a very common form in which the shank is four-sided, while back of the middle the outer face of the barb rises into a ridge, making this part of the body five-sided. The edges of the shank are sometimes rounded off so as to make this part elliptical in section, and all the edges of the body except the keel, on the outer face of the barb, are frequently rounded off as in Fig. 235a, No. 89745 [1044], which has a slate blade wedged into the bone body with a bit of old cloth and a wooden wedge. Fig. 235b, No. 56602 [157], from Utkiavwīn, is a head of the same shape, but has a brass blade and a body of ivory. This blade is wedged in with deer hair, but the other brass-bladed harpoon, No. 56601 [137], has a single rivet of whalebone.

The blade slit, and consequently the blade, is always in the plane of the barb, which position, as I have said before, corresponds to the last step but one in the develop-

ment of the harpoon-head. When the blade is of flint and inserted with a tang, the tip of the body is always whipped with sinew braid, as in Fig. 212, No. 89748 [928], from Nuwūk. This specimen is remarkable as being the only one in the series with a double point to the barb. These bodies are sometimes ornamented with incised lines, in conventional patterns, as shown in the different figures. A short incised mark somewhat resembling an arrow (see above, Fig. 234, No. 89747 [1044]) may have some significance as it is repeated on several of the heads. Harpoon-heads of this peculiar pattern are to be found in the Museum collection from other localities. As we should naturally expect, they have been found at the Diomed Islands, St. Lawrence Island, and Plover Bay. It is very interesting, however, to find a specimen of precisely the same type from Greenland, where the modern harpoons are so different from those used in the west.

That the line connecting the head with the float line is not always so



FIG. 234.—Body of whale harpoon head.



FIG. 235.—Whale harpoon heads.

long in proportion as represented on the two models is shown by Fig. 236, No. 89744 [969], the only specimen obtained with any part of the line attached. A piece of stout walrus-hide thong 2 feet long is passed through the line-hole and doubled in two equal parts, which are firmly stopped together with sinew about 2 inches from the head. Another piece of similar thong 4 feet 2 inches long is also doubled into two equal parts and the ends firmly spliced to those of the short piece thus: The two ends of the long piece are slit and one end of the short piece passed through each slit. One of these ends is then slit and through it are passed the other end of the short piece and

the bight of the long piece, and all is drawn taut and securely seized with sinew. The

bucket thus formed was probably looped directly into the bight of the float line.

The foreshaft is much larger than that of the model, though of the same shape. No. 56537 [97], Fig. 237, from Utkiaywñi, is of walrus-ivory and 15.8 inches long with a diameter of $1\frac{1}{2}$ inches at the butt. The oblong slot at the beginning of the chamfer is to receive the end of the lashing which secured this to the shaft. This form of foreshaft is very well adapted to insure the unshipping of the toggle-head, but lacks the special advantage of the loose-shaft, namely, that under a violent lateral strain it unships without breaking. The question at once suggests itself, why was not the improvement that is used on all the other harpoons applied to this one? In my opinion, the reason for this is the same as for retaining the form of toggle-head, which, as I have shown, is of an ancient pattern.

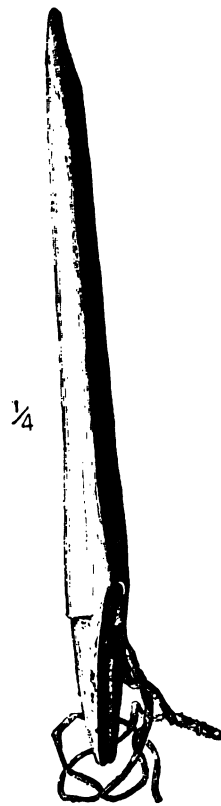


FIG. 237.—Foreshaft of whale harpoon.

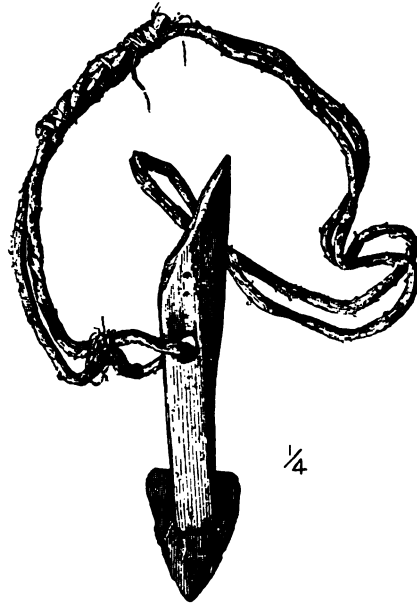


FIG. 236.—Whale harpoon head with "leader."

That is to say, the modern whale harpoon is the same pattern that was once used for all harpoons, preserved for superstitious reasons. It is a well known fact, that among many peoples implements, ideas, and language have been preserved in connection with religious

ceremonies long after they have gone out of use in every-day life. Now, the whale fishing at Port Barrow, in many respects the most important undertaking in the life of the natives, is so surrounded by superstitious observances, ceremonies to be performed, and other things of the same nature as really to assume a distinctly religious character. Hence, we should naturally expect to find the implements used in it more or less archaic in form. That this is the case in regard to the toggle-head I think I have already shown. It seems to me equally evident that this foreshaft, which contains the loose shaft and foreshaft, undifferentiated, is also the older form.

Why the development of the harpoon was arrested at this particular stage is not so easily determined. A natural supposition would be that this was the form of harpoon used by their ancestors when they first began to be successful whalers.

That they connect the idea of good luck with these ancient stone harpoons is shown by what occurred at Point Barrow in 1883. Of late years they have obtained from the ships many ordinary "whale-irons," and some people at least had got into the habit of using them.

Now, the bad luck of the season of 1882, when the boats of both villages together caught only one small whale, was attributed to the use of these "irons," and it was decided by the elders that the *first* harpoon struck into the whale must be a stone-bladed one such as their forefathers used when they killed many whales.

In this connection, it is interesting to note a parallel custom observed at Point Hope. Hooper¹ says that at this place the beluga must always be struck with a *flint* spear, even if it has been killed by a rifle shot.

Lances.—As I have said on a preceding page, some of the natives now use bomb-guns for dispatching the harpooned whale, and all the whaleboats are provided with steel whale lances obtained from the ships. In former times they used a large and powerful lance with a broad flint head. They seem to have continued the use of this weapon, probably for the same reasons that led them to retain the ancient harpoon for whaling until they obtained their present supply of steel lances, as we found no signs of iron whale lances of native manufacture, such as are found in Greenland and elsewhere. We obtained nine heads for stone lances (*kaluwig*) and one complete lance, a very fine specimen (No. 56765 [537], Fig. 238), which was brought down as a present from Nuwük. The broad, sharp head is of light gray flint, mounted on a shaft of spruce 12 feet 6 inches long. It has a broad, stout tang inserted in the cleft end of the

FIG. 238.—Whale Iron

¹ Corwin Report, p. 41.

shaft. The shaft is rhomboidal in section with rounded edges, and tapers from a breadth of 2 inches and a thickness of 1 at the tip to a butt of 0.7 inch broad and 1 thick. The tip of the shaft has a whipping of sinew-braid $1\frac{3}{4}$ inches deep, "kackled" down on both edges, one end of the twine on each edge, so that the hitch made by one end crosses the round turn of the other, making in all twenty-six turns. The shaft has been painted red for $1\frac{1}{2}$ inches below the whipping.

No. 89596 [1032] is the head and 5 inches of the shaft of a similar lance. The head is of black flint, and the sinew-braid forms a simple whipping. The remaining heads are all unmounted. I have figured several of them to show the variations of this now obsolete weapon. Fig. 239, No. 56677 [49], from Utkiavwñ, is of gray flint chipped in large flakes. The total length is 6.9 inches. The small lugs on the edges of the tang are to keep it from slipping out of the whipping.

No. 56679 [239], also from Utkiavwñ, is of black flint and broader than the preceding. Its length is 6.3 inches. No. 56680 [394], from the same village, is of light bluish gray flint and very broad. It



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FIG. 239.—Flint head of whale lance.

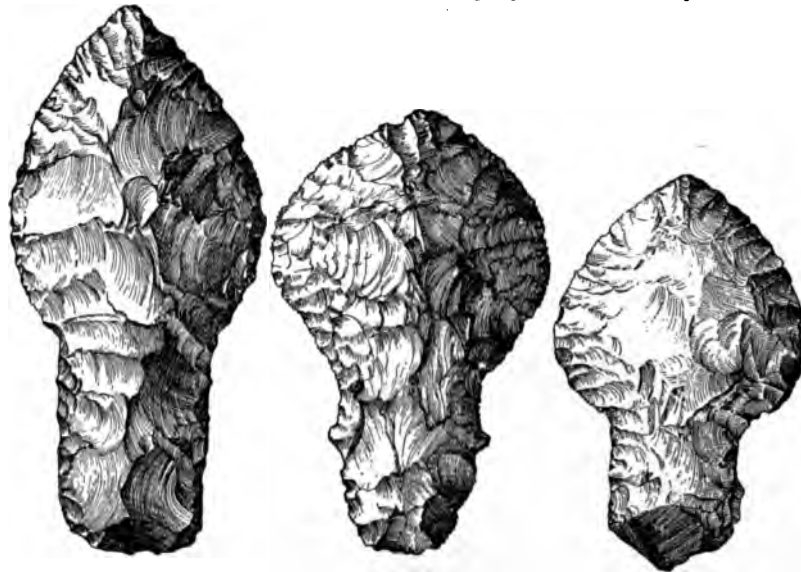


FIG. 240.—Flint heads for whale lances.

is 5.4 inches long. No. 56681 [5], from Utkiavwñ, is another broad

head of black flint, 6 inches long. Fig. 240a, No. 89597 [1034], from Nuwük, is of black flint, and unusually long in proportion, running into the tang with less shoulder than usual. Much of the original surface is left untouched on one face. This is probably very old. No. 89598 [1361] is a head of similar shape of dark gray flint from Sidaru. It is 6 inches long. Fig. 240b, No. 89599 [1373], from the same place and of similar material, is shaped very like the head of a steel lance. It is 5 inches long. Fig. 240c, No. 89600 [1069], from Utkiawwñ, is still broader in proportion and almost heart-shaped. It is of bluish gray flint and 4·8 inches long. These heads probably represent most of the different forms in use. Only two types are to be recognized among them, the long-pointed oval with a short tang, and the broad leaf-shaped head with a rather long tang, which appears to be the commoner form.

We obtained one newly made lance of a pattern similar to the above, but smaller, which was said to be a model of the weapon used in attacking the polar bear before the introduction of firearms. The name, pú'nnú, is curiously like the name panna given by Dr. Simpson and Capt. Parry to the large double-edged knife. The specimen, No. 89895 [1230], Fig. 241, came from Utkiawwñ. It has a head of gray flint 3½ inches long, exclusive of the tang, roughly convex on one face, but flat and merely beveled at the edges on the other. The edges are finely serrate. The shaft is of spruce, 6 feet 8 inches long, rounded and somewhat flattened at the tip, which is 1 inch wide and tapering to a diameter of 0·7 at the butt, and is painted red with ochre. The tip has a slight shoulder to keep the whipping in place. The tang is wedged in with bits of leather and secured by a close whipping of sinew braid 1¼ inches deep. Fig. 242, No. 89611 [1034], from Nuwük, was probably the head of such a lance, although it is somewhat narrower and slightly shorter. Its total length is 3·4 inches. The other two large lance-heads, No. 56708a [114a] and No. 56708b [114b], are both new, but were probably meant for the bear lance. They are of gray flint, 3½ inches long, and have the edges regularly serrate.

One form of lance is still in general use. It has a sharp metal head, and a light wooden shaft about 6 feet long. It is used in the kaiak for stabbing deer swimming in the water, after the manner frequently noticed among other Eskimo.¹ A pair of these spears is carried in beackets on the forward deck of the kaiak. On approaching a deer one of them is slipped out of the becket and laid on the deck, with the butt resting on the combing of



FIG. 241.—
Bear
lance.



FIG. 242.—Flint
head for bear lance.

¹ Parry, 2d Voy., p. 512 (Iglulik); Kumlien, Contributions, p. 54 (Cumberland Gulf); Schwatka, Science, vol. 4, No. 98, p. 544 (King Williams Land).

the cockpit. The hunter then paddles rapidly up alongside of the deer, grasps the lance near the butt, as he would a dagger, and stabs the animal with a quick downward thrust. This spear is called *kā'pun*, which in the Point Barrow dialect exactly corresponds to the Greenlandic word *kapût*, which is applied to the long-bladed spear or long knife used for dispatching a harpooned seal.¹ The word *kā'pun* means simply "an instrument for stabbing."

No. 73183 [524], Figs. 243a, 243b (head enlarged), will serve as a type of this weapon, of which we have two specimens. All that we saw were essentially like this. The head is iron, $4\frac{3}{4}$ inches long exclusive of the tang, and $1\frac{1}{2}$ inches broad. The edges are narrowly beveled on both faces. The shaft is 6 feet 2 inches long, and tapers from a diameter of 0.8 inch about the middle to about one-half inch at each end. The tip is cleft to receive the tang of the head, and shouldered to keep the whipping from slipping off. The latter was of sinew braid and 2 inches deep. The shaft is painted with red ocher.

The other has a shaft 6 feet 4 inches long, but otherwise resembles the preceding. The heads for these lances are not always made of iron. Copper, brass, etc., are sometimes used. No. 56699 [166] is one of a pair of neatly made copper lance heads. It is 5.9 inches long and $1\frac{1}{2}$ wide, and ground down on each face to a sharp edge without a bevel, except just at the point. Before the introduction of iron these lances had stone heads, but were otherwise of the same shape. Fig. 244 represents the head and 6 inches of the shaft of one of these (No. 89900 [1157] from Nuwük). The shaft is new and rather carelessly made of a rough, knotty piece of spruce, and is 5 feet $5\frac{3}{4}$ inches long. The head is of black flint and 2 inches long, exclusive of the tang, and the tip of the shaft is whipped with a narrow strip of light-colored whalebone, the end of which is secured by passing it through a slit in the side of the shaft and wedging it into a crack on the opposite side. This is an old head newly mounted for the market, and

the head is wedged in with a bit of blue flannel.

No. 89897 [1324], Fig. 245, from Utkiavwû, on the other hand, is an old shaft 5 feet $7\frac{1}{2}$ inches long, fitted with a new head, which is very broad, and shaped like the head of a bear lance. It is of variegated

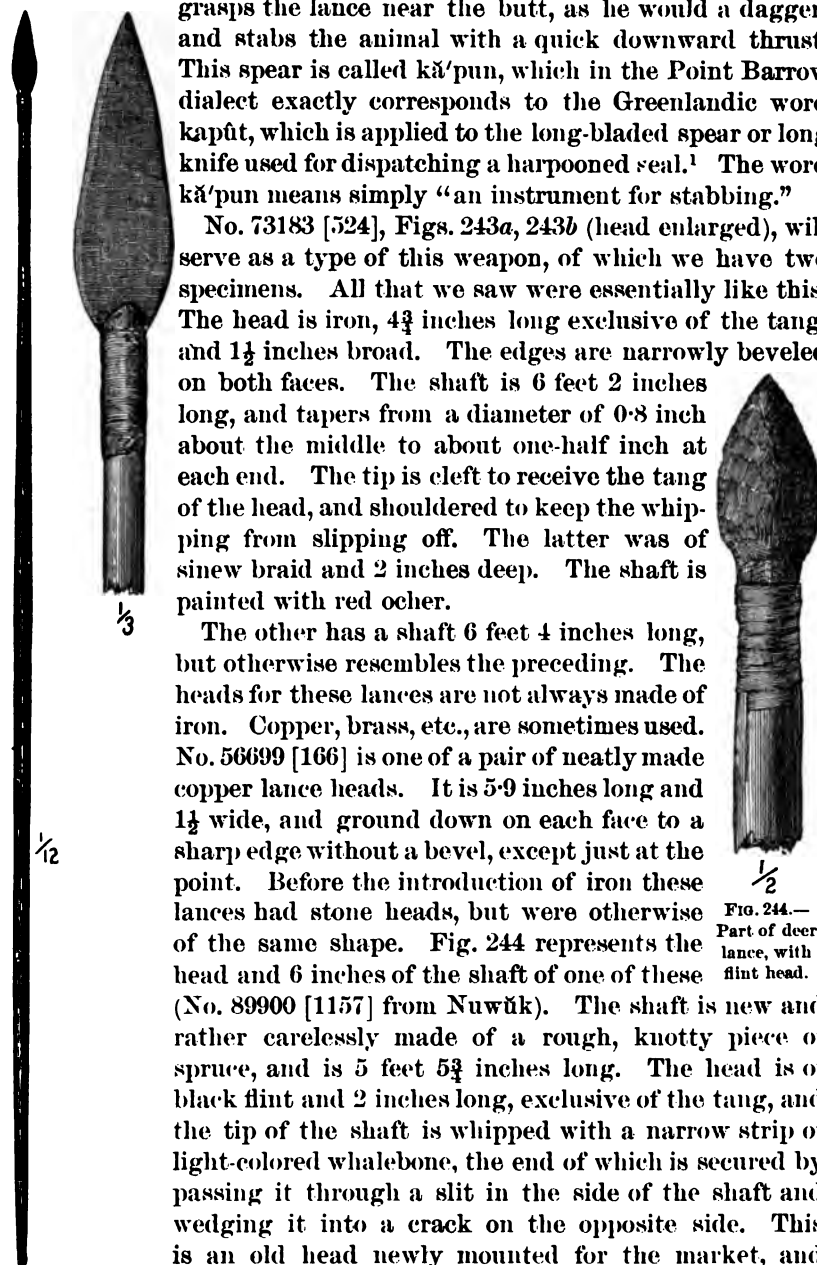


FIG. 243.—Deer lance.

FIG. 244.—Part of deer lance, with flint head.

¹ Crantz, vol. 1, p. 147, Pl. v, Fig. 5; and Kane, 1st Grinnell Exp., p. 479 (fig. at bottom).

jasper, brown and gray, and has a piece of white sealskin lapped over the cleft of the shaft at each side of the tang so that the edges of the two pieces almost meet in the middle. They are secured by a spaced whipping of sinew braid. This shaft, which is painted red, evidently had a broad head formerly, as it is expanded at the tip. No. 89896 [1324] is the mate to this, evidently made to match it. We also obtained one other flint-headed lance. The mate to No. 89900 [1157], No. 89898 [1157], has a head of dark gray slate 2.3 inches long. This spear appears to be wholly old, except the whipping of sinew braid. The shaft is of spruce, 5 feet 4½ inches long, and painted red with ochre. We also collected three stone heads for such lances. Fig. 246, No. 38711 [148], from Utkiavvū, shows the shape of the tang. It is of gray flint, and 3.7 inches long. No. 89610 [1154] is a beautiful lance head of polished olive green jade, 4.3 inches long. The hole in the tang is probably not intended for a rivet, as none of the lance heads which we saw were fastened in this way. It is more likely that it was perforated for attaching it to the belt as an amulet. We were told that this lance head was brought from the west. A large slate lance head found by Nordenskiöld¹ in the old "Onkilon" house at North Cape is of precisely the same shape as these deer-lance heads, but from its size was probably intended for a whale lance.

FIG. 245.—Deer lance, flint head.



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THROWING WEAPONS.

The only throwing weapon which these people use is a small bolas, designed for catching birds on the wing. This consists of six or seven small ivory balls, each attached to a string about 30 inches long, the ends of which are fastened together to a tuft of feathers, which serves as a handle and perhaps directs the flight of the missile. When not in use the strings are shortened up, as in Fig. 247, No. 75969 [1793], for convenience in carrying and to keep them from tangling, by tying them into slip knots, as follows: All the strings being straightened out and laid parallel to each other, they are doubled in a bight, with the end under the standing part, the bight of the end passed through the preceding bight, which is drawn up close, and so on, usually five or six times, till the strings are sufficiently shortened. A pull on the two ends slips all these knots and the strings come out straight and untangled.

The bolas is carried knotted up in a pouch slung round the neck, a native frequently carrying several sets. When a flock of ducks is seen approaching, the handle is grasped in the right



FIG. 246.—Flint head for deer lance.

¹ Vega, vol. 1, p. 444, Fig. 7.

hand, the balls in the left, and the strings are straightened out with a quick pull. Letting go with the left hand the balls are whirled round the head and let fly at the passing flock. The balls spread apart in flying through the air,

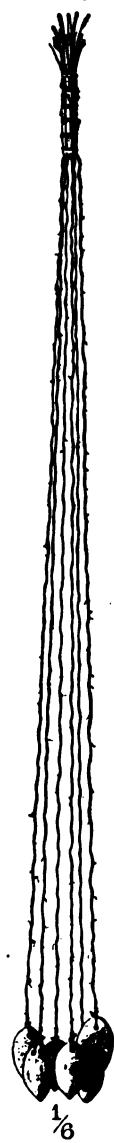


FIG. 248.—Bird bolas, ready for use.

so as to cover considerable space, like a charge of shot, and if they are stopped by striking a duck, the strings immediately wrap around him and hamper his flight so that he comes to the ground. The natives said that the balls flew with sufficient force to stun a duck or break his wing, but we never happened to see any taken except in the way just described. A duck is occasionally left with sufficient freedom of motion to escape with the bolas hanging to him. The weapon is effective up to 30 or 40 yards, but the natives often throw it to a longer distance, frequently missing their aim. It is universally employed, especially by those who have no guns, and a good many ducks are captured with it. In the spring, when the ducks are flying, the women and children hardly ever stir out of the house without one or more of these.

We brought home one specimen of this implement (kelautau'tin), No. 75969 [1793], Fig. 248, which is new and has the balls rather carelessly made. The balls, which are six in number, are of walrus ivory, 1.6 to 1.8 inches long and 1 inch in diameter (except one which is flattened, 2 inches long and 1.3 wide; they are usually all of the same shape). Through the larger end is drilled a small hole, the ends of which are joined by a shallow groove running over the end, into which the ends of the strings are fastened by three half-hitches each. There is one string of sinew braid to each set of two balls, doubled in the middle so that all six parts are equal and about 28 inches long. They are fastened to the feather handle as follows: Nine wing feathers of the eider duck are laid side by side, butt to point, and doubled in the middle so that the quills and vanes stand up on all sides. The middle of each string is laid across the bight of the feathers, so that the six parts come out on all sides between the feathers. The latter are then lashed tightly together with a bit of sinew braid, by passing the end over the bend of the feathers and tying with the rest of the string round the feathers.

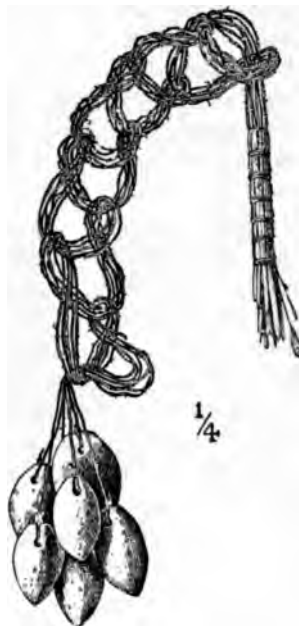


FIG. 247.—Bird bolas, looped up for carrying.

These weapons are generally very much like the specimen described, but vary somewhat in the shape and material of the balls, which are sometimes simply ovoid or spherical, and often made of single teeth of the walrus, instead of tusk ivory. Bone is also sometimes used. In former times, the astragalus bones of the reindeer, perforated through the ridge on one end were used for balls. No. 89490 [1342], is a pair of such bones tied together with a bit of thong, which appear to have been actually used. No. 89537 [1251] from Utkiavwiñ is a very old ball, which is small (1.1 inches long) and unusually flat. It appears to have been kept as a relic.

There is very little information to be found concerning the extent of the region in which this implement is used, either in the Museum collections or in the writings of authors. A few points, however, have been made out with certainty. The bolas are unknown among all the Eskimo east of the Anderson River, and the only evidence that we have of their use at this point is an entry in the Museum catalogue, to which I have been unable to find a corresponding specimen. Dease and Simpson, in 1837, did not observe them till they reached Point Barrow.¹ They were first noticed by Beechey at Kotzebue Sound in 1826.² Mr. Nelson's collections show that they are used from Point Barrow along the Alaskan coast, at least as far south as the Yukon delta, and on St. Lawrence Island, while for their use on the coast of Siberia as far as Cape North, we have the authority of Nordenskiöld,³ and the Krause Brothers.⁴

HUNTING IMPLEMENTS OTHER THAN WEAPONS.

Floats.—I have already spoken of the floats (apotú'kpñū) of inflated sealskin used in capturing the whale and walrus. We obtained one specimen, No. 73578 [538] Fig. 249. This is the whole skin, except the

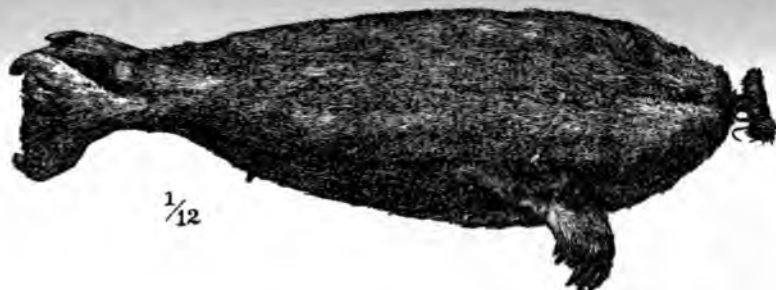


FIG. 249.—Seal skin float.

head, of a male rough seal (*Phoca fœtida*), with the hair out. The carcass was carefully removed without making any incision except round the neck and a few inches down the throat, and skinned to the very

¹ T. Simpson's Narrative, p. 156.

² Voyage, p. 574.

³ Vega, vol. 2, p. 109, and Fig. 3, p. 105.

⁴ Geographische Blätter, vol. 5, pt. 1, p. 32. See also Rosse, Arctic Cruise of the Corwin, p. 34.

toes, leaving the claws on. All natural or accidental apertures are carefully sewed up, except the genital opening, into which is inserted a ring of ivory, which serves as a mouthpiece for inflating the skin and is corked with a plug of wood. The cut in the throat is carefully sewed up, and the neck puckered together, and wrapped with seal thong into a slender shank about 1 inch long, leaving a flap of skin which is wrapped round a rod of bone 4 inches long and 1 in diameter, set across the shank, and wound with thong. This makes a handle for looping on the harpoon line.

All the floats used at Point Barrow are of the same general pattern as this, and are generally made of the skin of the rough seal, though skins of the harbor seal (*P. vitulina*) are sometimes used. One of these floats is attached to the walrus harpoon, but two are used in whaling.¹ Five or six floats are carried in each boat, and are inflated before starting out. I have seen them used for seats during a halt on the ice, when the boat was being taken out to the "lead." The use of these large floats is not peculiar to Point Barrow. They are employed by all Eskimo who pursue the larger marine mammals.

Flipper toggles.—We collected two pairs of peculiar implements, in the shape of ivory whales about 5 inches long, with a perforation in the belly through which a large thong could be attached. We understood that they were to be fastened to the ends of a stout thong and used when a whale was killed to toggle his flippers together so as to keep them in place while towing him to the ice, by cutting holes in the flippers and passing the ivory through. We unfortunately never had an opportunity of verifying this story. Neither pair is new. Fig. 250a represents a pair of these implements (*kă'gotfñ*) (No. 56580 [227]). They are of white walrus ivory. In the middle of each belly is excavated a deep, oblong cavity about three-fourths of an inch long and one-half wide, across the middle of which is a stout transverse bar for the attachment of the line. One is a "bow-head" whale (*Balaena mysticetus*), 4½ inches long, and the other evidently intended for a "California gray" (*Rhachinectes glaucus*). It has light blue glass beads inserted for eyes and is the same length as the other.

Fig. 250 (No. 56598 [407]) is a similar pair, which are both "bowheads" nearly 5 inches long. Both have cylindrical plugs of ivory inserted for eyes, and are made of a piece of ivory so old that the surface is a light chocolate color. The name, *kăgotfñ*, means literally "a pair of toggles."

Harpoon boxes (*u'dlun* or *u'blun*, literally "a nest.")—The slate harpoon blades already described were very apt to be lost or broken, so they always carried in the boat a supply of spare blades. These were kept in a small box carved out of a block of soft wood, in the shape of the animal to be pursued.

¹I learn from our old interpreter, Capt. E. P. Herendeen, who has spent three years in whaling at Point Barrow since the return of the expedition, that a third float is also used. It is attached by a longer line than the others, and serves as a sort of "telltale," coming to the surface some time ahead of the whale.

Fig. 251*a* represents one of these boxes (No. 56505 [138]) intended for spare blades for the whale harpoon. This is rather neatly carved from a single block of soft wood, apparently spruce, though it is very old and much weathered, in the shape of a "bowhead" whale, $9\frac{1}{2}$ inches long. The ends of the flukes are broken short off, and show traces of having been mended with wooden pegs or dowels. The right eye is indicated by a simple incision, but a tiny bit of crystal is inlaid for the left. Two little bits of crystal are also inlaid in the middle of the back. The belly is flat and excavated into a deep triangular cavity, with its base just forward of the angle of the mouth and the apex at the

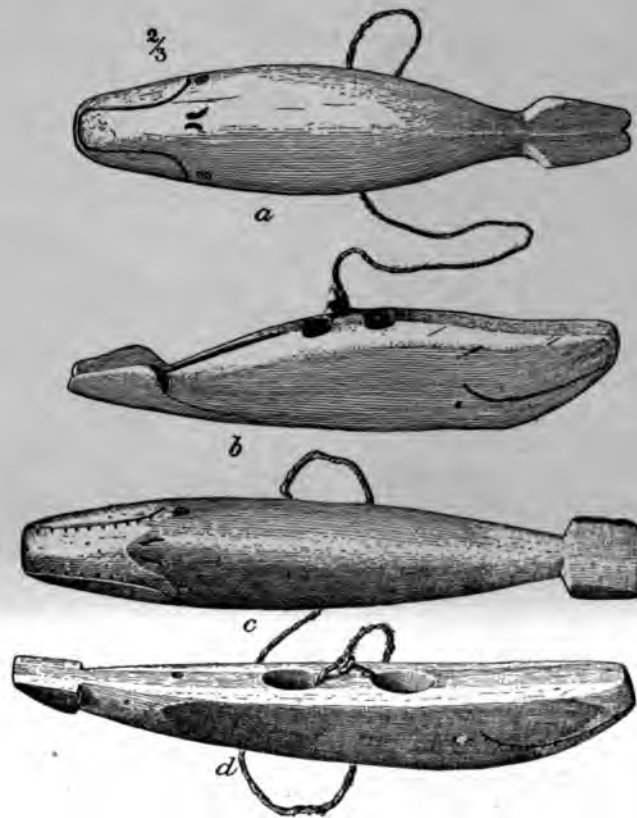


FIG. 250.—Flipper toggles.

"small." It is beveled round the edge, with a shoulder at the base and apex, and is covered with a flat triangular piece of wood beveled on the under face to fit the edge of the cavity. About half of one side of the cover has been split off and mended on with two "stitches" of whalebone fiber. The cover is held on by three strings of seal thong passing through holes in each corner of the cover and secured by a

knot in the end of each string. They then pass through three corresponding holes in the bottom of the cavity, leaving outside of the back two ends 7 inches and one 15 long, which are tied together. The cover can be lifted wholly off and then drawn back into its place by pulling the string.

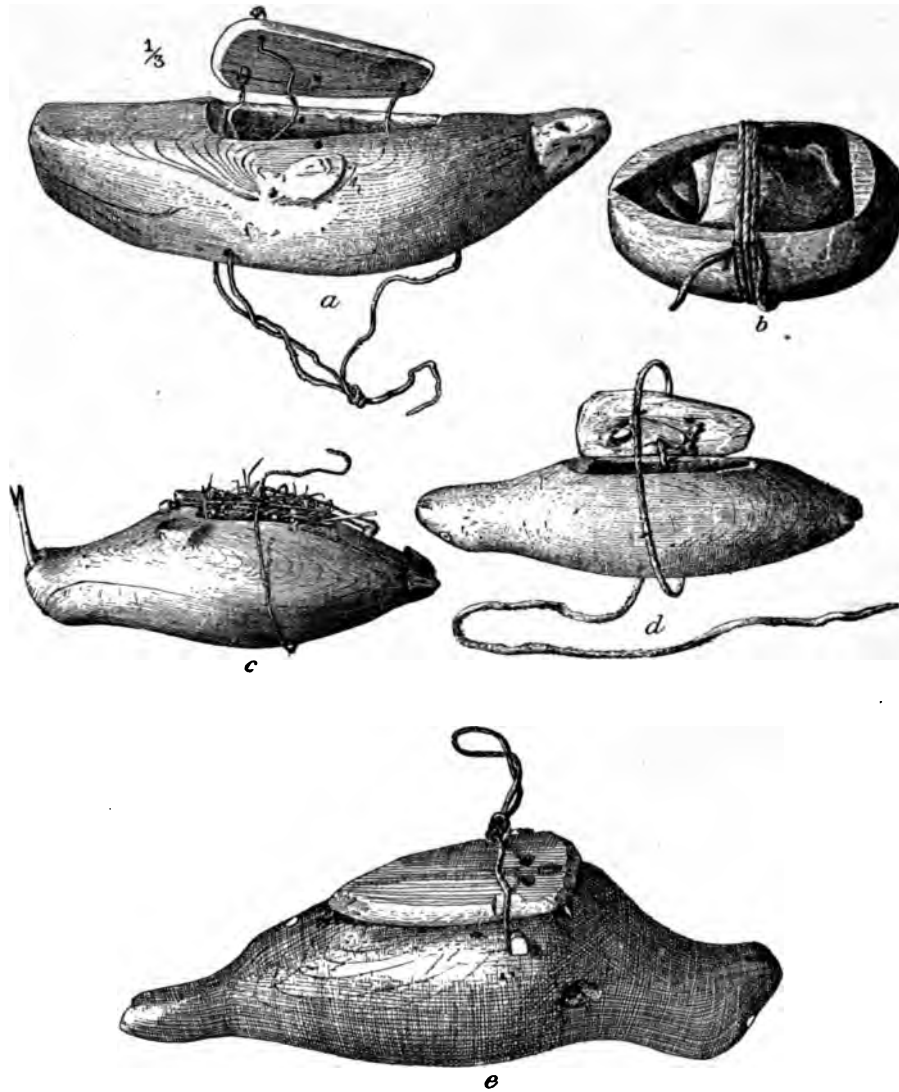


FIG. 251.—Boxes for harpoon heads.

We collected seven such whale-harpoon boxes, usually about 9 to 9 $\frac{1}{4}$ inches long. Nearly all have bits of crystal, amber, or pyrite, inlaid for the eyes and in the middle of the back, and the cover is generally rigged in the way described. No. 56502 [198], from Utkiavwĩñ, is a

large whale, a foot long, and has the tail bent up, while the animal is usually represented as if lying still. It has good-sized sky-blue beads inlaid for the eyes.

Fig. 251*b* (No. 89733 [1161], from Nuwük) represents a small box 4½ inches long, probably older than the others, and the only one not carved into the shape of a whale. It is roughly egg-shaped and has no wooden cover to the cavity, which is covered with a piece of deerskin, held on by a string of seal thong wrapped three times around the body in a rough, deep groove, with the end tucked under. In this box are five slate blades for the whale harpoon.

We also collected two boxes for walrus harpoons made in the shape of the walrus, with ivory or bone tusks. No. 89732 [860], Fig. 251*c*, from Nuwük, is old, and 7 inches long, and has two oval bits of ivory, with holes bored to represent the pupils, inlaid for the eyes. There is no cover, but the cavity is filled with a number of slate blades, carefully packed in whalebone shavings. There is a little eyebolt of ivory at each end of the cavity. One end of a bit of sinew braid is tied to the anterior of these, and the other carried down through the hinder one, and then brought up and fastened round the body with a marling hitch. The other (No. 56489 [127], is new and rather roughly made, 5 inches long and painted all over with red ocher. It has a cover, but no strings.

No. 56501 [142], Fig. 251*d*, from Utkiavwñ, is for carrying harpoon blades for the chase of the bearded seal (*Erignathus barbatus*), and is neatly carved into the shape of that animal. It is 7.4 inches long and has ivory eyes like the walrus box, No. 89732 [860]. The cover is fitted to the cavity like those of the whale boxes, but is held on by one string only, a piece of seal thong about 3 feet long passing through the middle of the cover and out at a hole on the left side, about one-fourth inch from the cavity. The box is filled with raveled rope-yarns. Fig. 251*e* (No. 89730 [981], from Utkiavwñ) is like this, but very large, 9.3 inches long. The cover is thick and a little larger than the cavity, beveled on the upper face and notched on each side to receive the string, which is a bit of sinew braid fastened to two little ivory hooks, one on each side of the body. It is fastened to the right hook, carried across and hooked around the left-hand one, then carried over and hooked round the other, and secured by tucking a bight of the end under the last part. The box contains several slate blades. We also collected one other large seal box (No. 89731 [859], from Nuwük), very roughly carved, and 9.8 inches long. The cover is fitted into the cavity and held on by a narrow strip of whalebone running across in a transverse groove in the cover and through a hole in each side of the box.

Nets (ku'bra).—The smaller seals are captured in large-meshed nets of rawhide. We brought home one of these, No. 56756 [109], Figs 252*a*–252*b* (detail of mesh). This is a rectangular net, eighteen meshes long and twelve deep, netted of fine seal thong with the ordinary netting knot. The length of the mesh is 14 inches.

Such nets are set under the ice in winter, or in shoal water along the shore by means of stakes in summer. In the ordinary method of setting the net under the ice two small holes are cut through the ice the length of the net apart, and between them in the same straight line is cut a third

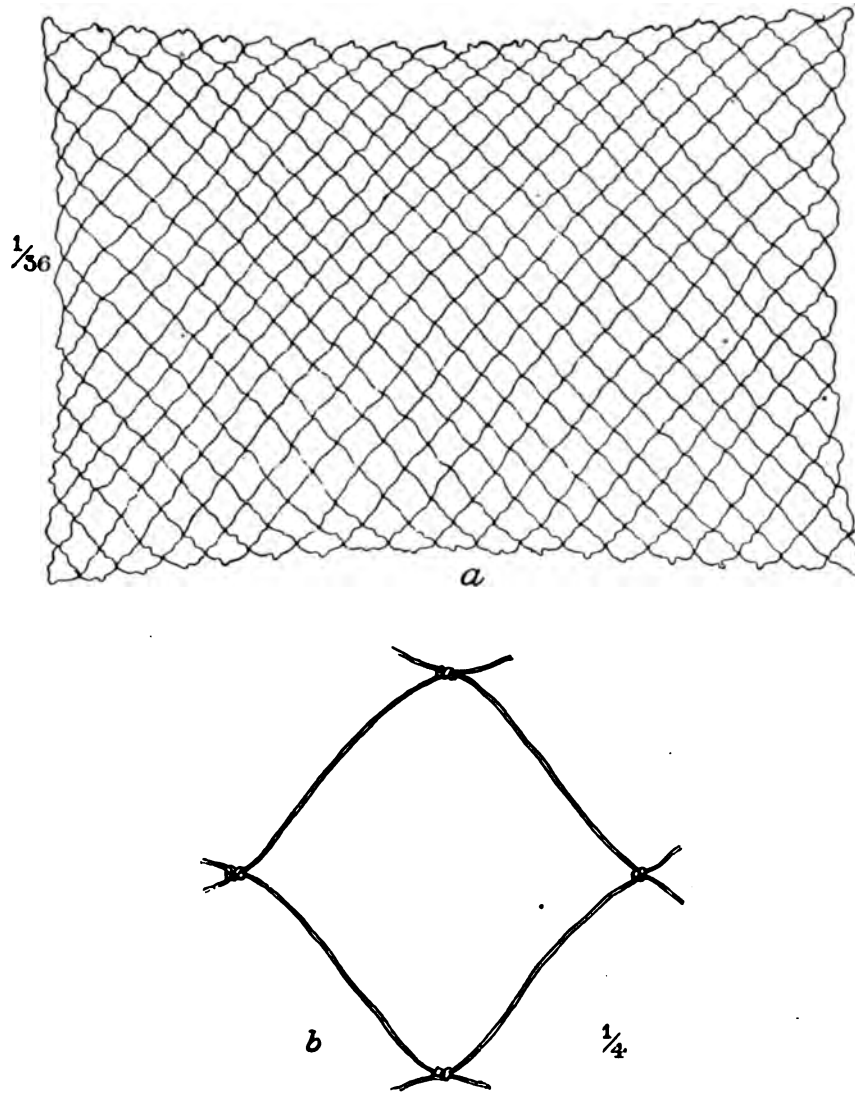


FIG. 252.—Seal net.

large enough to permit a seal to be drawn up through it. A line with a plummet on the end is let down through one of the small holes, and is hooked through the middle hole, with a long slender pole of willow, often made of several pieces spliced together, with a small wooden hook on the

end. The line is then detached from the plummet and fastened to one upper corner of the net, and a second line is let down through the other small hole and made fast in the same way to the other upper corner. By pulling on these lines the net is drawn down through the middle and stretched like a curtain under the ice, while a line at the middle serves to haul it up again. The end lines are but loosely made fast to lumps of ice, so that when a seal strikes the net nothing hinders his wrapping it completely around him in his struggles to escape. When the hunter, who is usually watching his net, thinks the seal is sufficiently entangled he hauls him up through the large hole and sets the net again.

I had no opportunity of observing whether any weights or plummets were used to keep down the lower edge of the net. These nets are now universally employed, but one native spoke of a time "long ago" when there were no nets and they captured seals with the spear (u'ne) alone. The net was used in seal catching in Dr. Simpson's time, though he makes but a casual reference to it,¹ and Beechey found seal nets at Kotzebue Sound in 1826.² The net is very generally used for sealing among the Eskimo of western America and in Siberia. We observed seal nets set with stakes along the shore of the sandspit at Plover Bay, and Nordenskiöld speaks of seal nets "set in summer among the ground ices along the shore,"³ and at open leads in the winter, but gives no description of the method of setting these nets beyond mentioning the "long pole which was used in setting the net,"⁴ as none of his party ever witnessed the seal fishery.⁵ I am informed by Mr. W. H. Dall that the winter nets in Norton Sound are not set under the ice as at Point Barrow, but with stakes in shoal water wherever there are open holes in the ice. "Ice nets" are spoken of as in use for sealing in Greenland, but I have been able to find no description of them. As they are not spoken of by either Egede or Crantz I am inclined to believe that they were introduced by the Europeans.⁶ Mr. L. M. Turner informs me that such is the case at Ungava Bay on the southern shore of Hudson Strait, where they use a very long net set under the ice very much as at Point Barrow. I can find no mention of the use of seal nets among any other of the eastern Eskimo.

It is well known that seals have a great deal of curiosity, and are easily attracted by any unusual sounds, especially if they are gentle and long-continued. It is therefore easy to entice them into the nets by making such noises, for instance, gentle whistling, rattling on the ice with the pick, and so forth. Two special implements are also used for this purpose. The first kind I have called:

¹ *Op. cit.*, p. 262.

² *Voyage*, pp. 295, 574.

³ *Vega*, vol. 2, p. 108.

⁴ *Ibid.*, p. 98.

⁵ See also the reference to Hooper's Corwin Report, quoted below under Hunting.

⁶ See, however, the writer's paper in the *American Anthropologist*, vol. 1, p. 333.

Seal calls (*adrigautin*).—This implement consists of three or four claws mounted on the end of a short wooden handle, and is used to make a gentle noise by scratching on the ice. It is a common implement, though I never happened to see it in use. We obtained six specimens, of which No. 56555 [90] Fig. 253*a*, is the type. It is 11½ inches long. The round handle is of ash, the claws are those of the bearded seal, secured by a lashing of sinew braid, with the end brought down on the under side to a little blunt, backward-pointing hook of ivory, set into the wood about 1 inch from the base of the arms.

Fig. 253*b* (No. 56557 [93] from Utkiavwīñ) is 9½ inches long and has four prongs. The haft is of spruce, and instead of an ivory hook there is a round-headed stud of the same material, which is driven wholly through the wood, having the point cut off flush with the upper sur-

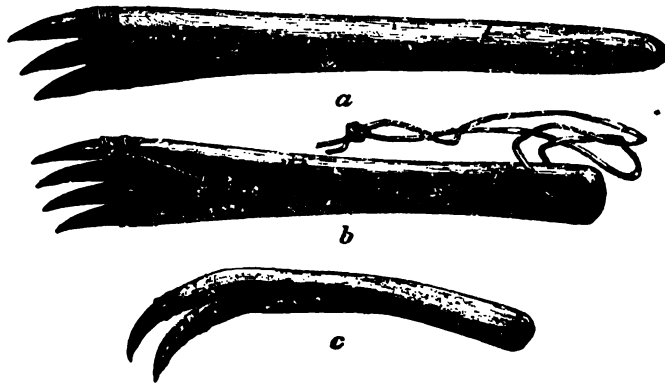


FIG. 253.—Scratchers for decoying seals.

face. It has a lanyard of seal twine knotted into the hole in the haft. The other two specimens of this pattern, Nos. 56556 [100] and 56558 [51] have each three claws, and hafts of soft wood, painted with red ocher, with lanyards, and are respectively 10.4 and 10.7 inches long. One has an ivory hook, but the other in place of this has a small iron nail, and is ornamented with a medium-sized sky-blue glass bead inlaid in the back. The other two are both new and small, being respectively 7.5 and 7.6 inches long. The hafts are made of reindeer antler and have only two prongs. No. 89467 [1312] from Utkiavwīñ, has the haft notched on each side, and has an irregular stud of bone for securing the lashing.

No. 89468 [1354], Fig. 253*c*, from Utkiavwīñ, has no stud and the claws are simply held on by a slight lashing of twisted sinew. Both of these were made for the market, but may be models of a form once used. There are two old seal calls in the Museum from near St. Michaels, made of a piece of reindeer antler, apparently the spreading brow antler, in which the sharp points of the antler take the place of claws.

The use of this implement, as shown by Mr. Nelson's collection, extends or extended from Point Barrow to Norton Sound. He collected specimens from St. Lawrence Island and Cape Wankarem in Siberia. Nordenskiöld speaks of the use of this implement at Pitlekaj and figures a specimen.¹ The other instrument appears to be less common. I have called it a seal rattle.

Seal rattle.—We obtained only two specimens, No. 56533 [409], which seem to be a pair. Fig. 254 is one of these. It is of cottonwood and 4 inches long, roughly carved into the shape of a seal's head and painted red, with two small transparent blue glass beads inlaid for the eyes. The neat becket of seal thong consists of three or four turns with the end wrapped spirally around them. The staple on which the ivory



FIG. 254.—Seal rattle.

pendants hang is of iron. This is believed to be a rattle to be shaken on the ice by a string tied to the becket for the purpose of attracting seals to the ice net. It was brought in for sale at a time during our first year when we were very busy with zoological work, and as something was said about "nētyi" and "kubra" ("seal" and "net") the collector concluded that they must be floats for seal nets, and they were accordingly catalogued as such and laid away. We never happened to see another specimen, and as these were sent home in 1882 we learned no more of their history. The late Dr. Emil Bessels, however, on my return called my attention to the fact that in the museum at Copenhagen there is a single specimen very similar to these, which was said to have been used in the manner described above. It came from somewhere in eastern America. There is one, he told me, in the British Museum from

Bering Strait. The National Museum contains several specimens collected by Mr. Nelson at Point Hope. It is very probable that this is the correct explanation of the use of these objects, as it assigns a function to the ivory pendants which would otherwise be useless. They have been called "dog bells," but the Eskimo, at Point Barrow, at least, are not in the habit of marking their dogs in any way.

Seal indicators.—When watching for a seal at his breathing hole a native inserts in the hole a slender rod of ivory, which is held loosely in place by a cross piece or a bunch of feathers on the end. When the seal rises he pushes up this rod, which is so light that he does not notice it, and thus warns the hunter when to shoot or strike with his spear. Most of the seal hunting was done at such a distance from the station that I remember only one occasion when this implement was

¹ Vega, vol. 2, p. 117, Fig. 3.

seen in use. We collected two specimens, of which No. 56507 [104], Fig. 255*a*, will serve as the type. It is of walrus ivory, 14½ inches long and 0·3 in diameter, with a small lanyard of sinew. The curved cross piece of ivory, 1½ inches long, is inserted into a slot one-fourth of an inch from the end and secured by a little treenail of wood.

Fig. 255*b* (No. 89454 [1114], from Nuwük) is a similar indicator, 13½ inches long and flat (0·3 inch wide and 0·1 thick). The upper end is carved into scallops for ornament and has a small eye into which

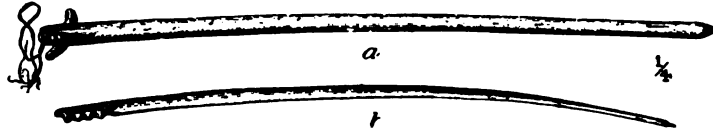


FIG. 255.—Seal indicators.

was knotted a bit of whalebone fiber. The tip is beveled off with a concave bevel on both faces to a sharp edge, so that it can be used for a “feather setter” (Igugwau) in feathering arrows. Such implements are mentioned in most popular accounts of the Eskimo of the east, and Capt. Parry describes it from personal observation at Iglulik.¹ I have been unable to find any mention of its use in western America, and have seen no specimens in the National Museum.

Sealing stools.—When a native is watching a seal-hole he frequently has to stand for hours motionless on the ice. His feet would become exceedingly cold, in spite of the excellence of his foot covering, were it not for a little three-legged stool about 10 inches high upon which he stands. This stool is made of wood, with a triangular top just large enough to accommodate a man's feet, with the heels together over one leg of the stool, and the other two legs supporting the toes of each foot, respectively.



FIG. 256.—Sealing stool.

The stool is neatly made, and is as light as is consistent with strength. It is universally employed and carried by the hunter, slung on the gun cover with the legs projecting behind.

When the hunter has a long time to wait he generally squats down so as almost to sit on his heels, holding his gun and spear in readiness, and wholly covered with one of the deerskin cloaks already described. They sometimes use this stool to sit on when waiting for ducks to fly over the ice in the spring.

¹Second Voyage, p. 510; also pl. opposite p. 550, Fig. 17.

We brought home two specimens of this common object (*nigawaú-otín*). No. 89887 [1411], Fig. 250, will serve as the type. The top is of spruce, $8\frac{3}{4}$ inches long and $10\frac{3}{4}$ wide. The upper surface is flat and smooth, the lower broadly beveled off on the edges and deeply excavated in the middle, so that there are three straight ridges joining the three legs, each of which stands in the middle of a slight prominence. The object of cutting away the wood in this way is to make the stool lighter, leaving it thick only at the points where the pressure comes. The large round hole in the middle, near the front, is for convenience in picking it up and hanging it on the cache frame, where it is generally kept. The three legs are set into holes at each corner, spreading out so as to stand on a base larger than the top of the stool. Where they fit into the holes they are 0.7 inch in diameter, tapered slightly to fit the hole, and then tapering down to a diameter of one-third inch at the tip. On the under side of the top they are braced with a lashing of stout seal thong. A split on the right-hand edge of the top has been mended, as usual, with a stitch of whalebone. This stool is quite old and has been actually used.

No. 89888 [1412], from the same village, is new and a little larger, but differs from the type only in having a triangular instead of a round hole in the top and no lashing. Those of our party who landed at Sidaru September 7, 1881, saw one of these stools hanging up in the then vacant village, and there is a precisely similar stool in the Museum from the Anderson region.

MacFarlane, in his manuscript notes, describes the use of these stools as follows: "Both tribes kill seals under ice; that is, they watch for them at their holes (breathing) or wherever open water appears. At the former they generally build a small snow house somewhat like a sentinel's box, on the bottom of which they fix a portable three-cornered stool, made of wood. They stand on this and thereby escape getting cold feet, as would be the case were they to remain for any time on ice or snow in the same immovable position." Beyond this I find no mention of the use of any such a utensil, east or west, except in Greenland, where, however, they used a sort of one-legged chair to sit on, as well as a footstool, which Egede pictures (Pl. 9) as oval, with very short legs.¹

Seal drags (uksiu'tiñ).—Every seal hunter carries with him a line for dragging home his game, consisting of a stout thong doubled in a bight about 18 inches long, with an ivory handle or knob at the other end. The bight is looped into an incision in the seal's lower jaw, while the knob serves for attaching a longer line or the end of a dog's harness. The seal is dragged on his back and runs as smoothly as a sled. We

¹"They first look out for Holes, which the Seals themselves make with their Claws about the Bigness of a Halfpenny; after they have found any Hole, they seat themselves near it upon a Chair, made for the Purpose; and as soon as they perceive the Seal coming up to the Hole and put his snout into it for some Air, they immediately strike him with a small Harpoon." Egede, *Greenland*, p. 104.

"The seals themselves make sometimes holes in the Ice, where they come and draw breath; near such a hole a Greenlander seats himself on a stool, putting his feet on a lower one to keep them from the cold. Now when the seal comes and puts its nose to the hole, he pierces it instantly with his harpoon." Crants, *History of Greenland*, vol. 1, p. 156.

collected eight of these drag lines, from which I have selected No. 56624 [44], Fig. 257*a*, as the type.

This consists of a stout thong of rawhide (the skin of the bearded

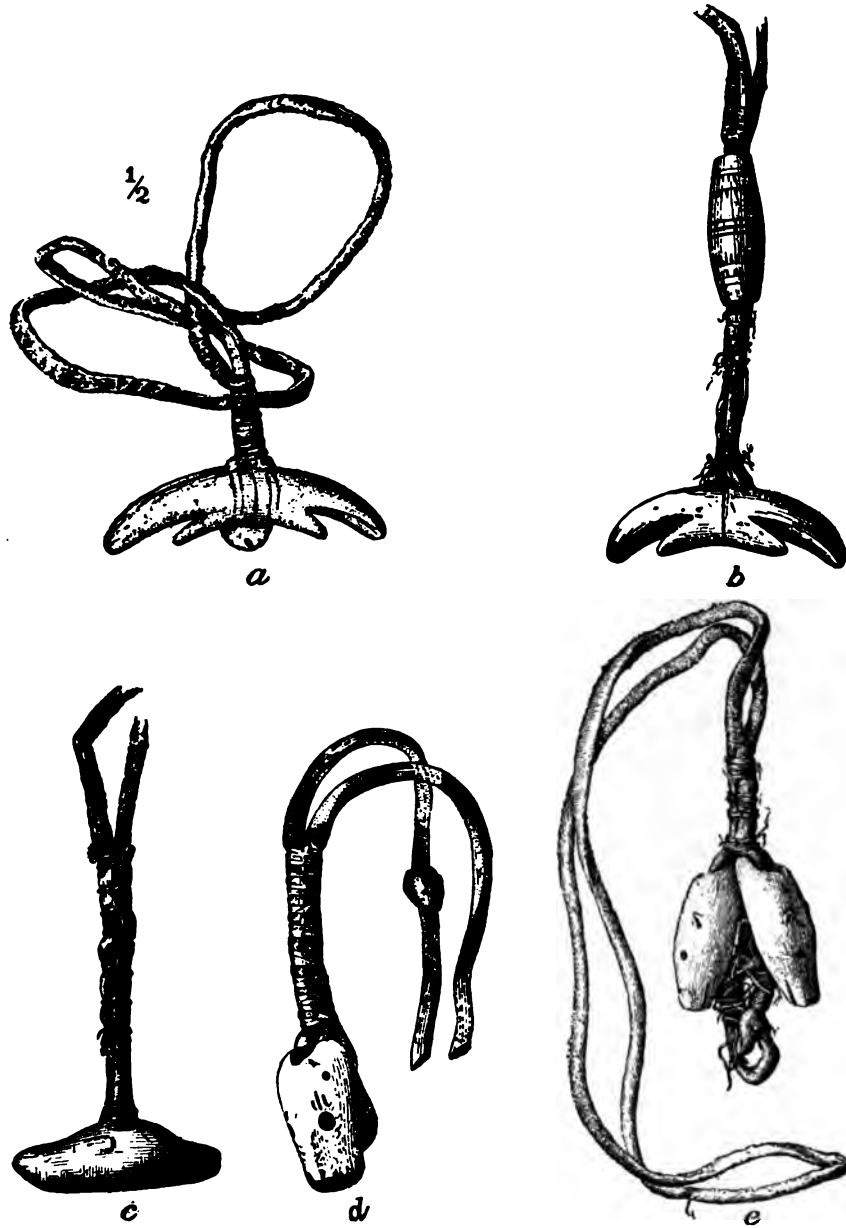


FIG. 257.—Seal drags and handles.

seal) 0.3 inch wide and 37 inches long, and doubled in a bight so that one end is about $2\frac{1}{2}$ inches the longer. These ends are fastened into a handle of walrus ivory, consisting of three pieces, namely: a pair of

neatly carved mittens, respectively 1.9 and 1.8 inches long, put together wrist to wrist with the palms up; and lying across the joint above, a little seal $1\frac{1}{4}$ inches long, belly down. A hole runs through each wrist and through the belly of the seal. The mittens are ornamented on the back with a blackened incised pattern, and the seal has blue glass beads for eyes and blackened incised spots on the back. The longer end of the thong runs up through the right mitten, across through the seal, and down through the left mitten. It is then passed through a slit 1 inch from the end of the shorter part and slit itself. Through this slit is passed the bight of the thong, all drawn up taut and seized with sinew braid.

No. 89467 [755], from Utkiavwīn, is a similar drag, put together in much the same way, but it has the mittens doweled together with two wooden pins, and a seal's head with round bits of wood inlaid for eyes, ears, and nostrils, in place of the seal. The longitudinal perforation in this head shows that it was originally strung lengthwise on one of these lines. The "double slit splice" of the two ends of the thong is worked into a complicated round knot, between which and the handle the two parts of the line are confined by a tube of ivory 1 inch long, ornamented with deeply incised patterns. Fig. 257*b* is the upper part of a line (No. 56622 [36], from Utkiavwīn), with a similar tube $1\frac{3}{4}$ inches long, and a handle carved from a single piece into a pair of mittens like the others.

No. 56625 [81], also from Utkiavwīn, is almost exactly similar to the one first described, but has the seal belly up. Fig. 257*c* (No. 89470 [1337], from the same village) has a seal 2.3 inches long for the handle, and No. 56626 [212], from Utkiavwīn, is like it. No. 89469*a* [755*a*] Fig. 257*d*, from Utkiavwīn, has for a handle the head of a bearded seal 1.6 inches long, neatly carved from walrus ivory, with round bits of wood inlaid for the eyes and ears. It is perforated longitudinally from the chin to the back of the head, and a large hole at the throat opens into this. The longer end of the thong is passed in at the chin and out at the back of the head; the shorter, in at the back of the head and out at the throat; the two ends brought together between the standing parts and all stopped together with sinew braid.

No. 56627 [45], Fig. 257*e*, has a handle made of two ivory bears' heads, very neatly carved, with circular bits of wood inlaid for eyes, and perforated like the seal's head just described. The thong is doubled in the middle and each end passed through one of the heads lengthwise, so as to protrude about 7 inches. About 4 inches of end is then doubled over, thrust through the throat hole of the opposite head, and brought down along the standing parts. All the parts are stopped together with sinew braid. This makes a small becket above the handle.

We collected seven knobs for these drag lines, of which six are seals' heads and one a bear's. They are all made of walrus ivory, apparently each a single tooth, and not a piece of tusk, and are about $1\frac{1}{2}$ inches to 2 inches long. They are generally carved with considerable skill, and

often have the ears, roots of the whiskers, nostrils, and outline of the mouth incised and blackened, while small blue beads, bits of ivory, or wood are inlaid for the eyes. Implements of this sort are in common use among Eskimo generally wherever they are so situated as to be able to engage in seal-hunting. Mr. Nelson's collection contains specimens from as far south as Cape Darby.

Whalebone wolf-killers (tsibru).—Before the introduction of the steel traps, which they now obtain by trade, these people used a peculiar contrivance for catching the wolf. This consists of a stout rod of whalebone about 1 foot long and one-half inch broad, with a sharp point at each end. One of these was folded lengthwise in the form of a Z,¹ wrapped in blubber (whale's blubber was used, according to our informant, Nikawáalu), and frozen solid. It was then thrown out on the snow where the wolf could find and swallow it. The heat of the animal's body would thaw out the blubber, releasing the whalebone, which would straighten out and pierce the walls of the stomach, thus causing the

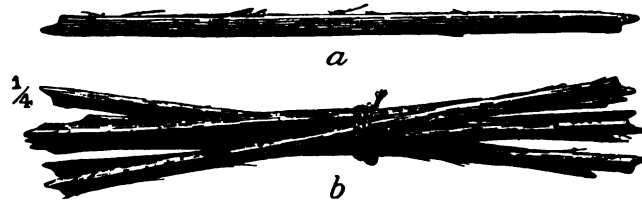


FIG. 258.—Whalebone wolf-killers.

animal's death. Nikawáalu says that a wolf would not go far after swallowing one of these blubber balls.

We collected four sets of these contrivances, one set containing seven rods and the others four each. Fig. 258a gives a good idea of the shape of one of these. It belongs to a set of seven, No. 89538 [1229], Fig. 258b, from Utkiavwñ, which are old and show the marks of having been doubled up. It is $12\frac{1}{2}$ inches long, 0.4 broad, and 0.2 thick. The little notches on the opposite edges of each end were probably to hold a lashing of sinew which kept the folded rod in shape while the blubber was freezing, being cut by thrusting a knife through the partially frozen blubber, as is stated by Schwatka.² Two of the sets are new, but made like the others.

This contrivance is also used by the Eskimo of Hudson Bay³ and at Norton Sound, where, according to Petroff,⁴ the rods are 2 feet long and wrapped in seal blubber. The name *Isi'bru* appears to be the same as the Greenlandic (*isavssok*), found only in the diminutive *isavssoraK*, a provincial name for the somewhat similar sharp-pointed stick baited with blubber and used for catching gulls. The diminutive form of this

¹It is twisted into "a compact helical mass like a watch-spring" in the Hudson Bay region. Schwatka, "Nimrod in the North," p. 133. See also Klutschak, "Als Eskimo," pp. 194, 195.

²"Nimrod in the North," p. 133.

³See Gilder, Schwatka's Search, p. 225; see also Klutschak, "Als Eskimo," etc., pp. 194-5, where the whalebones are said to have little knives on the ends.

⁴Report, etc., p. 127.

word in Greenlandic may indicate that their ancestors once used the large wolf-killer, when they lived where wolves were found. The definition of *nju'kuak*, the ordinary word for the gull-catcher (see below)—in the *Grønlandske Ordbog*—is the only evidence we have of the use of this contrivance in Greenland. This is one of the several cases in which we only learn of the occurrence of customs, etc., noted at Point Barrow, in Greenland, by finding the name of the thing in question defined in the dictionary.

Traps.—Foxes are caught in the winter by deadfalls or steel traps (*nānori'a*), set generally along the beach, where the foxes are wandering about in search of carrion thrown up by the sea. In setting the deadfalls a little house about 2 feet high is built, in which is placed the bait of meat or blubber. A heavy log of driftwood is placed across the entrance, with one end raised high enough to allow a fox to pass under it, and supported by a regular "figure of four" of sticks. The fox can not get at the bait without passing under the log, and in doing so, he must touch the trigger of the "figure of four" (4), which brings down the log across his back. When a steel trap is used it is not baited itself, but buried in the snow at the entrance of a similar little house, so that the fox can not reach the bait without stepping on the plate of the trap and thus springing it. Many foxes are taken with such traps in the course of the winter.

The boys use a sort of snare for catching setting birds. This is simply a strip of whalebone made into a slip-noose, which is set over the eggs, with the end fastened to the ground, so that the bird is caught by the leg. Once or twice, when there was a light snow on the beach, we saw a native catching the large gulls as follows: He had a stick of hard wood, pointed at each end, to the middle of which was fastened one end of a stout string about 6 feet long. The other end was secured to a stake driven into the frozen gravel, and the stick wrapped with blubber and laid on the beach, with the string carefully hidden in the snow. The gull came along, swallowed the lump of blubber, and as soon as he tried to fly away the string made the sharp stick turn like a toggle across his gullet, the points forcing their way through, so that he was held fast. A similar contrivance, but somewhat smaller and made of bone, is used at Norton Sound for catching gulls and murre, a number of them being attached to a trawl line and baited with fish. Mr. Nelson collected a large number of these.¹ In regard to the use of this contrivance in Greenland, see above under "wolf-killers."

Snow-goggles.—The wooden goggles worn to protect the eyes from snow-blindness may be considered as accessories to hunting, as they are worn chiefly by those engaged in hunting or fishing, especially when deer-hunting in the spring on the snow-covered tundra or when in the whaleboats among the ice. They are simply a wooden cover for the

¹ See Dr. Rau's *Prehistoric Fishing*, p. 12. Fig. 2 p. 13, represents one of these from Norton Sound, and Figs. 3-8, a series of similar implements from the bone caves of France.

eyes, admitting the light by a narrow horizontal slit, which allows only a small amount of light to reach the eye and at the same time gives sufficient range of vision. Such goggles are universally employed by the Eskimos everywhere¹ except in Siberia, where they use a simple shade for the eyes.²

We brought home four pairs of these goggles (*'dyigūn*), of which No 89894 [1708], Fig. 259, represents the common form. These are of pine wood, 5·8 inches long and 1·1 inches broad, and deeply excavated on the inside, with a narrow horizontal slit with thin edges on each side of the middle. In the middle are two notches to fit the nose, the one in the lower edge deep and rounded, the upper very shallow. The two holes in each end are for strings of sinew braid to pass round the head. They are neatly made and the outside is scraped smooth and shows traces of a coat of red ocher.

The history of this particular pair of goggles is peculiarly interesting. Though differing in no important respect from those used at the present

day, they were found on the site of the ancient village of *Ist'ukwa*, where our station stood, buried at a depth of 27 feet in undisturbed frozen ground, and were uncovered in digging the shaft sunk by Lieut. Ray for obtaining earth temperatures.³ The layer in which they were found was

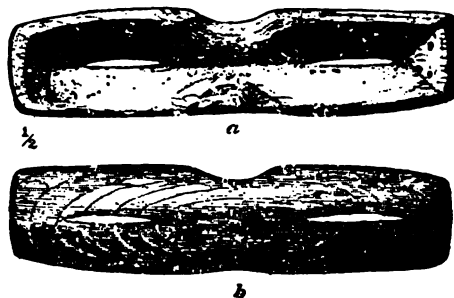


FIG. 259.—Wooden snow goggles.

evidently an old sea beach, consisting of sand and gravel mixed with broken shells, among which *Mya truncata* was recognized. The amount of the superincumbent gravel and similar material above this object does not necessarily indicate any very great length of time since they were first buried, as will be readily understood from what I have said above (p. 28) about the rapidity with which high hummocks of gravel are pushed up by the ice. The unbroken layer of turf, however, nearly a foot thick, with which the ground was covered at this point, shows that a considerable period must have elapsed since the gravel had reached nearly to its present level.

The pattern of these goggles is to my mind a very decided proof that at that early date this region was inhabited by Eskimo not essentially different from its present inhabitants. Goggles worn at the present day are almost always of the shape of these, though I remember seeing one pair made in two pieces joined by short strings of beads across the nose. They are, I think, universally painted with red ocher on the outside and

¹See Parry, 2d Voyage, p. 547, Iglulik and Hudson Strait, pl. opposite p. 548, Fig. 4, and pl. opposite p. 14; Crantz, History of Greenland, vol. 1, p. 234; Dall, Alaska, p. 195, figure (Norton Sound); also MacFarlane, MS., No. 2929 (Anderson River).

²Nordenskiöld, Vega, vol. 2, p. 99.

³Report U. S. International Polar Expedition to Point Barrow, p. 37.

blackened inside. They were not always made of wood, as there are two specimens in the collection made of a piece of antler, following the natural curve of the beam, divided longitudinally, with the softer inside tissue hollowed out.



FIG. 260.—Bone snow goggles.

Fig. 260 (No. 89701 [763], from Utkiavwū) represents one of these specimens. I

do not recollect ever seeing goggles of this material in actual use. No. 89703 [754], Fig. 261, is an unusual pattern, having along the top a horizontal brim about one-half inch high, which serves for an additional shade to the eyes. Above this are two oblique holes opening into the cavity inside, which are probably for the purpose of ventilation, to prevent the moisture from the skin from being deposited as frost on the inside of the goggles or on the eyelashes. I do not remember having seen such goggles worn. Dall figures a similar pair from Norton Sound, and those brought by Mr. Turner from Ungava have a similar brim and ventilating holes.



FIG. 261.—Wooden snow goggles, unusual form.

The snow goggles mentioned in Parry's Second Voyage (p. 547) as occasionally seen at Iglulik, but more common in Hudson's Strait, appear to have resembled these, but had a brim 3 or 4 inches deep.

Meat-cache markers.—We purchased a couple of little ivory rods, each with a little bunch of feathers tied to one end, which we were told were used by the deer hunters to mark the place where they had buried the flesh of a deer in the snow. This implement is called *tū'kusia*.



FIG. 262.—Marker for meat cache.

Fig. 262, represents one of these (No. 89531 [978] from Nuwūk). It is a flat, slender rod of white walrus ivory, $11\frac{1}{2}$ inches long, and evidently broken off at the tip. The

other end is cut into ornamental notches, and ornamented with an incised pattern colored with red ocher, consisting of conventional lines and the figure of a reindeer on each face, a buck on one face and a doe on the other. Tied by a bit of sinew to the uppermost notch are four legs and three wing tips (three or four primaries, with the skin at the base) of the buff-breasted sandpiper (*Tryngites subruficollis*). This was evidently



FIG. 263.—Marker for meat cache.

longer when new and perhaps was originally used for a seal indicator (which see above). Fig. 263 (No. 89453 [1581] from Utkiavwīñ) is a similar rod, the tip of which has been brought to an edge so that it can be used as a "feather-setter" in feathering arrows. The remains of two wing tips of some small bird are tied to one of the notches at the upper end.

METHODS OF HUNTING.

Having now described in detail all the weapons and other implements used in hunting, I am prepared to give an account of the time and methods of pursuing the different kinds of game.

The polar bear.—Bears are occasionally met with in the winter by the seal hunters, roaming about the ice fields at some distance from the shore. They usually run from a man and often do not make a stand even when wounded. Occasionally, however, a bear rendered bold by hunger comes in from the sea and makes an attack on some native's storehouse of seal meat even in the midst of the village. Of course, in such a case he has very little chance of escape, as the natives all turn out with their rifles and cut off his retreat. Two bears were killed in this way at Utkiavwīñ in the winter of 1882-'83. The bear is always attacked with the rifle, often with the help of dogs to bring him to bay. The umiaks when walrus hunting sometimes meet with bears among the loose ice. If the bear is caught in the water, there is very little difficulty in paddling up close enough to him to shoot him.

The wolf.—The wolf can hardly be considered a regular object of pursuit. Wolves are often seen and occasionally shot by deer hunters in the winter, and one family in the summer of 1883 managed to catch a couple of young wolf cubs alive, somewhere between Point Barrow and the Colville. These they brought home with them and kept them picketed on the tundra just outside of the village, with a little kennel of snow to shelter them, carefully feeding them till winter, when their fur had grown long enough for use in trimming hoods. They were then

killed with a stone-headed arrow, which we were told was necessary for the purpose, and their skins dressed and cut into strips which were sold around the village. Superstition required that the man who killed these wolves should sleep outside of the house in a tent or snow hut for "one moon" after killing them. We did not learn the reason for this practice beyond that it would be "bad" to do otherwise.

The fox.—Foxes are sometimes shot, but are generally taken in the traps described above, which are usually set some distance from the village so as to avoid catching prowling dogs. Though generally exceedingly shy, the fox is sometimes rendered careless by hunger. One of the women at the deer-hunters' camp in the spring of 1882 caught one in the little snow house built to store the meat and killed him with a stick.

The reindeer.—Reindeer are comparatively scarce within the radius of a day's march from Point Barrow, though solitary animals and small parties are to be seen almost any day in the winter a few miles inland from the seacoast. In the autumn, which is the rutting season, they occasionally wander down to the lagoons back of the beach. Nearly every day in the autumn and winter, when the weather is not stormy, one or more natives are out looking for reindeer, usually traveling on snowshoes and carrying their rifles slung on their backs. The deer are generally very wild and often perceive a man and begin to run at a distance of a mile or two, though a rutting buck will sometimes fancy that a skin-clad Eskimo is a rival buck, and come toward him, especially if the hunter crouches down and keeps perfectly still.

The usual method of hunting is to walk off inland until a deer is sighted, when the hunter moves directly toward him at a rapid pace, without regard to the wind or attempting to conceal himself, which would be almost hopeless in such open country. As soon as the deer starts to run, the hunter quickens his pace—to a run, if he has "wind" enough—and follows the game as long as he can keep it in sight, trusting that the well known curiosity of the deer will induce it to "circle" round, in order to see what it is that is following him with such pertinacity. Should the deer turn, as often happens, especially if there is more than one of them, the hunter alters his course so as to head him off, and as soon as he gets within long rifle range opens fire, and keeps it up till the animal is hit or escapes out of range. Strange as it may seem, a number of deer are killed every winter in this way.

If a deer be killed, the hunter usually "butchers" him on the spot, and brings in as much of the meat as he can carry on his back, leaving the rest, carefully covered with slabs of snow to protect it from the foxes, to be brought in as soon as convenient by a dog sled, which follows the hunter's tracks to the place.

During the spring the deer retire some distance from the Point, and the does then drop their fawns. At this season nearly all the natives are busily engaged in the whale fishery, and pay little attention to the

reindeer, so that we did not learn where they went to. When the fawns are perhaps a month old a small party, say a young man and his wife, sometimes makes a short journey to the eastward to procure fawn skins for clothing. They say that the fawns at this age can be caught by running them down. During the summer again the deer come down to the coast in small numbers, taking to the water in the lagoons, or even in the sea, when the flies become troublesome.

Sometimes in warm, calm weather the flies are so numerous that the deer is driven perfectly frantic, and runs along without looking where he is going, so that, as the natives say, a hunter who places himself in the deer's path has no difficulty in shooting him. Flies were unusually scarce both summers that we were at the station, so that we never had an opportunity of seeing this done. When a deer is seen swimming he is pursued with the kaiak and lanced in the manner already described. In July, 1883, one man from Utkiavwĩn made a short journey inland, "carrying" his kaiak from lake to lake, and killed two deer in this way without firing a shot. I believe this method of hunting is frequently practiced by the parties who go east for trading in the summer, and those who visit the rivers for the purpose of hunting.

The natives seemed to expect deer in summer at the lagoons, as along the isthmus between Imé'kptũ and Imékpũnglu they had set up a range of stakes, evidently intended to turn the deer up the beach where he would be seen from the camp at Pernijũ. Only one deer, however, came down either summer, and he escaped without being seen. This contrivance of setting up stakes to guide the deer in a certain direction is very commonly used by the Eskimo. Egede gives a curious description of the practice in Greenland in his day: They "chase them [i. e., the reindeer] by Clap-hunting, setting upon them on all sides and surrounding them with all their Women and Children to force them into Defiles and Narrow Passages, where the Men armed lay in wait for them and kill them. And when they have not People enough to surround them, then they put up white Poles (to make up the Number that is wanted) with Pieces of Turf to head them, which frightens the Deer and hinders it from escaping."¹ Pl. 4, of the same work, is a very curious illustration of this style of hunting.

A similar method is practiced at the Coppermine River, where the deer are led by ranges of turf toward the spot where the archer is hidden.² Franklin also noticed between the Mackenzie and the Colville similar ranges of driftwood stumps leading across the plain to two cairns on a hill,³ and Thomas Simpson mentions a similar range near Herschel Island,⁴ and double rows of turf to represent men leading down to a small lake near Point Pitt, for the purpose of driving the deer into the water where they could be speared.⁵ This is

¹ Greenland, p. 62.

² Franklin, 1st Exped., vol. 2, p. 181.

³ 2d Exped., p. 137.

⁴ Narrative, p. 114.

⁵ Ibid., p. 138.

similar to the practice described by Schwatka¹ among the "Netschilluk" of King William's Land, where a line of cairns as high as a man and 50 to 100 yards apart is built along a ridge running obliquely to the water. When deer are seen feeding near the water the men form a skirmish line from the last cairn to the water and advance slowly. The deer mistake the cairns for men and take to the water, where they are easily speared.

The most important deer hunt takes place in the late fall and early spring, when the natives go inland 50 or 75 miles to the upper waters of Kuaru and Kulugrua, where the deer are exceedingly plentiful at this season. Capt. Herendeen, who went inland with the deer hunters in the autumn of 1882, reports that the bottom lands of Kulugrua "looked like a cattle yard," from the tracks of the reindeer. They start as soon as it is possible to travel across the country with sledges, usually about the first of October, taking guns, ammunition, fishing tackle, and the necessary household utensils for themselves and their families, and stay till the daylight gets too short for hunting. In 1882, many parties got home about October 27 or 28. At this season there is seldom snow enough to build snow huts, so they generally live in tents, always close to the rivers from which they procure water for household use. The men spend their time hunting the deer, while the women bring in the game, attend to drying the skins and the household work, and catch whitefish and burbot through the ice of the rivers, which are now frozen hard enough for this purpose. Some of the old men and those who have not a supply of ammunition engage in the same pursuit.

A comparatively small number of the people go out to this fall deer hunt, which appears to be a new custom, adopted since Dr. Simpson's time. It was probably not worth while to go out after deer at seasons when there was not enough snow for digging pitfalls, since they depended chiefly on these for the capture of the reindeer before the introduction of firearms. Fully half of each village go out on the spring deer hunt, as they did in Maguire's time, the first parties starting out with the return of the sun, about January 23, and the others following in the course of two or three weeks, and remain out till about the middle of April, when it is time to come back for the whale fishery. The people of Utkiavwî always travel to the hunting grounds by a regular road, which is the same as that followed by Lieut. Ray in his exploring trips. They travel along the coast on the ice wherever it is smooth enough till they reach Sîñiaru, and then strike across country, crossing Kuaru and reaching Kulugrua near the hill Nuasu'knan. (See map, Pl. II.)

The people from Nuwûk travel straight across Elson Bay to the south till they reach nearly the same region. Some parties from Nuwûk also hunt in the rough country between Kulugrua and Ikpîkpûñ. As the sledges are heavily laden with camp equipage, provisions and oil for the lamps, they travel slowly, taking four or five days for the journey,

¹ Science, vol. 4, 9, pp. 543-544.

stopping for the night with tolerable regularity at certain stations where the first party that travels over the trail build snow huts, which are used by those who follow them. At the rivers they are scattered in small camps of four or five families, about a day's journey apart. As well as we could learn these camps are in regularly established places, where the same people return every year, if they hunt at all. It even seemed as if these localities were considered the property of certain influential families, who could allow any others they pleased to join their parties.¹ It is certain, at all events, that the people of Utkiavwīñ did not hunt on the Ikpīkpūñ with the men of Nuwūk. At this season they live entirely in snow huts, often excavated in the deep drifts under the river bluffs, and the men hunt deer while the women, as before, catch fish in Kuaru and Kulugrua. None are taken in Ikpīkpūñ. (See above, p. 58.)

Deer are generally very plentiful at this season, though sometimes, as happened in February, 1883, there comes a warm southerly wind which makes them all retreat farther inland for a few days. They are generally hunted by chasing them on snowshoes, in the manner already described, but with much better chances of success, since when a number of hunters are out in the same region the deer are kept moving, so that a herd started by one hunter is very apt to run within gunshot of another. The natives have generally very good success in this spring hunt. Two men who were hunting on shares for the station killed upward of ninety reindeer in the season of 1883. A great deal of the meat is, of course, consumed on the spot, but a good many deer are brought home frozen. They are skinned and brought home whole, only the heads and legs being cut off. The latter are disjointed at the knee and elbow. These frozen carcasses are usually cut up with a saw for cooking. At this season the does are pregnant, and many good-sized fetuses are brought home frozen. We were told that these were excellent food, though we never saw them eaten. For the first two or three days after the return of the deer hunters to the village all the little boys are playing with these fetuses, which they set up as targets for their blunt arrows.

Before starting for the deer hunt the hunters generally take the movable property which they do not mean to carry with them out of the house and bury it in the snow for safe keeping, apparently thinking that while a dishonest person might help himself to small articles left around the house, he could hardly go to work and dig up a cache without attracting the attention of the neighbors. If both families from a house go deer hunting, they either close it up entirely or else get some family who have no house of their own to take care of it during their absence. During the season, small parties, traveling light, with very little baggage, make flying trips to the village, usually to get a fresh supply of

¹Dr. Richardson believes that the hunting grounds of families are kept sacred among the Eskimo. *Searching Expedition*, vol. 1, pp. 244, 351. See also the same author's paper, *New Philosophical Journal*, vol. 52, p. 323.

ammunition or oil, and at the end of the season a lucky hunter almost always sends in to borrow extra dogs and hire women and children to help bring in his game. The skins, which at this season are very thick and heavy, suitable only for blankets, heavy stockings, etc., are simply rough dried in the open air, and brought in stacked up on a flat sled. Lieut. Ray met a Nuwuk party returning in 1882 with a pile of these skins that looked like a load of hay. With such heavy loads they, of course, travel very slowly. A few natives, especially when short of ammunition, still use at this season the snow pitfalls mentioned by Capt. Maguire.¹

The following is the description of those seen by Lieut. Ray in 1883: A round hole is dug in the drifted snow, along the bank of a stream or lake. This is about 5 feet in diameter and 5 or 6 feet deep, and is brought up to within 2 or 3 inches of the surface, where there is only a small hole, through which the snow was removed. This is carefully closed with a thin slab of snow and baited by strewing reindeer moss and bunches of grass over the thin surface, through which the deer breaks as soon as he steps on it. The natives say that they sometimes get two deer at once.

This method of hunting the reindeer appears uncommon among the Eskimo. I find no mention of it except at Repulse Bay,² and among the Netsillingmint, where dogs' urine is said to be sprinkled on the snow as a bait to attract the deer by its "Salzgehalt."³ Lieut. Ray was informed by the natives that the "Nunatañmiun" also captured deer by means of a rawhide noose set across a regular deer path, when they discovered such. The noose is held up and spread by a couple of sticks, and the end staked to the ground with a piece of antler. A similar method was practiced by the natives of Norton Sound.⁴ A few parties visit the rivers in summer for the purpose of hunting reindeer, but most of the natives are either off on the trading expeditions previously mentioned or else settled in the small camps along the coast, 3 or 4 miles apart, whence they occasionally go a short distance inland in search of reindeer.

The seal.—The flesh of the smaller seals forms such a staple of food, and their blubber and skin serve so many important purposes, that their capture is one of the most necessary pursuits at Point Barrow, and is carried on at all seasons of the year and in many different methods. During the season of open water many seals are shot from the umiaks engaged in whaling and walrus hunting or caught in nets set along the shore at Elson Bay. This is also the only season when seals can be captured with the small kaiak darts.

The principal seal fishery, however, begins with the closing of the sea, usually about the middle of October. When the pack ice comes in there are usually many small open pools, to which the seals resort for air. Most of the able-bodied men in the village are out every day armed

¹ Northwest Passage, Appendix, p. 387.

² Rae, Narratives, etc., p. 135.

³ Klutachak, "Als Eskimo," etc., p. 181.

⁴ Dall, Alaska, p. 147.

with the rifle and retrieving harpoon, traveling many miles among the ice hummocks in search of such holes. When a seal shows his head he is shot at with the rifle, and the hunter, if successful, secures his game with the harpoon. This method of hunting is practiced throughout the winter wherever open holes form in the ice. A native going to visit his nets or to examine the condition of the ice always carries his rifle and retrieving harpoon, in case he should come across an open hole where seals might be found. The hunt at this season is accompanied with considerable danger, as the ice pack is not yet firmly consolidated and portions of it frequently move offshore with a shift of the wind, so that the hunter runs the risk of being carried out to sea. The natives exercise considerable care, and generally avoid crossing a crack if the wind, however light, is blowing offshore; but in spite of their precautions men are every now and then carried off to sea and never return.

The hunters meet with many exciting adventures. On the morning of November 24, 1882, all the heavy ice outside of the bar broke away from the shore, leaving a wide lead, and began to move rapidly to the northeast, carrying with it three seal hunters. They were fortunately near enough to the village to be seen by the loungers on the village hill, who gave the alarm. An umiak was immediately mounted on a flat sled and carried out over the shore ice with great rapidity, so that the men were easily rescued. The promptness and energy with which the people at the village acted showed how well the danger was appreciated.

At this season of the year a single calm night is sufficient to cover all the holes and leads with young ice strong enough to support a man, and occasionally before the pack comes in the open sea freezes over. In this young ice the seals make their breathing holes (adlu), "about the Bigness of a Halfpenny," as Egede says, and the natives employ the stabbing harpoon for their capture. At the present day this is seldom used alone, but the seal is shot through the head as he comes to the surface, and the spear only used to secure him. Seals which have been shot in this way are sometimes carried off by the current before they can be harpooned. As far as I can learn, this practice of shooting seals at the adlu is peculiar to Point Barrow (including probably the rest of the Arctic coast as far as Kotzebue Sound), though the use of the *una*, as already stated, is very general.

This method of hunting can generally be prosecuted only a few days at a time, as the movements of the pack soon break up the fields of young ice, though new fields frequently form in the course of the season. After the January gales the pack is so firmly consolidated that there are no longer any open holes or leads, and when the spring leads open young ice seldom forms, so that this method of hunting is as a rule confined to the period between the middle of October and the early part of January.

With the departure of the sun, about the middle of November, begins

the netting, which is the most important fishery of the year, but which can be prosecuted with success only in the darkest nights. The natives say that even a bright aurora interferes with the netting. At this season narrow leads of open water are often formed parallel to the shore, and frequently remain open for several days. The natives are constantly reconnoitering the ice in search of such leads, and when one is found nearly all the men in the village go out to it with their nets. A place is sought where the ice is tolerably level and not too thick for about a hundred yards back from the lead, at which distance the nets are set, often a number of them close together, in the manner already described, so that they hang like curtains under the ice, parallel to the edge of the open water. When darkness comes on the hunters begin to rattle on the ice with their ice picks, scratch with the seal call, or make some other gentle and continuous noise, which soon excites the curiosity of the seals that are swimming about in the open lead. One at length dives under the ice and swims in the direction of the sound, which of course leads him directly into the net, where he is entangled.

On favorable nights a great many seals are captured in this way. For instance, on the night of December 2, 1882, the netters from Utkiav-wiñ alone took at least one hundred seals. Such lucky hauls are not common, however. As the weather at this season is often excessively cold, the seals freeze stiff soon after they are taken from the net, and if sufficient snow has fallen they are stacked up by sticking their hind flippers in the snow. This keeps them from being covered up and lost if the snow begins to drift. I have counted thirty seals, the property of one native, piled up in this way into a single stack. The women and children go out at their convenience with dog sleds and bring in the seals. A woman, however, who is at work on deerskin clothing must not touch a hand to the seals or the sled on which they are loaded, but may lend a hand at hauling on the drag line. When the seals are brought to the edge of the beach they must not be taken on land till each has been given a mouthful of fresh water. We did not learn the object of this practice, but Nordenskiöld, who observed a similar custom at Pitlekaj, was informed that it was to keep the leads from closing.¹

When the lead keeps open for several days, or there is a prospect of its opening again, the hunter leaves his gear out on the ice, sometimes bringing his ice pick, scoop, and setting pole part way home and sticking them up in the snow alongside of the path. In 1884 a lead remained open for several days about 3 or 4 miles from the village, and the natives made a regular beaten trail out to it. When we visited the netting ground the lead had closed, but nearly all the men had left their gear sticking up near it, with the nets tied up and hung upon the ice picks. They had built little walls of snow slabs as a protection against the wind. The season for this netting ends with the January gales, which close the leads permanently.

¹ Vega, vol. 2, p. 130. Compare the custom observed in Baffin Land, of sprinkling a few drops of water on the head of the seal before it is cut up, mentioned by Hall, *Arctic Researches*, p. 573.

Later in the winter the seals resort to very inconsiderable cracks among the hummocks for air, and nets are set hanging around these cracks, so that a seal can not approach the crack without being caught. There was such a crack just in the edge of the rough land floe, not half a mile from Utkiavwñ, in February, 1883, from which two men took several seals, visiting the nets every day or two. Those men who do not go off on the deer hunt keep one or more seal nets set all winter, either in this way or in the third method, which can be practiced only after the daylight has come back, when the ice is thick. At this season there are frequently to be found among the hummocks what the natives call *i'glus*, dome-shaped snow houses about 6 feet in diameter and 2 or 3 feet high, with a smooth round hole in the top, and communicating with the water. These are undoubtedly the same as the snow burrows described by Kumlien,¹ which the female seal builds to bring forth her young in.² They are curious constructions, looking astonishingly like a man's work. The natives told me that nets set at these places were for the capture of young seals (*nëtyiáru*). It appears that these houses are the property of a single female only until her young one is able to take to the water, as a net is kept set at one of these holes, as well as I could understand, sometimes capturing several seals. The net is set flat under the hole, the corners being drawn out by cords let down through small holes in a circle round the main opening, through which the net is drawn. A seal rising to the surface runs his head through the meshes of the net. The small holes and sometimes the middle one are carefully covered with slabs of snow.

The officers of the revenue steamer *Corwin*, who made the sledge journey along the northeast coast of Siberia in the early summer of 1881, saw seal nets set in this way, flat, under air holes in the ice, with a hole for each corner of the net. When a seal was caught the net was drawn up through the middle hole with a hooked pole.³ In 1883 they began setting these nets at Point Barrow about March 4, and probably about the same date the year before, though we did not happen to observe this method of netting until considerably later.

In June and July, when the ice becomes rotten and worn into holes, the seals "haul out" to bask in the sun, and are then stalked and shot. They are exceedingly wary at this season. The seal usually taken in the methods above described is the rough or ringed seal (*Phoca fœtida*), but in 1881 a single male ribbon seal (*Histiophoca fasciata*) was netted, and in 1882 a native shot one at the breathing hole, but it was carried away by the current before he could secure it. The natives said that they sometimes caught the harbor seal (*P. vitulina*) in the shore nets in Elson Bay. The bearded seal (*Erignathus barbatus*), whose skin is especially prized for making harpoon lines, boot soles, umiak covers,

¹ Contributions, p. 57.

² Hall. Arctic Researches, pp. 507 and 578, with diagrams.

³ Hooper, *Corwin Report*, p. 25.

etc., is never very abundant, and occurs chiefly in the season of open water, when it is captured from the umiak with harpoon and rifle, but they are sometimes found in the winter, as two were killed at breathing holes in the rough ice January 8, 1883.

The walrus.—The walrus occurs only during the season of open water, and is almost always captured from the umiak with the large harpoon and rifle. The whaling boats usually find a few, especially late in the season, and after the trading parties have gone in the summer the natives who remain are generally out in the boats a good deal of the time looking for walrus and seals. As a general thing walrus are especially plenty in September, when much loose ice is moving backwards and forwards with the current, frequently sleeping in large herds upon cakes of ice. The boats, which are out nearly every day at this season with volunteer crews, not regularly organized as for whaling, paddle as near as they can to these sleeping herds and try to shoot them in the head, aiming also to "fasten" to as many as they can with the harpoon and float as they hurry into the water. A harpooned walrus is followed up with the boat and shot with the rifle when a chance is offered. Swimming walrus are chased with the boat and "fastened to" by darting the harpoon. When a walrus is killed it is towed up to the nearest cake of ice and cut up on the spot. We never knew of the kaiak being used in walrus-hunting, as is the custom among the eastern Eskimo.

The whale.—The pursuit of the "bowhead" whale (*Balæna mysticetus*), so valuable not only for the food furnished by its flesh and "blackskin" and the oil from its blubber, but for the whalebone, which serves so many useful purposes in the arts of the Eskimo and is besides the chief article of trade with the ships, is carried on with great regularity and formality. In the first place all the umialks (boat-owners) or those who are to be the captains of whaling umiaks, before the deer hunters start out in January, bring all the gear to be used in the whale fishery to the *kû'dyîgl*, where it is consecrated by a ceremony consisting of drumming and singing, perhaps partaking of the nature of an incantation.

Capt. Herendeen was the only one of our party who witnessed this ceremony, which took place at *Utkiavwîñ* on January 9, 1883, and he did not bring back a detailed account of the proceedings. During part of the ceremony all the umialks were seated in a row upon the floor, and a woman passed down the line marking each across the face with an oblique streak of blacklead. As soon as the deer hunters return in the spring they begin getting ready for the whales, covering the boats, fitting lines to harpoons, and putting gear of all sorts in perfect order. Every article to be used in whaling—harpoons, lances, paddles, and even the timbers of the boats—must be scraped perfectly clean.¹ This work is generally done by the umialk himself and his

¹ Compare Egede, *Greenland*, p. 102. The whale "can't bear sloven and dirty habits."

family, as the crews do not enter on their duties till the whaling actually commences. The crews are regularly organized for the season, and are made up during the winter and early spring. They consist of eight or ten persons to each boat, including the captain, who is always the owner of the boat, and sits in the stern and steers, using a larger paddle than the rest, and the harpooner, who occupies the bow. When a bombgun is carried it is intrusted to a third man, who sits in the waist of the boat, and whose duty it is to shoot the whale whenever he sees a favorable opportunity, whether it has been harpooned or not. The rest are simply paddlers.

When used for whaling, the umiak is propelled by paddles alone, sails and oars never being even taken on board. Men are preferred for the whaling crews when enough can be secured, otherwise the vacancies are filled by women, who make efficient paddlers. Some unialiks hire their crews, paying them a stipulated price in tobacco and other articles, and providing them with food during the season. Others ship men on shares. We did not learn the exact proportions of these shares in any case. They appear to concern the whalebone alone, as all seem to be entitled to as much of the flesh and blubber as they can cut off in the general scramble. At this season exploring parties are out every day examining the state of the ice to ascertain when the pack is likely to break away from the landfloe, and also to find the best path for the umiaks through the hummocks.

In 1882 the condition of the ice was such that the boats could be taken out directly from Utkiavwîñ, by a somewhat winding path, to the edge of the land floe about five or six miles from the shore. This path was marked out by the seal-hunters during the winter, and some of the natives spent their leisure time widening and improving it, knocking off projecting points of ice with picks and whale spades, and filling up the worst of the inequalities. Much of the path, however, was exceedingly rough and difficult when it was considered finished. In 1883 the land floe was so rough and wide abreast of the village that no practicable path could be made, so all the whalers with their families moved up to Imé'kpûñ and encamped in tents as already described (see p. 84) for the season. From this point a tolerably straight and easy path was made out to the edge of the land floe. The natives informed me as early as April 1 that it would be necessary for them to move up to Imé'kpûñ, adding that the ice abreast of the village was very heavy and would move only when warm weather came. This prediction was correct, as the season of 1883 was so late that no ships reached the station until August 1.

About the middle of April the natives begin anxiously to expect an east or southeast wind (nígyə) to drive off the pack and open the leads, and should it not speedily blow from that quarter recourse is had to supernatural means to bring it. A party of men go out and sit in a semicircle facing the sea on the village cliff, while one man in the mid-

dle beats a drum and sings a monotonous chant, interrupted by curious vibrating cries, accompanied with a violent shaking of the head from side to side. This ceremony is conducted with great solemnity, and the natives seemed disinclined to have us witness it, so that we learned very little about it. They, however, told us that the chant was addressed to a *tuaña* or spirit, requesting him to make the desired wind blow.¹ It does not appear to be necessary that the man who delivers the invocation should be a regular magician or "doctor." A succession of unsuccessful attempts were made in 1882, some of them by men who never to our knowledge practiced incantations on other occasions. During this period, and while the whaling is going on, no pounding must be done in the village, and it is not allowable even to rap with the knuckles on wood for fear of frightening away the whales.² It is interesting to find that at Norton Sound, where the whale is not pursued, this superstition has been transferred to the salmon fishery, one of the most important industries of the year. Mr. Dall³ says: "While the fishery lasts no wood must be cut with an axe, or the salmon will disappear."

As soon as the lead opens, and sometimes before when the prospect looks promising, the boats are taken out to the edge of the land floe and kept out there during the season, which lasts till about the last week in June, when they are brought in and got ready for the summer expeditions. When the lead closes, as often happens, the boats are hauled up on the ice and many or all of the crews come home until there are prospects of open water. When there is open water, the boats are always on the lookout for whales, either cruising about in the lead or lying up at the edge of the floe, the crews eating and sleeping when they can get a chance and shooting seals and ducks when there are no whales in sight. The women and children travel back and forth between the village and the boats, carrying supplies of food for the whalers.

In 1883, there was a regular beaten trail along the smooth shore ice between *Imé'kpûñ* and *Utkiavwñ*, where people were constantly traveling back and forth. When the boats are out no woman is allowed to sew, as was noticed by Dr. Simpson.⁴ To carry the *umiak* out over the ice it is lashed on a flat sled and drawn by dogs and men. A description of one of these boats which I accompanied for part of its journey out to the open water, will show how a whaleboat is fitted out. The rifles, harpoons, lances, and other gear of the party were sent on ahead on a sled drawn by half a dozen dogs, with a woman to lead them. After these had made a short stage, they were unfastened from this

¹ Hall speaks of seeing the *angeko* "very busy ankooting on the hills"—"To try and get the pack ice out of the bay."—*Arctic Res.*, p. 573.

² Compare Rink, *Tales*, etc., p. 55: "To the customs just enumerated may be added various regulations regarding the chase, especially that of the whale, this animal being easily scared away by various kinds of impurity or disorder."

³ *Alaska*, p. 147.

⁴ *Loc. cit.*, p. 261.

sled and brought back and harnessed to the flat sled on which the umiak was lashed. The party, which consisted of five men and two women, one of whom remained with the sled load of gear, then started ahead, the women running in front of the dogs and the men pushing at the sides of the boat. The boat travels very easily and rapidly on smooth ice, but among the hummocks the men have hard work pushing and scrambling, and occasional stops have to be made to widen narrow places in the path and to chisel off projecting points of ice which might pierce the skin cover of the boat. When they came up to the first sled the women were again sent on with this while the men rested. The inflated sealskin floats, five or six in number, the whale harpoon, and whale spades, and ice picks were carried in the boats.

A whaling umiak always carries a number of amulets to insure success. These consisted in this case of two wolf skulls, a dried raven, the axis vertebra of a seal, and numerous feathers. The skin of a golden eagle is considered an excellent charm for whaling, and Nika-waalu was particularly desirous to secure the tip of a red fox's tail, which he said was a powerful amulet. The captain and harpooner wore fillets of mountain sheepskin, with a little crystal or stone image of a whale dangling at each side of the face, and the captain's fillet was also fringed with the incisor teeth of the mountain sheep. Both wore little stone whales attached to the breast of the jacket, and one woman and one or two of the men had streaks of black lead on their faces.¹

When they are on the watch for whales the great harpoon is kept always rigged and resting in a crotch of ivory in the bow of the boat. When a whale is sighted they paddle up as close as possible and the harpooner thrusts the harpoon into him. The whale dives, with the floats attached to him, and the shaft, which is retained, is rigged for striking him when he rises again. The other boats, if any are near, join in the chase until the whale is so wearied that he can be lanced or a favorable opportunity occurs for shooting him. All boats in sight at the time the whale is struck, as I understood, are entitled to an equal share of the whalebone.

As soon as the whale is killed he is towed up to the edge of the land floe and everybody standing on the edge of the ice and in the boats begins hacking away, at random, at the flesh and blubber, some of them going to work more carefully to cut out the whalebone. The "cutting in" is managed without order or control, everybody who can be on the spot being apparently entitled to all the meat, blubber, and blackskin he or she can cut off. The same custom was practiced in Greenland, and is to this day in eastern Siberia.

¹ Compare Egede, Greenland, p. 102. "When they go a Whale-catching they put on their best Gear or Apparel, as if they were going to a Wedding Feast, fancying that if they did not come cleanly and neatly dressed the Whale, who can't bear sloven and dirty Habits, would shun them and fly from them."

See also Crantz, History of Greenland, Vol. 1, p. 121. "They dress themselves in the best manner for it, because, according to the portentous sayings of their sorcerers, if any one was to wear dirty cloaths, especially such in which he had touched a dead corpse, the whale would escape, or, even if it was already dead, would at least sink."

While they are very particular in all superstitious observances regarding the whales, they are less careful about certain things, such as loud talking and firing guns at seals and fowl when they are waiting for whales, which really hurt their chances with the timid animals. They are less energetic than one would suppose in pursuit of the whale, according to Capt. Herendeen, who spent several days each season with the whaleboats. Instead of cruising about the lead in search of whales they are rather inclined to lie in wait for them at the edge of the floe, so that when the open water is wide many whales escape.

When the leads are very narrow the whales are sometimes shot with the bombgun from the edge of the ice. Success in this appears to be variable. In 1882 only one small whale was secured, and in 1883 one full-grown one, though several were struck and lost each season. The veteran whaling-master, Capt. L. C. Owen, informs me that one season the boats of these two villages captured ten. The season of 1885 was very successful. The natives of the two villages are reported to have taken twenty-eight whales. Capt. E. E. Smith, however, informs me that only seven of these were full-grown.

When actually engaged in whaling the umialik exercises a very fair degree of discipline, but at other times he seems hardly able to keep his men from straggling off to go home or to visit their seal nets, etc., so that he sometimes has to chase a whale "short-handed."

Nowhere else among the Eskimo does the whale fishery appear to be conducted in such regular manner with formally organized crews as upon this northwest coast. From all accounts the animal is only casually pursued elsewhere with fleets of kaiaks or umiaks manned by volunteer crews.¹

The beluga or white whale is only casually pursued, and as far as I could learn is always shot with the rifle. It is not abundant.

Fowl.—During the winter months a few ptarmigan are occasionally shot, but the natives pay no special attention to birds until the spring migrations. The first ducks appear a little later than the whales, about the end of April or the first week of May, and from that time till the middle of June scarcely a day passes when they are not more or less plenty. The king ducks (*Somateria spectabilis*) are the first to appear, while the Pacific eiders (*S. v-nigra*) arrive somewhat later, and are more abundant towards the end of the migrations. At this season all women and children, and many men, go armed with the bolas, and everybody is always on the lookout for flocks of ducks. On four or five favorable days each season, at intervals of a week or ten days, there are great flights of eiders coming up in huge flocks of two or three hundred, stretched out in long diagonal lines. These flocks follow one another in rapid succession and keep the line of the coast, apparently striking straight across Peard Bay from the Seahorse Islands to a point

¹See Egede, *Greenland*, p. 102; Crantz, *History of Greenland*, Vol. 1, p. 121; Parry, *2d. Voy.*, p. 509 (Iglulik); McClure, *Northwest Passage*, p. 92 (Capo Bathurst).

four or five miles below Utkiavwñ, and most of them fly up along the smooth shore-ice to Pernyñ or Point Barrow. Some flocks always fly up among the hummocks of the land floe, and a few others turn eastward below the village and continue their course to the northeast across the land.

On the days between the great flights there are always a few flocks passing, and some days when there is no flight along shore they are very abundant out at the open water, where the whalers shoot them in the intervals of whaling. When a great flight begins the people at the village hasten out and form a sort of skirmish line across the shore ice from the shore to the hummocks, a few sometimes stationing themselves among the latter. They take but little pains to conceal themselves, frequently sitting out on the open ice-field on sealing stools or squares of bearskins. The ducks generally keep on their course without paying much attention to the men, and in fact one may often get a shot by running so as to head off an approaching flock. Firing, however, frightens them and makes them rise to a considerable height, often out of gunshot. Many ducks are taken with guns and bolas in these flights.

Rather late in the season the old squaws (*Clangula hyemalis*) pass to the northeast in large flocks, but usually go so high that none are taken. A good many of these, however, with a few eiders, geese, brant, and loons, remain and breed on the tundra, and are occasionally shot by the natives, though most of them are too busy with whaling and seal and walrus hunting to pay much attention to birds. Small parties of two or three lads or young men, sometimes with their wives, make short excursions inland to the small streams and sand islands east of Point Barrow, after birds and eggs, and the boys from the small camps along the coast towards Woody Inlet are always on the lookout for eggs and small birds, such as they can kill with their bows and arrows or catch in snares. They say that the parties which go east, and those which visit the rivers in summer, get many eggs and find plenty of ducks, geese, and swans, which have molted their flight feathers so that they are unable fly.

About the end of July the return migration of the ducks begins. At this season the flocks, which are generally smaller and more compact than in the spring, come from the east along the northern shore, and cross out to sea at the isthmus of Pernyñ, where the natives assemble in large numbers to shoot them as well as to meet with the Nunatañmiun. All the people who have been scattered along the coast in small camps gradually collect at this season at Pernyñ, and the returning eastern parties generally stop there two or three days; while, after they have brought their families back to the village, the men frequently walk up to Pernyñ for a day or two of duck shooting. The tents are pitched just in the bend of Elson Bay, and north of them is a narrow place in the sandspit over which the ducks often pass. Here the na-

tives dig shallow pits in the gravel, in which they post themselves with guns and bolas. A line of posts is set up along the bend of the beach from the tents almost to the outlet of Imêkpûniglu.

When a light breeze is blowing from the northeast the ducks, no matter how far off shore they are when first seen, always head for the point of land on the other side of this outlet, probably with the intention of following the line of lagoons and going out to sea farther down the coast, as they sometimes do. When, however, they reach this critical point they catch sight of the posts, and the natives who are watching them sharply set up a shrill yell. Frightened by this and by the line of posts, nine times out of ten, if the cry is given at the right moment, the ducks will falter, become confused, and, finally, collecting into a compact body will whirl along the line of posts, past the tents, flying close to the water, and turn out to sea at the first open space, which is just where the gunners are posted. This habit of yelling to frighten the ducks and bring them within gunshot has been observed on the Siberian coast in places where the ducks are in the habit of flying in and out from lagoons over low bars.¹ Should the wind blow hard from the east, however, or blow from any other quarter, the ducks do not fly in such abundance, nor do they pay much attention to the posts or the yelling, but often keep on their course down the lagoons, or head straight for the beach and cross wherever they strike it. The latter is generally the habit with the old squaws, who come rather late in the migrations, while the black brant (*Branta nigricans*) are more apt to go down the lagoons. A few pintail ducks (*Dafila acuta*), are occasionally shot at this season, and are sometimes found in the two little village ponds (Tûseraru). The shooting at Pernyû usually lasts till the middle or end of September, during which month the natives also shoot a good many gulls (*Larus barrovianus* and *Rhodostethia rosea*) as they fly along the shore.

IMPLEMENTS FOR FISHING.

Hooks and lines.—The streams and lakes in the immediate neighborhood of Point Barrow contain no fish, and there is comparatively little fishing in the sea. When the water first closes in the autumn narrow tide cracks often form at the very edge of the beach. At these cracks the natives frequently catch considerable numbers of Polar cod (*Boreogadus saida*) and small sculpins (*Cottus quadricornis* and *C. decastrensis*), with the hook and line. The tackle for this fishing consists of

¹Von der Lagune aus pflegten jeden Morgen und Abend grosse Entenschaaren über den Ort hinweg nach dem Meere zu fliegen. Dann wurden durch Pfeifen und Schreien die Thiere so geängstigt, dass sie ihren Flug abwärts richteten und nun durch die mit grosser Sicherheit geworfene Schleuder oder durch Flintenschüsse erreicht werden konnten. (East Cape), Krause Brothers, Geographische Blätter, Vol. 5, pt. 1, p. 32.

"The birds were easily called from their course of flight, as we repeatedly observed. If a flock should be passing a hundred yards or more to one side, the natives would utter a long, peculiar cry, and the flock would turn instantly to one side and sweep by in a circuit, thus affording the coveted opportunity for bringing down some of their number." (Cape Wankarem), Nelson, Cruise of the Corwin, p. 100.

a short line of whalebone, provided with a little "squid" or artificial bait of ivory, and fastened to a wooden rod about 18 inches or 2 feet long. The lure, which is apparently meant to represent a small shrimp, is kept moving, and the fish bite at it. We brought home two complete sets of tackle for this kind of fishing, two lines without rods and twelve lures or hooks. No. 89548 [1733] Fig. 264, has been selected for description.

The line is 40 inches long and made of four strips of whalebone 0.1 inch wide, fastened together with what appear to be "waterknots." Two of these strips are of black whalebone, respectively $4\frac{1}{2}$ and 9 inches long; the other two are of light colored whalebone and $15\frac{1}{2}$ and 11 inches long. The light colored end is made fast to the eye in the small end of the hook as follows: The end is passed through the eye, doubled back



FIG. 264.—Tackle for shore fishing.

and passed through a single knot in the standing part, and knotted round the latter with a similar knot (Fig. 265). This knot is the one generally used in fastening a fishing line to the hook. The other end is doubled in a short bight into which is becket-hitched one end of a bit of sinew thread about 3 inches long, and the other end is knotted into a notch at one end of the rod, as the whalebone would be too stiff to tie securely to the stick. The rod is a roughly whittled splinter of California redwood, $14\frac{1}{2}$ inches long. The body of the lure is a piece of walrus ivory $1\frac{1}{2}$ inches long. Through a hole in the large end of this is driven the barbless brass hook, with a broad thin plate at one end bent up, flush with the convex side. When not in use the line is reeled lengthwise on the rod, secured by a notch at each end of the latter, and the hook stuck into the wood on one side of the rod. The hook is wedged into the body of the lure with a bit of whalebone. The other specimen, No. 89547, [1733] from the same village, is almost exactly like this, but



FIG. 265.—Knot of line into hook.

has a slightly shorter line, made of three strips of bone, of which the lower two, as before, are of light colored whalebone. The object of using this material is probably to render the part of the line which is under water less conspicuous, as we use leaders and casting lines of transparent silkworm gut. The body of the lure is made of old brown walrus ivory. These lures are 1 inch to $1\frac{1}{2}$ inches long, and vary little in the shape of the body which is usually made of walrus ivory, in most cases darkened on the surface by age or charring, so that when carved into shape it is parti-colored, black and white. The body is often ornamented with small colored beads inlaid for eyes and along the back (Fig. 266a, No. 56609 [153], from Utkiavwīñ).

The hook is usually of the shape described but is sometimes simply a slightly recurved spur about $\frac{1}{2}$ -inch long as in Fig. 266b (No. 56610 [160],

also from Utkiavwīñ). It is usually of brass or copper, rarely of iron. Two peculiar lures from Utkiavwīñ, are No. 56705 [150a and 150b].



FIG. 266.—Small fishhooks.

The first, *a*, has a body of brass of the usual shape, and a copper hook, and the other, *b*, has the body made of a strip of thin brass to the back of which is fastened a lump of lead or pewter. The hook appears to be made of a common copper tack. We were informed that these lures were also used for catching small fish, trout, smelts, and perhaps grayling in the rivers in summer. No. 89554 [950], Fig. 267*a*, from Utkiavwīñ, is per-

haps intended exclusively for this purpose, as it is larger than the others, (1.9 inch long) and highly ornamented with beads. Fig. 267*b*, No. 89783 [1007], is one of these beaded lures (2½ inches long), with an iron hook, undoubtedly for river fishing, as it belonged to the "inland" native, Ilū'bw'ga. It differs slightly in shape from the others, having two eyes at the small end into which is fastened a leader of sinew braid 3 inches long. On this are strung four blue glass beads and one red one.

No. — [151] Fig. 268, from Utkiavwīñ, is a rod rigged for fishing in the rivers. The rod is a roughly whittled stick of spruce or pine, 27 inches long. One line is 43 and the other 36 inches long and each is made of two strips of whalebone of which the lower is light colored as usual. The shorter line carries a small plain ivory lure of the common pattern, and the longer one a little flat barbless hook of copper with a broad flat shank. This was probably scraped bright and used without bait. The lines are



FIG. 267.—Hooks for river fishing.



FIG. 268.—Tackle for river fishing.

reeled in the usual manner on the rod, and the hooks caught into notches on the sides of it. The small lures are called nī'ksīñ.

¹Museum number effaced.

When at the rivers in the autumn and early spring, they fish for burbot with a line carrying a peculiar large hook called *iekqlûn*, which is baited with a piece of whitefish. There are two forms of this hook, which is from 3 to 5½ inches long. One form differs in size only from the small *nî'ksîn*, but is always of white ivory and not beaded (Fig. 269, No. 89550 [780] from Utkiavwîñ, which is 4½ inches long and has a copper hook). The hook is of copper, brass or iron. The other form, which is perhaps the commoner, has a narrow flat body, slightly bent, and serrated on the edges



FIG. 270.—
Burbot
hook,
2d pattern.



FIG. 269.—Bur-
bot hook, 1st
pattern.

to give a firm attachment to the bait. This body is usually of antler, and has a copper or iron hook either spur-shaped or of the common form as in Fig. 270, No. 89553 [764] from Utkiavwîñ, which has a body of walrus ivory 4 inches long and a copper hook. Of late years, small cod hooks obtained from the ships have been adapted to these bodies, as is seen in Fig. 271, No. 89552 [841] from Utkiavwîñ. The shank of the hook has been half imbedded in a longitudinal groove on the flatter side of the body, with the bend of the hook projecting about ¼ inch beyond the tip of the latter. The ring of the hook has been bent open and the end sunk into the body. The hook is held on by two lashings of sinew, one at each end of the shank.

No. 56594 [32] from Utkiavwîñ is like the preceding, but has a larger hook, which from the bend to the point is wrapped in a piece of deer skin with the flesh side out, and wound with sinew having a tuft of hair at the point of the hook. This is probably to hide the point when the hook is baited. No. 56594 [167] from Utkiavwîñ, has the hook fastened to the back of the body instead of the flat side. The manner in which these hooks are baited is shown in Fig. 272, which represents a complete set of burbot tackle (No. 89546 [946]) brought in and sold by some Utkiavwîñ natives, just as they had been using it in the autumn of 1882 at Kuaru or Kulugrua. A piece of whitefish, flesh and skin,



FIG. 271.—Burbot
hook, made of
cod hook.

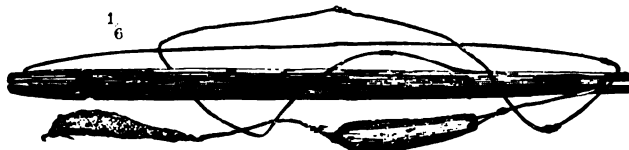


FIG. 272.—Burbot tackle, baited.

with the scales removed is wrapped round the hook so as to make a club-shaped body 4½ inches long and is sewed up along one side with cotton twine. The copper spur projects through the skin on the other side.

This hook would not hold the fish unless it were "gorged," but the voracious burbot always swallows its prey. In dressing these fish for the table, whitefish of considerable size were frequently found in them. The line is of whalebone like those already described but a little stouter, 78 inches long, and made of seven pieces, all black. The end of the line is fastened into an eye in the small end of a rough club-shaped sinker of walrus ivory, $4\frac{3}{4}$ inches long. There is another eye at the large end of the sinker, for the attachment of a leader of double sinew braid $5\frac{1}{2}$ inches long connecting the hook with the sinker.

The reel, which serves also as a short rod, is of yellow pine $19\frac{1}{2}$ inches long. When the line is reeled up, the hook is caught into the wood on one side of the reel. No. 89545 [946] is a similar set of baited tackle, bought from the same natives, differing from the preceding only in proportions, having a longer line—9 feet and 6 inches—and a somewhat larger bait. We also procured two sets of burbot tackle unbaited.

One of these (No. 56543 [33] from Utkiavwīñ) has a whalebone line 14 feet long, and a roughly octahedral sinker of walrus ivory 3 inches long and $1\frac{1}{2}$ in diameter. The hook, which is joined to the sinker as before by a leader of stout sinew braid, is of the second pattern, with serrated edges, and a copper hook. The leader is neatly spliced into this. The other, No. 56544 [187], also from Utkiavwīñ, has no sinker and a hook with a club-shaped body and iron spur. It was probably put together for sale, as it is new. The sinkers, of which we collected five, besides those already mentioned, are always about the same weight and either club-shaped or roughly octahedral. They are always of walrus ivory and usually carelessly made. Fig. 273 (No. 56577 [260]) represents one of these sinkers (kībica), on which there is some attempt at ornamentation. On the larger are two eyes and the outline of a mouth like a shark's, incised and filled



FIG. 273.—
Ivory sinker.

in with black refuse oil.

A similar line and reel are used for catching polar cod in the spring and late winter through the ice at some distance from the shore. These lines are 10 or 15 fathoms long, and provided with a heavy sinker of ivory, copper, or rarely lead, to which are attached by whalebone leaders of unequal length, two little jiggers like Fig. 274 (the property of the writer, from Utkiavwīñ). This is of white walrus ivory, $2\frac{1}{4}$ inches long and $\frac{3}{8}$ in diameter at the largest part. The two slender hooks are of copper and are secured by wedges of whalebone. This makes a contrivance resembling the squid jigs used by our fishermen. These jiggers are sometimes made wholly of copper, which is scraped bright.

This fishery begins with the return of the sun, about the



FIG. 274.—
Ivory jigger for
polar cod.

1st of February, and continues when the ice is favorable until the season is so far advanced that the ice has begun to melt and become rotten. The fish are especially to be found in places where there is a good-sized field of the season's ice, 3 or 4 feet thick, inclosed by hummocks, and they sometimes occur in very great numbers. In 1882 there was a large field of this kind about 2 miles from the village and the fishing was carried on with great success, but in 1883 the ice was so much broken that the fish were very scarce. Some lads caught a few early in the season, but the fishery was soon abandoned.

A hole about a foot in diameter is made through the ice with an ice pick, and the fragments dipped out either with the long-handled whalebone scoop, or the little dipper made of two pieces of antler mounted on a handle about 2 feet long, which everybody carries in the winter. The line is unreeled and let down through the hole till the jigs hang about a foot from the bottom. The fisherman holds in his left hand the dipper above mentioned, with which he keeps the hole clear of the ice crystals, which form very quickly, and in his right the reel which he jerks continually up and down. The fish, attracted by the white "jiggers," begin nosing around them, when the upward jerk of the line hooks one of them in the under jaw or the belly. As soon as the fisherman feels the fish, he catches a bight of the line with the scoop in his left hand and draws it over to the left; then catches the line below this with the reel and draws it over to the right, and so on, thus reeling the line up in long hanks on these two sticks, without touching the wet line with his fingers.

When the fish is brought to the surface of the ice, he is detached from the barbless hook with a dextrous jerk, and almost instantly freezes solid. The elastic whalebone line is thrown off the stick without kinking and let down again through the hole. When fish are plentiful, they are caught as fast as they can be hauled up, sometimes one on each "jigger." If the fisherman finds no fish at the first hole he moves to another part of the field and tries again until he succeeds in "striking a school." The fish vary in abundance on different days, being sometimes so plentiful that I have known two or three children to catch a bushel in a few hours, while some days very few are to be taken. In addition to the polar cod, a few sculpins are also caught, and occasionally the two species of *Lycodes* (*L. turnerii* and *coccineus*) which voracious fish sometimes seize the little polar cod struggling on the "jigger" and are thus caught themselves. This fishery is chiefly carried on by the women, children, and old men, who go out in parties of five or six, though the hunters sometimes go fishing when they have nothing else to do. There were generally thirty or forty people out at the fishing-ground every day in 1882.

Jiggers of this pattern appear to be used at Pitlekaj, from Nordendskiöld's description,¹ but I have seen no account either there or elsewhere

¹ Vega, vol. 2, p. 110.

of the peculiar method of reeling up the line such as we saw at Point Barrow. Lines of whalebone are very common among the Eskimo generally,¹ and perhaps this material is preferable to any other for fishing in this cold region, for not only does the elastic whalebone prevent kinking, but the ice which forms instantly on the wet line in winter does not adhere to it, but can easily be shaken off. No. 56545 [410] is a line 51 feet and 10 inches long and 0.05 inch in diameter, made of human hair, neatly braided in a round braid with four strands. This was called a fishing line, but was the only one of the kind seen. Fishhooks of the kind described, with a body of bone or ivory, which serves for a lure, armed with a spur or bent hook of metal, without a barb, seem to be the prevailing type amongst the Eskimo. In the region about Norton Sound (as shown by the extensive collections of Mr. Nelson and others) this is often converted into an elaborate lure by attaching pendants of beads, bits of the red beak of the puffin, etc. Crantz mentions a similar custom in Greenland of baiting a hook with beads.²

Nets (Kubra).—The most important fishery at the rivers is carried on by means of gill-nets, set under the ice, and visited every few days. In these are taken large numbers of all three species of whitefish (*Coregonus kenicotti*, *C. nelsoni*, and *C. laurettae*.) The collection contains three specimens of these nets, two of whalebone and one of sinew. No. 56754 [147], Fig. 275, is a typical whalebone net. It is long and shallow, 79 meshes long and 21 deep, made of fine strips of whalebone fastened together as in the whalebone fishing lines. Most of the whalebone is black, but a few light colored strips are intermixed at random. The length of the mesh is $3\frac{1}{2}$ inches, and the knot used in making them is the ordinary netting-knot. When not



FIG. 275.—Section of whalebone net.

in use the net is rolled up into a compact ball and tied up with a bit of string. When set, this net is 21 feet 7 inches long and 3 feet 4 inches deep. The other whalebone net (No. 56753 [172], also from Utkiavwīñ), is similar to this, but slightly larger, being 87 meshes (25 feet) long and 22 (3 feet 9 inches) deep. The length of mesh is $3\frac{1}{2}$ inches.

¹ "Their Lines are made of Whalebones, cut very small and thin, and at the End tacked together." Egede, Greenland, p. 107. See also Crantz, vol. 1, p. 95; Dall, Alaska, p. 148; and the Museum Collections which contain many whalebone lines from the Mackenzie and Anderson rivers, collected by MacFarlane, and from the whole western region, collected by Nelson.

² "Instead of a bait, they put on the hook a white bone, a glass bead, or a bit of red cloth" (when fishing for sculpins). History of Greenland, vol. 1, p. 95.

Fig. 276 (unit of web) is a net (No. 56752 [171] from the same village) of the same mesh and depth, but 284 meshes (60 feet) long and made of twisted sinew twine.

I had no opportunity of seeing the method of setting these nets under the ice, but it is probably the same as that used in setting the seal nets.

When in camp at Pernyû in the summer, the natives set these nets in the shoal water of Elson Bay, at right angles to the beach, with a stake at each end of the net. They are set by a man in a kayak, and in them are gilled considerable numbers of whitefish, two species of salmon (*Oncorhynchus gorbusha* and *O. nerka*) and an occasional trout (*Salvelinus malma*). They take these nets east with them on their summer expeditions, but we did not learn the method of using them at this season. Perhaps they are sometimes used for seining on the beach, as Thomas Simpson says that the Eskimo at Herschel Island (probably Kûnmûd'lfû) sold his party "some fine salmon trout, taken in a seine of whalebone, which they dragged ashore by means of several slender poles spliced together to a great length."¹

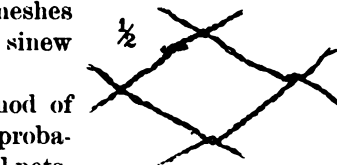


FIG. 276.—Mesh of sinew net.

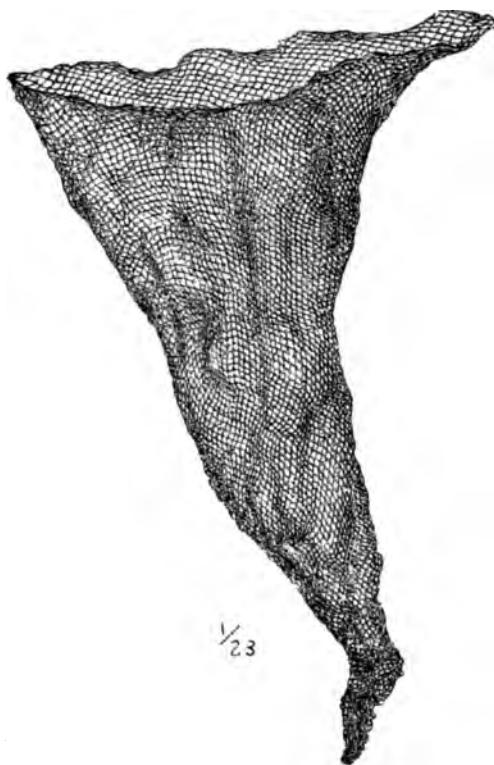


FIG. 277.—Fish trap.

An Utkiawwî native told us that he found trout (*Salvelinus malma*) so plentiful at or near the mouth of the Colville, in 1882, that he fed his dogs with them.

Fig. 277 is a peculiar net or fish-trap (No. 56755 [190]) from Utkiawwî, the only specimen of the kind seen. It is a conical, wide-mouthed bag, 8 feet 4 inches long and 5½ feet wide at the mouth, netted all in one piece of twisted sinew, with a 2¼-inch mesh. This was brought over for sale at an early date, before we were well acquainted with the natives, and we only learned that it was set permanently for catching fish. Unfortunately, we never saw another specimen, and through the press of other duties never happened to make further

¹ Narrative, p. 115.

inquiries about it. From its shape it would appear as if it were meant to be set in a stream with the mouth towards the current. This contrivance is called *sápotin*, which corresponds to the Greenlandic *saputit*, a dam for catching fish.

From all accounts, the natives east of the Anderson River region were ignorant of the use of the net before they made the acquaintance of the whites,¹ though they now use it in several places, as in Greenland and Labrador. The earliest explorers on the northwest coast, however, found both fish and seal nets in use, though, as I have already mentioned, the seal net was spoken of at Point Barrow as a comparatively recent invention. At the present day, nets are used all along the coast from the Mackenzie and Anderson rivers (see MacFarlane's Collection) as far south at least as the Yukon delta.² I have not been able to learn whether gill nets are used in the delta of the Kuskokwim. Petroff³ mentions fish traps and dip nets merely. That the natives of Kadiak formerly had no nets I infer from Petroff's statement⁴ that "of late they have begun to use seines of whale sinew." Nets are generally used on the Siberian coast. We observed them ourselves at Plover Bay, and Nordenskiöld⁵ describes the nets used at Pitlekaj, which are made of sinew thread. It is almost certain that the American Eskimo learned the use of the net from the Siberians, as they did the habit of smoking, since the use of the gill net appears to have been limited to precisely the same region as the Siberian form of tobacco pipe.⁶



FIG. 278.—
Fish spear.

Spears.—The only evidence which we have of the use of spears for catching fish in this region is a single specimen, No. 89901 [1227], Fig. 278, from Utkiavwū, which was newly and rather carelessly made for sale, but intended, as we were told, for spearing fish. This has a roughly whittled shaft, of spruce, 21½ inches long, armed at one end with three prongs. The middle prong is of whalebone, 4½ inches long, inserted into the tip of the shaft, which is cut into a short neck and whipped with sinew. The side prongs are also of bone, 9 inches long. Through the tip of each is driven a sharp, slender slightly recurved spur of bone, about 1½ inches long. Each prong is fastened to the shaft with two small wooden treenails, and they are braced with a figure-of-eight lashing of sinew through holes in the side prongs and around the middle one. The side prongs are somewhat elastic, so that when the spear is struck down

¹ The Greenlanders used a sort of sieve or scoop net, not seen at Point Barrow, for catching caplin (*Mallotus villosus*). Egede, Greenland, p. 108; and Crantz, vol. 1, p. 95. John Davis, however, says of the Greenlanders in 1586, "They make nets to take their fish of the finne of a whale." Hakluyt's Voyages, etc. (1589), p. 782.

² Dall, Alaska, p. 147; and Petroff, Report, etc., p. 127.

³ Op cit., p. 73.

⁴ Op cit., p. 142.

⁵ Vega, vol. 2, p. 109.

⁶ See the writer's paper in the American Anthropologist, vol. 1, pp. 325-336.

on the back of a fish they spring apart and allow the middle prong to pierce him, and then spring back so that the spurs either catch in his sides or meet below his belly, precisely on the principle of the "patent eel spear." This implement is almost identical with one in the National Museum from Hudson Bay, which appears to be in general use among the eastern Eskimo.¹ The name, *kāki'buā*, is very nearly the same as that used by the eastern natives (*kākkie-wēi*, Parry, and *kakivak*, Kumlien). This spear is admirably adapted for catching large fish in shallow rocky streams where a net can not be used, or where they are caught by dams in tidal streams in the manner described by Egede and Crantz. There is so little tide, however, on the northwest coast, that this method of fishing can not be practiced, and, as far as I know, there is no locality in the range of the Point Barrow natives, a region of open shoal beaches, and rivers free of rocks, where this spear could be used in which a net would not serve the purpose much better. Taking into consideration the scarcity of these spears and the general use of nets, I am inclined to believe that this spear is an ancient weapon, formerly in general use, but driven out of fashion by the introduction of nets.

FLINT WORKING.

These people still retain the art of making flint arrow and spear-heads, and other implements such as the blades for the skin scrapers to be hereafter described. Many of the flint arrowheads and spear points already described were made at Nuwūk or Utkiavwīn especially for sale to us and are as finely formed and neatly finished as any of the ancient ones. The flints, in many cases water-worn pebbles, appear to have been splintered by percussion into fragments of suitable sizes, and these sharp-edged spalls are flaked into shape by means of a little instrument consisting of a short, straight rod of some hard material mounted in a short curved haft. We collected nine of these tools (*ki'gli*) of which two have no blades. No. 89262 [1223] figured in Point Barrow Report, Ethnology, Pl. III, Fig. 7, has been selected as the type. The handle is of walrus ivory, 7·8 inches long, straight and nearly cylindrical for about 4½ inches, then bending down like a saw handle and spread out into a spatulate butt. Fitted into a deep groove on the top of the handle so that its tip projects 1·8 inches beyond the tip of the latter is a slender four-sided rod of whale's bone, 4·7 inches long. This is held in place by two simple lashings, one of cotton twine and the other of seal thong. The flint to be flaked is held in the left hand and

¹ Kumlien's description (Contributions, p. 37, Cumberland Gulf) would apply almost word for word to this spear, and Captain Parry, (Second Voyage, p. 509) describes a very similar one in use at Iglulik. The "Perch, headed with two sharp-hooked Bones," for spearing salmon—called in the Grønlandsk Ordbog, *kakiak*, "en Lyster (med to eller tre Pigge)"—mentioned by Egede (Greenland, p. 108) is probably the same thing, and a similar spear is spoken of by Rae (Narrative, p. 172) as in use at Repulse Bay. A similar weapon, described by Dr. Rink as "Mit einem in brittischen Columbien vorkommenden identisch," was found in east Greenland (Deutsche Geographische Blätter, vol. 9, p. 234). See the description of the spear found by Schwatka at Back's Great Fish River (Nimrod in the North, p. 139), also described by Klutschak (Als Eskimo, etc., p. 120).

pressed against the fleshy part of the palm which serves as a cushion and is protected by wearing a thick deer-skin mitten. The tool is firmly grasped well forward in the right hand with the thumb on top of the blade and by pressing the point steadily on the edge of the flint, flakes of the desired size are made to fly off from the under surface.

These tools vary little in pattern, but are made of different materials.

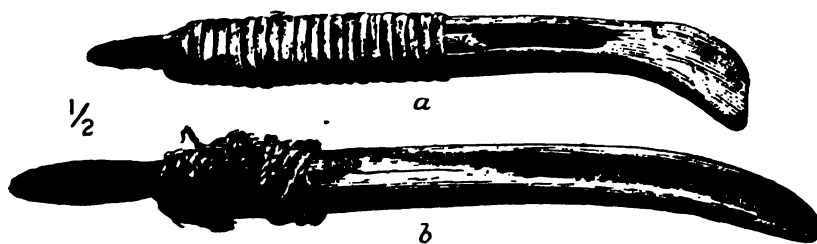


FIG. 279.—Flint flakers

Hard bone appears to have been the commonest material for the blade, as three out of the seven blades are of this substance. One specimen (No. 89263 [796] from Utkiavwīñ) has a blade of iron of the same shape but only 2 inches long. No. 89264 [1001] also from Utkiavwīñ, Fig. 279*a*, has a short blade of black flint flaked into a four-sided rod $1\frac{1}{2}$ inches long. This is held in place by a whipping of stout seal thong tightened by thrusting a splinter of wood in at the back of the groove.

Two specimens (Nos. 89260 [794] Fig. 279*b* and 89261 [1216] both from Utkiavwīñ) have blades of the peculiar Nuæsuknan concretions previously described. Each is an oblong pebble wedged into the groove and secured by a lashing as usual. No. 89260 [794] has a haft of antler. This is rather the commonest material for the haft. Two specimens have hafts of walrus ivory and three of fossil ivory. The length of the haft is from 6 to 8 inches, of the blade 1.5 to 4.7 inches. Fig. 280 (No. 89265 [979] from Nuwūk) is the haft of one of these tools, made of fossil ivory, yellow from age and stained brown in blotches, which shows the way in which the groove for the blade was excavated, namely, by boring a series of large round holes and cutting away the material between them. The remains of the holes are still to be seen in the bottom of the groove. The tip of this haft has been roughly carved into a bear's head with the eyes and nostrils incised and filled with black dirt, and the eyes, nostrils, and mouth of a human face have been rudely incised on the under side of the butt and also blackened. All this carving is new and was done with the view of increasing the market value of the object. The original ornamentation consists of an incised pattern on the upper surface of the butt, colored with red ocher which has turned black from age and dirt.



FIG. 280.—Haft of flint flaker

Fig. 281 (No. 89782 [1004e]) is one of these tools, very neatly made, with a haft of reindeer antler and a bone blade, secured by a whipping of seal thong which belongs with the "kit" of tools owned by the "inland" native, Ilú'bw'ga. Mr. Nelson collected a number of specimens of this tool at various points on the north-west coast from Point Hope as far south as Norton Bay, but I can find no evidence of its use elsewhere.

FIRE MAKING.

Drills.—In former times fire was obtained in the method common to so many savages, from the heat developed by the friction of the end of a stick worked like a drill against a piece of soft wood. This instrument was still in use at least as late as 1837,¹ but appears to have been wholly abandoned at Point Barrow at the time of the *Plover's* visit, though still in use at Kotzebue Sound.²

A native of Nuwük one day brought down for sale what he said was an exact model of the ancient fire drill, níóotñ. This is No. 89822 [1080], Fig. 282. The drill is a stick of pine 12 inches long, shaped like the shaft of a common perforating drill, brought to a blunt but rounded

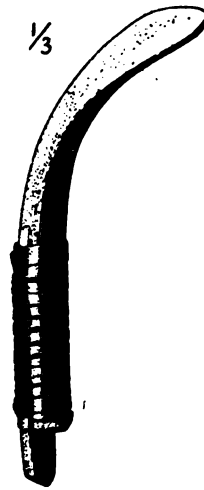


FIG. 281.—Flint flaker with bone blade.

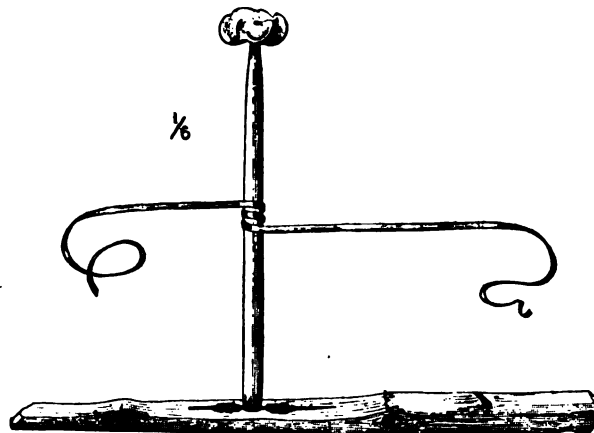


FIG. 282.—Fire drill with mouthpiece and stock.

point. This is worked by a string, without bow or haudles, consisting of a strip of the skin of the bearded seal, 40 inches long, and has for a mouthpiece the astragalus bone of a reindeer, the natural hollow on one side serving as a socket for the butt of the drill.³ The point of the drill

¹ "Their own clumsy method of producing fire is by friction with two pieces of dry wood in the manner of a drill."—(T. Simpson, Narrative, p. 162.)

² Dr. Simpson, op. cit., p. 242.

³ Compare Nordenskiöld's figure of the fire drill in use at Pitlekaj (Vega, vol. 2, p. 121), which has a similar bone for a socket, held not in the mouth but in the left hand.

is made to work against the split surface of a stick of spruce 18 inches long, along the middle of which is cut a gash, to give the drill a start. Three equidistant circular pits, charred and blackened, were bored out by the tip of the drill, which developed heat enough to set fire to the sawdust produced. Tinder was probably used to catch and hold the fire.

Most authors who have treated of the Eskimo have described an instrument of this sort in use either in former times or at the present day.¹

Among most Eskimo, however, a bow is used to work the drill. The only exceptions to this rule appears to have been the ancient Greenlanders and the people of Hudson Bay (see the passages from Hakluyt, Crantz, and Ellis, just quoted.) Chamisso, however,² speaks of seeing the Aleutians at Unalaska produce fire by means of a stick worked by a string making two turns about the stick and held and drawn with both hands, with the upper end of the stick turning in a piece of wood held in the mouth. When a piece of fir was turned against another piece of the same wood fire was often produced in a few seconds. This passage appears to have escaped the usually keen observation of Mr. W. H. Dall, who, speaking of the ancient Aleutians, says: "The 'fiddle-bow drill' was an instrument largely used in their carving and working bone and ivory; but for obtaining fire but two pieces of quartz were struck together," etc.³

¹ Besseles, *Naturalist*, vol. 18, pt. 9, p. 867, speaks of a fire drill used at Smith Sound with a bow and a mouthpiece of ivory.

A Greenlanders; seen by John Davis, in 1586, "beganne to kindle a fire, in his manner: he took a piece of a board, wherein was a hole halfe thorow: into that he puts the end of a rond sticke like unto a bedstaffe, wetting the end thereof in traine, and in fashion of a turner, with a piece of leather, by his violent motion doth very speedily produce fire."—Hakluyt's *Voyages*, etc. (1589), p. 782.

"They take a short Block of dry Fir Tree, upon which they rub another Piece of hard Wood, till by the continued Motion the Fir catches Fire."—Egede, *Greenland*, p. 137.

"If their fire goes out, they can kindle it again by turning round a stick very quick with a string through a hole in a piece of wood."—Crantz, *History of Greenland*, vol. 1, p. 145.

Lyon (*Journal*, p. 210) says that at Iglulik they were able to procure "fire by the friction of a pin of wood in the hole of another piece and pressed down like a drill from above." This was worked with a bow and willow catkins were used for tinder. A man informed them that "he had learned it from his father rather for amusement than for utility; the two lumps of iron pyrites certainly answering the purpose a great deal better."

"They have a very dextrous Method of kindling Fire; in order to which, they prepare two small Pieces of dry Wood, which having made flat, they next make a small Hole in each, and having fitted into these Holes a little cylindrical Piece of Wood, to which a Thong is fastened, they whirl it about thereby with such a Velocity, that by rubbing the Pieces of Wood one against the other, this Motion soon sets them on fire."—Ellis, *Voyage to Hudsons Bay*, p. 234.

A picture of the process is given opposite page 132, in which a man holds the socket, while a woman works the thong (western shore of Hudson Bay, near Chesterfield Inlet).

Rae also mentions a similar drill used in the same region in 1847 (*Narrative*, p. 187); and there is a specimen in the National Museum, collected by MacFarlane, and said to be the kind "in use until lately" in the Mackenzie and Anderson region.

Dall figures a fire drill with bow and mouthpiece formerly in use at Norton Sound (*Alaska*, p. 142); and Hooper (*Tents*, etc., p. 187) describes a similar drill at Plover Bay.

From Nordenskiöld's account (*Vega*, vol. 2, p. 121) the fire drill seems to be still generally used by the natives at the *Vega*'s winter quarters. He says that the women appeared more accustomed to the use of the drill than the men, and that a little oil was put on the end of the drill.

² Kotzebue's *Voyage*, vol. 3, p. 260.

³ Contribution to *N. A. Ethnology*, vol. 1, p. 82.

I had no opportunity of seeing this drill manipulated, but I have convinced myself by experiment that the stick or "light-stock," to use Nordenskiöld's expression, must be held down by one foot, the workman kneeling on the other knee.

Flint and steel.—Fire is usually obtained nowadays by striking a spark in the ordinary method from a bit of flint with a steel, usually a bit of some white man's tool. Both are carried, as in Dr. Simpson's time, in a little bag slung around the neck, along with some tinder made of the down of willow catkins mixed with charcoal or perhaps gunpowder. The flints usually carried for lighting the pipe, the only ones I have seen, are very small, and only a tiny fragment of tinder is lighted which is placed on the tobacco. Lucifer matches (*kllläksagau*) were eagerly begged, but they did not appear to care enough for them to purchase them. Our friend *Nikawáalu*, from whom we obtained much information about the ancient customs of these people, told us that long ago, "when there was no iron and no flint"—"*savik píñmút, áñma píñmút*"¹—they used to get "great fire" by striking together two pieces of iron pyrites. Dr. Simpson speaks² of two lumps of iron pyrites being used for striking fire, but he does not make it clear whether he saw this at Point Barrow or only at Kotzebue Sound. Iron pyrites appears to have been used quite generally among the Eskimo. Bessels saw it used with quartz at Smith Sound, with willow catkins for tinder³ and Lyon mentions the use of two pieces of the same material, with the same kind of tinder, at Iglulik.⁴ Willow catkins are also used for tinder at the Coppermine River.⁵

No. 89825 [1133 and 1722] are some of the catkins used for making the tinder, which were gathered in considerable quantities at the rivers. They are called *kímmiuru*, which perhaps means "little dogs," as we say "catkins" or "pussy willows."

Kindlings.—From the same place they also brought home willow twigs, 9 inches long, and tied with sinews into bunches or fagots of about a dozen or a dozen and a half each, which they said were used for kindling fires. (No. 89824 [1725].)

Bow-and-arrow making.—A complete set of bow-and-arrow tools consists of 4 pieces, viz: a marline spike, two twisters, and a feather setter, as shown in Fig. 283, No. 89465 [962], from *Utkiavwíñ*. The pieces of this set are perforated and strung on a piece of sinew braid, 4 inches long, with a knot at each end.

The Marline spike.—This is a flat, four-sided rod of walrus ivory, 5·6



FIG. 283.—Set of bow-and-arrow tools.

¹ Compare this with Dr. Simpson's statement, quoted above, that stones for arrowheads were brought by the *Nunatañmiun* from the *Ku'wák* River.

² *Op. cit.*, p. 243.

³ *Naturalist*, vol. 18, pt. 9, p. 807.

⁴ *Journal*, pp. 210 and 231.

⁵ *Franklin, First Exped.*, vol. 2, p. 188.

inches long, tapering to a sharp rounded point at one end, and tapered slightly to the other, which terminates in a small rounded knob. It is very neatly made from, rather old yellow ivory, and ornamented on all four faces with conventional incised patterns colored with red ochre.

This implement is used in putting on the backing of a bow to raise parts of the cord when an end is to be passed under and in tucking in the ends in finishing off a whipping. It was probably also used in putting whippings or seizings on any other implements. We collected 10 of these tools, all quite similar, and made of walrus ivory, yellow from age and handling. They vary in length from $4\frac{1}{2}$ to 6 inches, and are always contracted at the upper end into a sort of neck or handle, surmounted by a knob or crossbar. No. 89463 [836] Fig. 284, from Utkiavwñ has



FIG. 284.—Marline spike.

the crossbar carved very neatly into the figure of an Amphipod crustacean without the legs. The eyes, mouth, and vent are indicated by small round holes filled with some black substance, and there is a row of eight similar holes down the middle of the back. The tip of this tool, which is 5.9 inches long, has been concaved to an edge so as to make a feather-setter of it. Through the knob at the butt there is some-



FIG. 285.—Marline spike.

times a large round eye, as in Fig. 285 (No. 89464 [842] from Utkiavwñ, 4.7 inches long). These tools are sometimes plain, like the specimens last figured, and sometimes ornamented with conventional patterns of incised lines, colored with red ochre, like the others.

The twistors (No. 89465 [962]) are flat four-sided rods of walrus ivory, respectively 4.4 and 4.7 inches long. At each end one broad face is raised into a low transverse ridge about 0.1 inch high and the other rounded off, with the ridge on opposite faces at the two ends. They are ornamented on all four faces with longitudinal incised lines, colored with red ochre.

The use of these tools, which was discovered by actual experiment after our return to this country¹ is for twisting the strands of the sinew backing after it has been put on the bow into the cables already de-

¹ See the writer's paper on Eskimo bows, Smithsonian Report for 1884, pt. 2, p. 315.

scribed. The manner in which this tool is used is as follows: The end is inserted between the strands at the middle of the bow, so that the ridge or hook catches the lower strands, and the end is carried over through an arc of 180° , which gives the cable a half turn of twist. This brings the twister against the bow, so that the twisting can be carried no further in this direction, and if the tool were to be removed for a fresh start the strands would have to be held or fastened in some way, making the process a slow one. Instead, the tool is slid back between the strands till the other end comes where the first was, so that the hook at this end catches the strand, and the workman can give to the cable another half turn of twist. This is continued until the cable is sufficiently twisted, the tool sliding back and forth like the handle of a vise. The tools are used in pairs, one being inserted in each cable and manipulated with each hand, so as to give the same amount of twist to each cable. At the present day, these tools are seldom used for bow making, since the sinew-backed bow is so nearly obsolete, but are employed in playing a game of the nature of pitch-penny. (See below, under games and pastimes.)

These tools, of which we collected twenty-six specimens, are all of walrus ivory, and of almost exactly the same shape, varying a little in size and ornamentation. They vary in length from 3 to 5.7 inches, but are usually about $4\frac{1}{2}$ inches long. The commonest width is 0.4 inches, the narrowest being 0.3 and the width 0.7 broad, while the thickness is almost always 0.3, varying hardly 0.1 inch. Most of them are plain, but a few are ornamented with incised lines, and two are marked with "circles and dots" as in Fig. 286, one of a rather large pair (No. 56521

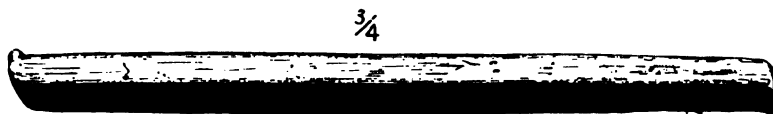


FIG. 286.—Twister for working sinew backing of bow.

[249] from Utkiavwīn). These are 5.4 inches long, neatly made and quite clean. All the others show signs of age and use.

There are large numbers of these tools in the National Museum from various points in the region where bows of the Arctic type are used, namely, from the Anderson River to Norton Sound, and one from St. Lawrence Island, whence we have received no twisted bows. Their use was, however, not definitely understood, as they are described simply as "bow tools," "bow string twisters" or even "arrow polishers." Mr. Nelson informs me that the tool is now not used in Norton Sound, except for playing a game, as at Point Barrow, but that the natives told him that they were formerly used for tightening the backing on a bow and also for twisting the hard-laid sinew cord, which is quite as much, if not more, used at Norton Sound as the braid so common at Point Barrow. I find no mention of the use of this tool in any of the authors who have

treated of the Eskimo, except the following in Capt. Beechey's vocabulary, collected at Kotzebue Sound: "Marline spike, small of ivory, for lacing bows—ke-poot-tak." The specimens from the Mackenzie and Anderson rivers are almost without exception made of hard bone, while walrus ivory is the common material elsewhere. The name (kaputæ) means simply a "twister."

The *feather-setter* (*ŕ'gugvau*) (No. 89465 [962]) is a flat, slender, rounded rod of walrus ivory, 7 inches long, with the tip abruptly concaved to a thin rounded edge. The faces are ornamented with a pattern of straight incised lines, colored with red ocher. This tool is used for squeezing the small ends of the feathering into the wood of the arrow shaft close



FIG. 287.—"Feather-setter."

to the nock. Fig. 287 is a similar tool (No. 89486 [1285] from Utkiavwiñ) also of walrus ivory, 6 inches long, with the upper end roughly whittled to a sharp point. It is probably made of a broken seal indicator or meat-cache marker. Several other ivory tools previously mentioned have been concaved to an edge at the tip so that they can be used as feather-setters. I do not find this tool mentioned by previous observers, nor have I seen any specimens in the National Museum.

Fig. 288 (No. 89459 [1282] from Utkiavwiñ) represents an unusual

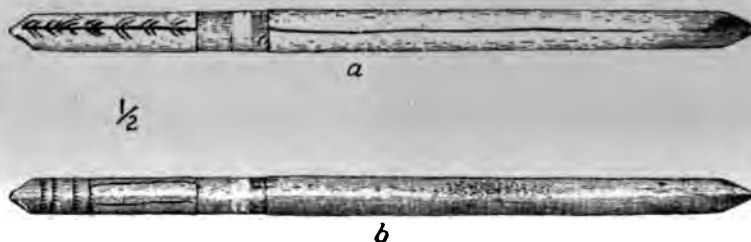


FIG. 288.—Tool of antler.

tool, the use of which was not ascertained in the hurry of trade. It has a point like that of a graver, and is made of reindeer antler, ornamented with a pattern of incised lines and bands, colored with red ocher, and was perhaps a marline spike for working with sinew cord.

SKIN-WORKING.

Scrapers (*ikun*).—For removing bits of flesh, fat, etc., from a "green" skin, and for "breaking the grain" and removing the subcutaneous tissue from a dried skin, the women, who appear to do most if not all of this work, use a tool consisting of a blunt stone blade, mounted in a short, thick haft of wood or ivory, fitting exactly to the inside of the hand and having holes or hollows to receive the tips of the fingers and thumb. The skin is laid upon the thigh and thoroughly scraped with

this tool, which is grasped firmly in the right hand and pushed from the worker. This tool is also used for softening up skins which have become stiffened from being wet and then dried. The teeth appear to be less often used for such purposes than among the eastern Eskimo.

We obtained eighteen such scrapers, some without blades, and two unmounted blades. Every woman owns one of these tools. While they are all of the same general model, they vary a good deal in details. Four different forms or subtypes have been recognized in the series collected, all modifications of the form seen in Fig. 289, No. 89313 [955], which may be called the type. The blade is of brown jasper, rather coarsely flaked, 1.1 inches long. It is wedged with pieces of skin, into a deep slot in the tip of the handle, which is of fossil ivory, slightly yellowed from handling. The left side against

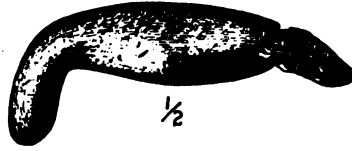


FIG. 289.—Skin scraper.

which the thumb rests is slightly flattened, and the right slightly excavated to receive the third and fourth fingers, which are bent round under the lobe, their tips pressing against the concave under surface of the latter. The fore and middle fingers rest upon the upper surface.

No. 89320 [1171] from Utkiavwñ, without a blade, is of the same general pattern, but is slightly excavated on the left as well as the right side so as to make a sort of shank. It is of fossil ivory, stained a dingy orange from age and grease. The two incised circles and dots on the upper surface close to the slot make the end of the handle look like the head of a *Lophius*, which it is perhaps meant to represent. No. 89321 (858), an old fossil ivory handle, has the left side slightly hollowed to receive the tip of the thumb, and a median keel on the upper surface with a barely perceptible hollow on each side of it for the tips of the fingers. This is a step toward the second subtype as shown in Fig. 290 (No. 89317 [748] from Utkiavwñ, which has no blade). This

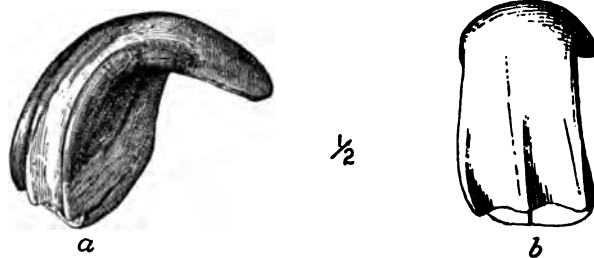


FIG. 290.—Skin scrapers—handles only.

is of fossil ivory, thicker and more strongly arched than the type described, deeply excavated below so as to form a broad lobe at the butt, with the upper surface deeply grooved to receive the tips of

the fore and middle fingers, and a slight hollow on the left side for the thumb. This specimen is very neatly made and polished, and all the edges are rounded off. One-half of the handle (lengthwise) and the outer quarter of the other half are stained with age and grease a beautiful amber

brown. This specimen was said to be as old as the time when men wore but one labret.

The only essential difference between this subtype and the preceding



FIG. 291.—Skin scrapers.

[1426]) has an unusually short blade (only 0.4 inch long), and is much cut out on the right side so as to make a sort of nick. Fig. 291b (No. 89314 [1780]) is a nearly new handle of this pattern, which was bought of the "Nunatañimui," who came to Pernyñ in 1883. It is very highly ornamented, both with incised patterns, colored black, and by carving the space between the unusually deep thumb hollow and those for the fingers into what seems to be meant for an ear, in high relief, colored red inside.

The third subtype has the lobe separated from the body on the right side only, leaving the left side unexcavated, except by the thumb-hollow, as is shown in Fig. 292 (No. 89316 [1177] from Utkiavwñ) which has a handle of yellowed fossil ivory and a black



FIG. 292.—Skin scraper.



FIG. 293.—Peculiar modification of scraper.

takes the place of the two finger hollows. The blade was of gray flint and rather longer than usual.

The last subtype which, according to my recollection, is the one most

flint blade. No. 89310 [1071] Fig. 293, from Utkiavwñ, is a rather unusual modification of this pattern, with a wooden handle, in which the bottom is not cut out. The thumb groove is deepened into a large hole which opens into the excavation on the right side, while a large oblong slot on top, opening into these cavities,

frequently seen in use at the present day, has the butt produced horizontally into a broad, flat lobe. The excavation of the right side may be continued through to the left in the form of a notch, as shown in Fig. 294 (No. 89315 [1365] from Sidaru) which has a blade of black flint and a handle of fossil ivory, with hollows for the thumb and fingers; or the left side may be unexcavated except for the thumb groove as in Fig. 295 (No. 89309 [1135] from Utkiavwñ). This specimen has a rather large wooden handle, with the grooves as before. It appears, however, to have been remodeled to fit a smaller hand than that of the original owner, as the thumb groove has been deepened for about two-thirds of its original length, and there is a deep, round hole in the middle of the groove for

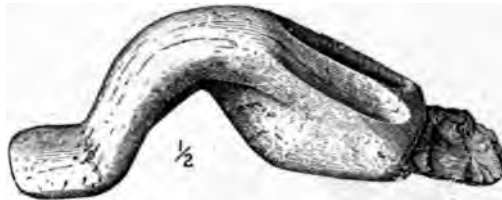


FIG. 294.—Skin scraper.

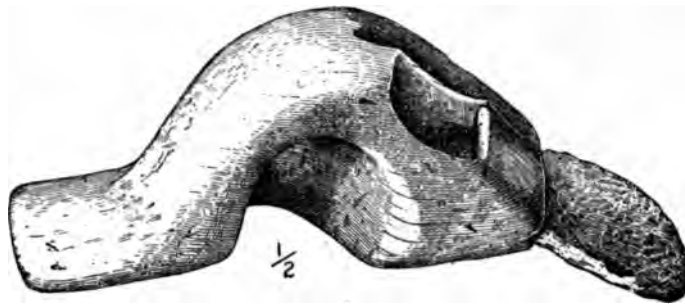


FIG. 295.—Skin scraper.

the second finger. The peculiarity of this specimen, however, is that it has a blade of sandstone, flat and rather thin, with a smooth, rounded edge. The natives told us that scraper blades of sandstone were the prevailing form in old times.

Fig. 296 (No. 89312 [1336] from Utkiavwñ) is another wooden handle, in which the excavation for the third and fourth fingers is merely a large round hole on the right side, while in front the handle is cut into two short lobes, between which in a deep groove the forefinger fits. There is a hollow for the thumb under the left lobe and one on the right under the left lobe and one on the right for the middle finger. No. 89311 [1079] from the same village is almost exactly

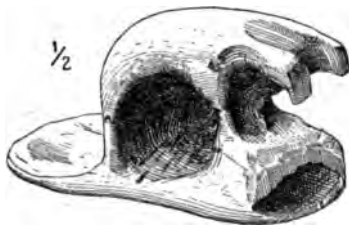


FIG. 296.—Skin scraper.

similar. These are the only two specimens of the kind which I recollect seeing. A rather large flint-bladed scraper with a wooden handle very much the shape of that of No. 89309 [1135] is the tool most generally used at the present day. The blades are all of the same general shape and vary in size from the little one above mentioned (No. 89322

[1426], Fig. 291*a*), only 0.4 inch long, to blades like No. 89612 [820], Fig. 297, from Utkiavwñ. This is newly made from light gray translucent flint and is 5 inches long. The name *kibûgû*, applied to this specimen by the native from whom it was purchased, appears to refer either to the material or the unusual size. The blade is ordinarily called *kuki*, "a claw."



FIG. 297.—Flint blade for skin scraper.

With the ivory handles a blade about 1 or 1½ inches is commonly used and with the wooden ones a considerably larger one, 2 to 3 inches in length. The handles vary in size to fit the hands of the owners, but are all too small for an average white man's hand. All that we collected are for the right hand.

This pattern of skin scraper which appears from the Museum collections to be the prevailing one from Point Barrow to Norton Sound, is evidently the direct descendant of the form used still farther south, which consists of a stone or bone blade of the same shape, mounted on a wooden handle often a foot or 18 inches long, which has the other end bent down into a handle like the butt of a pistol. Shortening this handle (a process shown by specimens in the Museum) would bring the worker's hand nearer to the blade, thus enabling him to guide it better. Let this process be continued till the whole handle is short enough to be grasped in the hand and we have the first subtype described, of which the others are clearly improvements.

A still more primitive type of scraper is shown by Fig. 298, No. 89651 [1295] from Utkiavwñ, the only specimen of the kind seen. This has a flint blade, like those of the modern scrapers, inserted in the larger end of a straight haft of reindeer antler, 5½ inches long. We did not learn the history of this tool in the hurry of trade, but from the shape of the blade it is evidently a scraper. Its use as a skin scraper is rendered still more probable by the fact that the scrapers used by some of the eastern Eskimo (there are specimens in the Museum from Cumberland Gulf and Pelly Bay) have straight handles, though shorter than this.

The Siberian natives use an entirely different form of scraper which has a long handle like that of a spoke-shave with a small blade of stone or iron in the middle and is worked with both hands.¹ Fig. 299 (No. 89488 [1578] from Utkiavwñ) is a tool which we never saw in use but which we were told was intended for scraping skins. It is probably an obsolete tool, as a knife would better serve the purpose of re-



FIG. 298.—Straight-haft scraper.

¹ Nordenskiöld, *Vega*, vol. 2, pp. 122, and Fig. 1, p. 117.

moving the subcutaneous tissue, etc., while the stone scrapers just described are better for softening the skin.

It is the distal end of the "cannon" bone or metacarpal, of a reindeer, 6.2 inches long, with the two condyles forming the handle. At the other end the posterior face of the shaft is chamfered off so as to expose the medullary cavity for about 2½ inches, leaving a sharp edge on each side. The tip is roughly broken off. The tool appears to be old but the two condyles have been recently carved rudely into two human faces, one male (with marks for labrets) and the other female. There is a somewhat similar tool in the Museum brought by Mr. Nelson from Norton Sound.



FIG. 299.—Bone scraper.

Scraper cups (óhováwñ).—In removing the last of the blubber from the skins of seals or walruses when they wish to save the oil, they scrape it off with a little oblong cup of walrus ivory with a sharp edge at one or both ends. The cup, of course, catches the oil which is transferred to a dish. These cups are sometimes, I believe, also used for dipping oil. We collected ten of these cups, of which No. 89251 [1287], Fig. 300*a*, will serve as the type. This is 3.7 inches long, carved out of a single piece of walrus ivory, and worked down from the inside to a sharp edge on each end. The carving is smoothly done on the outside, but more roughly within, where it is somewhat hacked. It is stained a dark yellow with oil and polished on the outside, probably by much handling. Fig. 300*b* (No. 89258 [1090] also from Utkiavwñ) is a similar cup, but has a sharp edge only at one end which is cut out in a concave curve.

The ten cups in the collection are all about the same shape and size and all of walrus ivory, stained yellow with oil. The largest is 4 inches long and 2¾ wide, and the smallest, 3 by 2.1 inches. The majority are



FIG. 300.—Scraper cups.

about 3½ by 2½ inches. Five of the ten have sharp edges at both ends, the rest at one only. Mr. Nelson brought home specimens of this implement from Point Hope and St. Lawrence Island, but I do not find it mentioned elsewhere.

With these tools and their knives, they do all the work of preparing skins for clothing, boat covers, etc. I had no opportunity of seeing the

process in all its stages, and can therefore give only a general account of it. Deerskins are always dressed as furs, with the hair on. The skin is rough-dried in the open air, with considerable subcutaneous tissue adhering to it, and laid aside until needed. When wanted for use, a woman takes the skin and works it over carefully with a stone scraper on the flesh side, removing every scrap of subcutaneous tissue and "breaking the grain" of the skin, which leaves a surface resembling white chamois leather and very soft. This is then rubbed down with a flat piece of sandstone or gypsum, and finally with chalk, so that when finished it seems like pipeclayed leather. All furs are prepared in the same way. Small seal skins to be worn with the hair on are scraped very clean and, I think, soaked in urine, before they are spread out to dry. The black waterproof seal skin has the hair shaved off close to the skin, great care being taken to leave the epidermis intact, and also has a certain amount of tanning in urine. It is probable that a little of the blubber is left on these skins, to make them oily and waterproof.

When, however they wish to prepare the white-tanned seal skin, the skins are brought into the warm house, thawed out or dampened and then rolled up and allowed to ferment for several days, so that when they are unrolled hair and epidermis are easily scraped off together. The skin is then soaked in urine, stretched on a large hoop, and put out to dry in the sun and air. Many of these skins are prepared during the first sunny weather in the early spring. The skins of the large seal, walrus or bear when used for boat-covers or boot soles appear to be sweated in the same way, as the epidermis is always removed. We did not learn whether urine was employed on these skins, but I think from their ordinary appearance that they are simply stretched and dried in their own fat, as appears to be the case with the skin of the beluga, from which the epidermis is easily scraped without sweating.¹

Combs for deerskins.—The loosened hairs on a deerskin garment are removed by means of a comb made of a section of the beam of an antler, hollowed out and cut into teeth on the end. This instrument probably serves also to remove vermin, as its name "kúmotín" looks very much as if derived from kúmük, louse. I must say, however, that the natives whom I asked if kúmotín had anything to do with kúmük said it had not. When vermin get troublesome in a garment, it is taken out on the tundra, away from the houses, and beaten with rods like a carpet. Very old garments when much infested with lice are taken out back of the village, cut into small pieces, and burned. It is no uncommon sight in the spring to see an old woman sitting out on the tundra, busy with her knife cutting up old clothes.

We brought home nine of these combs, of which No. 89354 [1879], Fig. 301a, has been selected as the type. It is $4\frac{1}{4}$ inches long and has

¹ Crantz describes the process of preparing boat covers as follows: "The boat skins are selected out of the stoutest seals' hides, from which the fat is not quite taken off; they roll them up, and sit on them, or let them lie in the sun covered with grass several weeks, till the hair will come off." *History of Greenland*, vol. 1, p. 167.

sixteen teeth about 1 inch long. The small holes near the other end are for a lanyard to hang it up by.

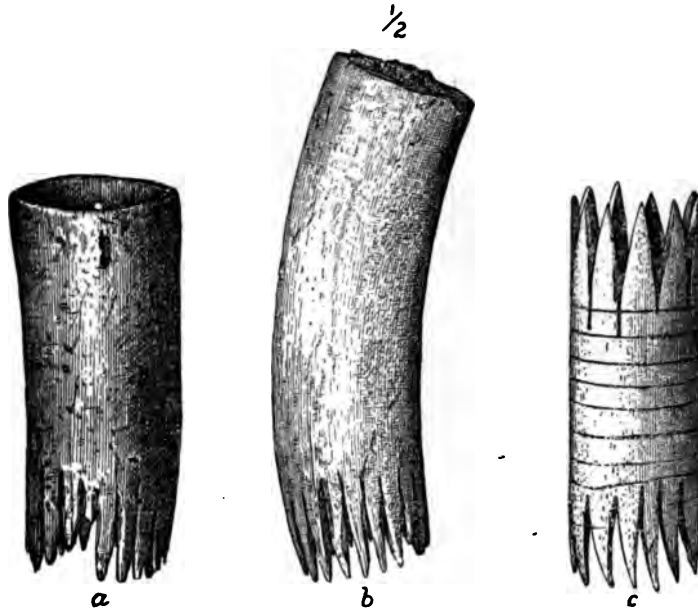


FIG. 301.—Combs for cleaning deerskins.

Six of these combs have teeth at one end only, the other three at both ends. These teeth are generally about fifteen in number, and 1 inch or a little over long. No. 89781 [1005], a very small comb only 2.9 inches long, which belonged to the "inland" native Ilûbw'ga, has twenty teeth 0.6 inch long. These combs are usually about 4 or 4½ inches long. No. 89556 [1017], Fig. 301*b*, from Utkiavwîñ is an unusually long comb, 5.3 inches long, which is peculiar in being solid except at the end which is cut into teeth.

Fig. 301*c* (No. 89359 [993]), from Utkiavwîñ is a double-ended comb, having ten teeth on one end and thirteen on the other. It is 4.1 inches long and made with considerable care, being ornamented with incised rings colored with red ocher. This is a common implement at Point Barrow, but seems unusual elsewhere. There is a single specimen from the Diomedes in Mr. Nelson's collection.

MANUFACTURE OF LINES OF THONG.

No tools are used for this purpose except a knife. I have seen a small jackknife used for cutting the fine seal skin lines. The workman takes a wet skin from which the hair and epidermis have been removed and sits down cross-legged on the ground with somebody else to hold the skin stretched for him. Then holding the knife vertically up with the edge away from him, he starts at one corner of the skin and cuts a narrow strip in one continuous piece, going round and round the

skin, gathering and stretching the strip with the left hand. They do this work quite rapidly and with great skill, cutting single lines upward of 90 feet long and only one-eighth inch in diameter, almost perfectly even. These fine lines of seal-skin thong, which serve a great variety of purposes, are usually made when they are in the summer camps, before the breaking up of the ice. They are dried by stretching them between stakes 6 inches or a foot high, driven into the ground.

The stout thongs of the hide of the bearded seal, walrus, or beluga are usually made in the winter and stretched to dry between posts of whales' bones set up in the village, about breast high. While they are drying, the maker carefully trims and scrapes the edges with his knife, so as to make an almost round line.¹ The usual diameter is about 0.3 inch. These lines are not always made with such care, being often merely flat thongs. Fine deer-skin twine, or "babiche," as it is called by the voyageurs, for making the nettings of snow shoes, is made in the same way. A deer skin is dampened, rolled up, and put up over the lamp for a day or two to remove the hair by sweating, and then cut into a single long piece of fine thong.



FIG. 302.—Double-slit splice for rawhide lines.

All the men do not appear able to do this fine work. For instance, our friend Mûñialu had the babiche for his new snowshoes made by his housemate, the younger Tuñazu. When it is desired to fasten together two pieces of the stouter kinds of thong, what I have so often referred to as the "double-slit splice" is generally employed. This is made as follows: The two ends to be joined together are each slit lengthwise, and one is passed through the slit in the other. The other end of this piece is then passed through the slit in the first piece, and drawn through so that the sides of each slit interlace like the loops of a square knot (see diagrams, Fig. 302). The splice is often further secured by a seizing of sinew braid. Most writers on the Eskimo have not gone sufficiently into the details of their arts to describe their methods of splicing. One writer,² however, in describing some Eskimo implements from East Greenland, describes and figures several splices somewhat of this nature, and one in particular especially complicated by crossing the sides of the slits and passing the end through several times. This method of uniting thongs is probably very general among the Eskimo and is also common enough among civilized people.

BUILDERS' TOOLS.

For excavating.—At the present day they are very glad to use white men's picks and shovels when they want to dig in the gravel or clean out the ice from their houses. They, however, have mattocks and pick.

¹ Gilder describes a similar process of manufacturing these lines at Hudson's Bay. (Schwatka's Search, p. 176.)

² W. J. Sollas, in Jour. Anthrop. Inst. of Great Britain and Ireland, vol. 9, pp. 329-336.

axes (sikla) of their own manufacture, which are still in use. These are always single-pointed and have a bone or ivory head, mounted like an adz head on a rather short haft. The haft, like those of the mauls and adzes already described, is never fitted into the head, but always applied to the under surface of the latter and held on by a lashing of thong.

The only complete implement of the kind which we obtained is No. 73574 [297], Fig. 303. The head is of whale's rib, $17\frac{3}{4}$ inches long. The butt is shouldered on the under surface to receive the haft and roughened with crosscuts to prevent slipping, with two shallow

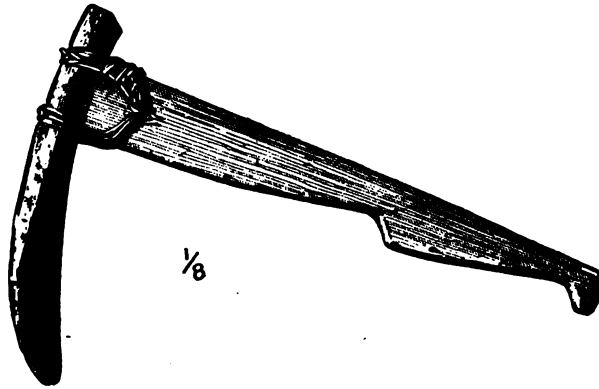


FIG. 303.—Mattock of whale's rib.

rough transverse notches on the upper surface for the lashings. The haft is of pine, $24\frac{1}{2}$ inches long. The lashing is of stout thong of bearded seal hide, in two pieces, one of four turns passing through the hole, round the front edge of the haft, over the lower notch in the head, and back across the haft to the hole again. The ends are knotted together on top

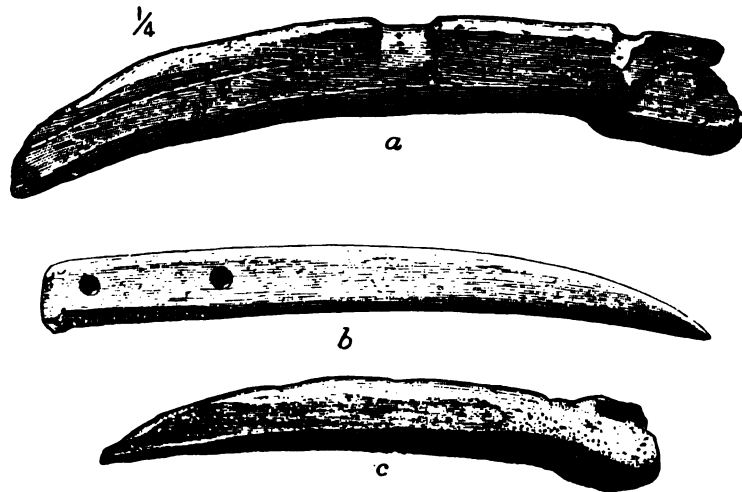


FIG. 304.—Pickax heads of bone, ivory, and whale's ribs.

of the head by becket-hitching one end into an eye in the other, made by slitting it close to the tip and passing a bight of the standing part through this slit. The other part is of seven turns, put on in the same way, but crossing back of the haft, and started by looping one end round the head and through the eye by means of an eye at the end made as before.

It is finished off by winding the end three or four times round these turns, so as to tighten them up, and hitching it round two of them on one side. This method of hafting differs in no essential respect from that used on the mauls and adzes above described.

We have also two heads for such mattocks, which hardly differ from the one described, except the No. 56494 [285] has the notches for the lashings on the side of the head instead of on the upper surface. It is 16 inches long. The other, No. 89843 [1043], Fig. 304*a*, is a very rude head made of an almost cylindrical piece of rib. This is a very old tool, which from its oily condition has evidently been long laid away in some blubber room at Utkiavwīū. It is 15·2 inches long.

These blunt-pointed mattocks are not so much used at present as picks with a sharp point mounted in the same way, and specially adapted for working in ice or hard frozen soil. I have, however, never seen them used for cutting holes in the ice for fishing, which some authors have supposed to be what they were meant for. Their shape makes them very inconvenient for any such a purpose, except when the ice is very thin.

The ice pick, like those carried on the butt of the spear, is under any circumstances a more serviceable tool. These sharp pickax heads are generally made of a walrus tusk, the natural shape of which requires very little alteration to fit it for the purpose. We collected three of these ivory heads, all very nearly alike, of which No. 56539*b* [96], Fig. 304*b*, will serve as the type. This is the tip of a good-sized walrus tusk, 14·2 inches long, preserving very nearly the natural outline of the tusk except at the point, where it is rounded off rather more abruptly above. It is keeled along the upper edge and on the lower edge at the point, so that the latter is four-sided, and the sides of the butt are flattened. On the under side the butt is cut off flat for about 3½ inches, leaving a low flange or ridge, and roughened with crosscuts to fit the end of the haft, and the butt is perforated with two large tranverse eyes for the lashing. The other two heads are almost exactly like this and very nearly the same size.

Sharp-pointed pick heads of whale's bone appear also to have been used, probably at an earlier date than the neatly finished ivory ones, as we collected three such heads, all very old and roughly made, and having notches or grooves for the lashings instead of eyes. Fig. 304*c* is one of these, No. 89844 [1315], from Utkiavwīū, very rudely cut from a piece of whale's rib, 12 inches long.

I do not recollect seeing any of these bone-headed picks in use, while the ivory-headed one was one of the commonest tools. This Eskimo tool is in use at Pitlekaj, a village supposed to be wholly inhabited by sedentary Chukches.¹

TOOLS FOR SNOW AND ICE WORKING.

Snow knives.—For cutting the blocks of snow used in building the

¹Nordenskiöld's figures, *Vega*, vol. 2, p. 123.

apu'ya, or snow hut, they at the present day prefer a saw or a large steel knife (for instance, a whaleman's boarding knife), if they can procure it, but they still have many of the large saber-shaped ivory knives so commonly used by the Eskimo everywhere for this purpose. These are, however, more generally used for scraping snow off their clothing, etc., at

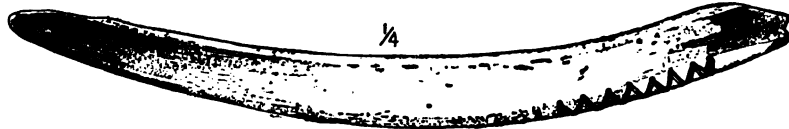


FIG. 305.—Ivory snow knife.

present. We brought home two of these knives, which do not differ in any important respect from the many specimens collected by other explorers in Alaska.

No. 89478 [759], Fig. 305, is one of these—saviu'ra, "like a knife." It is of walrus ivory (following the natural outline of the tusk), 16½ inches

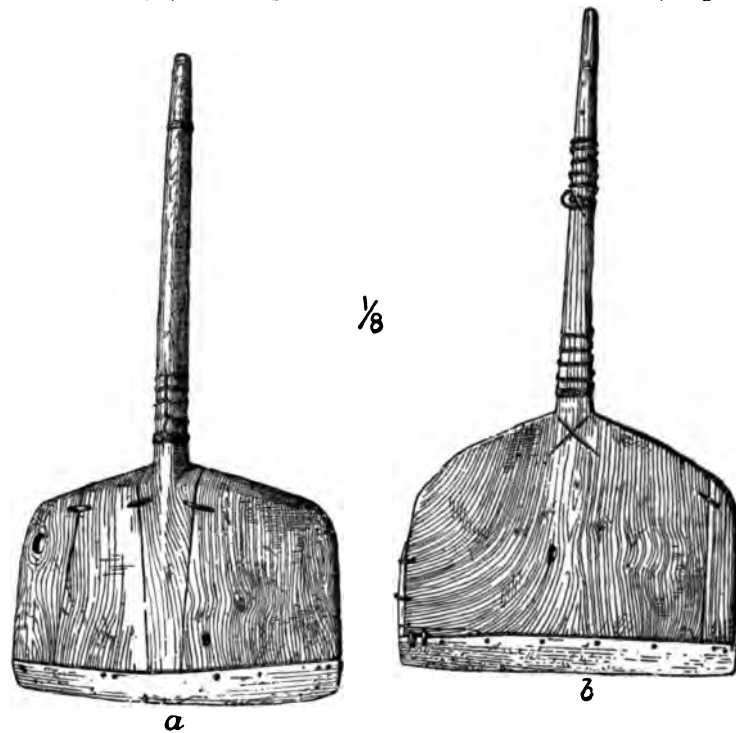


FIG. 306.—Snow shovels.

long. The blade is double-edged, the haft rounded on the edges and laced along the lower edge for 3½ inches with a double piece of sinew braid. The object of this is to give the hand a firmer grip on the haft. These knives are also used for cutting the blocks of snow to supply the house with water.

Snow shovels.—The broad, short-handled snow shovel of wood with a
9 ETH—20

sharp edge of ivory is the tool universally employed whenever snow is to be shoveled, either to clear it away or for excavating houses or pitfalls in the snowdrifts, or "chinking" up the crevices in the walls of the snow house, and is an indispensable part of the traveler's outfit in winter. The shovels (pi'ksun) are all made on essentially the same pattern, which is well shown by Fig. 306a, No. 56739 [30]. The blade is 14 inches broad and 11 long. The whole upper surface of the shovel is flat. The handle is beveled off on the side to a rounded edge below, and is quite thick where it joins the blade, tapering off to the tip. The blade is thick and abruptly rounded off on the upper edge below and gradually thinned down to the edge. The edge of the wood is fitted with a tongue into a groove in the top of the ivory edge, which is $1\frac{1}{2}$ inches deep. It is fastened on by wooden tree-nails at irregular intervals, and at one end, where the edge of the groove has been broken, by a stitch of black whalebone. The wooden part of the shovel is made of four unequal pieces of spruce, neatly fitted and doweled together and held by the ivory edge and three stitches of black whalebone close to the upper edge, and countersunk below the flat surface. The whippings of sinew braid on the handle are to give a firm grip for the hands.

No. 56738 [27], Fig. 306b, is a similar shovel of the same material and almost exactly the same dimensions, figured to show the way it has been pieced together and mended. The maker of this shovel was able to procure a broad piece of wood which only had to be pieced out with a narrow strip on the left side, which is fastened on as before. It was, however, not long enough to make the whole of the handle, which has a piece $8\frac{1}{2}$ inches long, neatly scarfed on at the end and secured by six stout treenails of wood; three at each end of the joint, passing through the thin part of the scarf into the thick, but not through the latter. Nearly the whole handle was seized with sinew braid put on as before, but much of this seizing is broken off. At the right side of the blade the grain takes a twist, bringing it parallel to the ivory edge, and rendering it liable to split, as has happened from the warping of the ivory since the shovel has been in the Museum. The owner sought to prevent this by fastening to the edge a stout "strap" of walrus ivory $4\frac{1}{2}$ inches, which appears to be an old bird spear point. The lower end of this fitted into the groove of the ivory edge, and it was held on by three equidistant lashings of narrow whalebone, each running through a hole in the edge of the wood and round the ivory in a deep transverse groove.

This pattern of snow shovel is very like that from Iglulik, figured by Capt. Lyon,¹ but the handle of the latter is so much shorter in proportion to the blade that there is an additional handle like that of a pot lid near the head of the blade on the upper surface. The ivory edge also appears to be fastened on wholly with stitches.

¹ Parry's Second Voy., pl. opposite p. 548, Fig. 5.

Fig. 307 (No. 89775 [1250] from Utkiavwĩñ) is a peculiar implement, the only one of the kind that we saw. It is a shovel, 17 inches long, made of a whale's scapula, with the anterior and posterior borders cut off straight so as to make it $13\frac{1}{4}$ inches broad, and the superior margin beveled off to an edge. The handle is made by flattening the neck of the scapula and cutting through it a large horizontal elliptical slot, below which the end of the scapula is worked into a rounded bar 1 inch in diameter. The cutting around this slot appears new, and red ocher has been rubbed into the crevices. On the other hand, the beveling of the digging edge appeared to be old. Though colored with red ocher, the edge is gapped as if from use, and there are fragments of tundra moss sticking to it. It is probably an old implement "touched up" for sale. We did not learn whether such tools were now generally used. This may have been a makeshift or an individual fancy.



FIG. 307.—Snow shovel made of a whale's scapula.



FIG. 308.—Snow pick.

Fig. 308 (No. 89521 [1249] from Utkiavwĩñ) is another peculiar tool of which we saw no other specimen. It appears to be really an old implement and was said to have been used for digging or picking in the snow. It is a stout sharp-pointed piece of bone, 3 inches long, inserted in the end of a piece of a long bone of some animal, 4.7 inches long and about $1\frac{1}{2}$ wide, which serves as a haft.

Ice picks—The ivory ice pick (tu'u) always attached to the seal-harpoon has been already described. This differs from the *tók* of the Greenlanders and other eastern Eskimo in having a sharp bayonet point, while the latter is often chisel-pointed. All the men now have iron ice picks which they use for cutting the holes for fishing, setting seal nets, and such purposes. These are made of some white man's tool which has a socket, like a harpoon iron, a whale lance, a boarding knife or bayonet, and usually have a rather slender blade about a foot long, mounted on a pole 6 or 8 feet long. The point is sharp and polygonal, generally four-sided. The tool is managed with both hands and used to split off fragments of ice by rather oblique blows. In other words, it is used in precisely the same way as the little single-handed pick which we use in refrigerators. For chiseling off projecting corners of ice when making a path out through the ice pack, they

often use whale spades, of which they have obtained a great many from wrecks.

No. 89483 [1313] from Utkiavwĩñ, is a very old pick made of a piece of reindeer antler, 11½ inches long, split lengthwise, and tapered to a sharp curved point. The butt is cut into a sort of tang with a low shoulder. The split face is concave, the soft interior tissue having been removed by decay and perhaps also intentionally. Another peculiar tool is shown in Fig. 309 (No. 89479 [1064] from Utkiavwĩñ). This was called kākaiyaxion, and is a rounded piece of antler 10·4 inches long, tapering from the butt where there is a low shoulder and the broken remains of a rounded tang to be fitted to a shaft. One side is cut off flat from the shoulder to the tip, gradually becoming concave. The concavity is deepest near the middle. The tip is slightly expanded, rounded, and somewhat bent toward the convex side. The specimen is smoothly and neatly made and dark brown from age. No other specimens were seen. We were told that this tool was mounted

FIG. 309.—Snow drill.

on a long pole and used for drilling holes in the ice by making the pole revolve with the hands.

Ice scoops.—When picking a hole through the ice they use a long-handled scoop, made of a piece of antler bent round into a hoop, and netted across the bottom with strips of whalebone, so that the water may drain off in dipping pieces of ice out of the water. We brought home one specimen of this universal implement (No. 89903 [1696], Fig. 310). The handle is of oak, 5 feet 1¾ inches long and elliptical in section. The rim of the bowl is a long thin strip of antler, apparently from the "palm," bent round into a pointed oval, 8½ inches long and 5¾ wide, with the ends of the strip overlapping about 3 inches at the broader end. The ends are sewed together with two vertical stitches of whale-

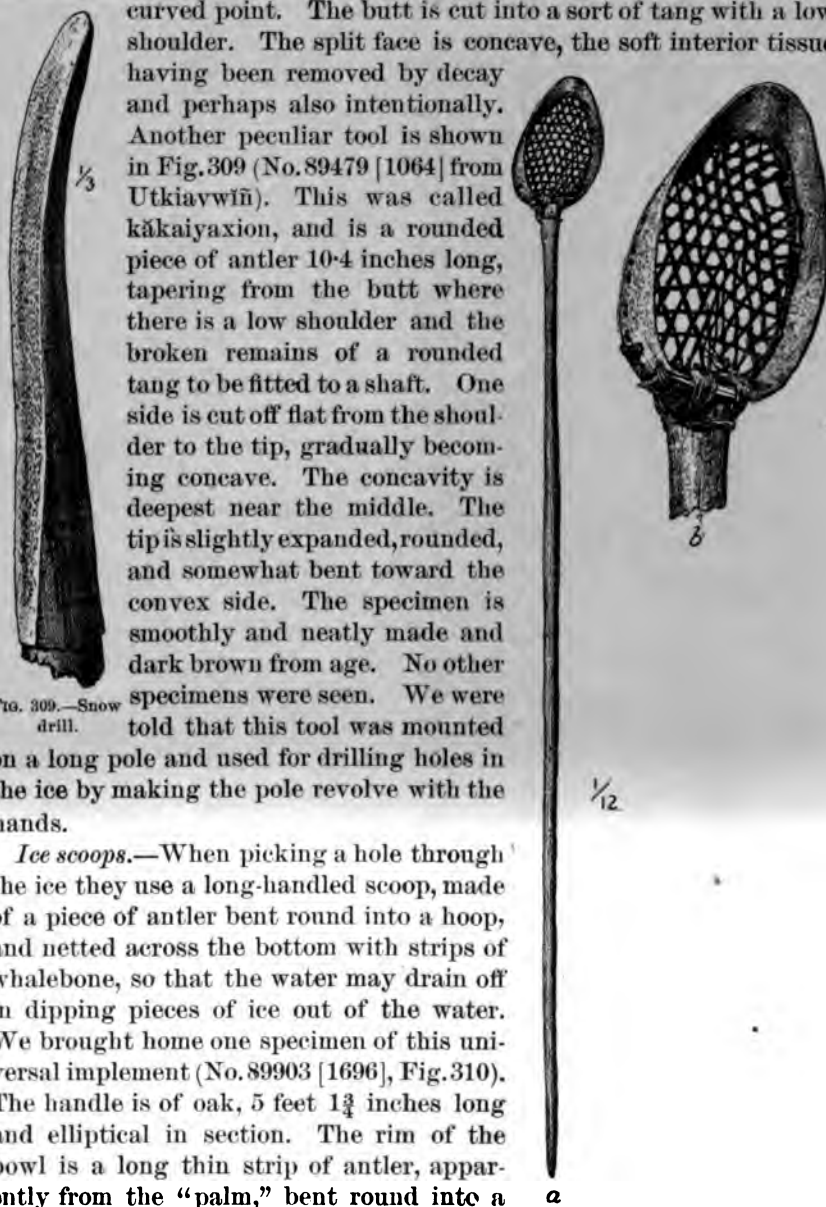


FIG. 310.—Ice scoop.

bone. The left end has been broken across obliquely near the joint and mended with whalebone stitches. Round the lower edge of the rim runs a row of twenty-seven pairs of small holes 0.2 inch from the edge. The holes of each pair are connected by a deep channel, and a narrow shallow groove, probably for ornament, joins the pairs. On the left side are eight extra holes between the pairs, which are not used. Through these holes, omitting the first two pairs in the right-hand end, is laced a piece of seal thong, thus: Starting at the point of the oval, the two ends of the thong are passed through the pair of holes there from the outside and the bight drawn home into the channel; the ends are crossed, the left end going to the right, and vice versa, and passed out through the farther hole of the next pair and in through the nearer, and so on till the ends meet at the broad end of the oval where they are tied together, thus making twenty-five loops on the inside of the rim into which the netting is fastened. This is made of strips of thin whalebone, interwoven, over and under each other, passing up through one loop and down through the next. There are eleven longitudinal strands passing obliquely from right to left, the same number from left to right, and eleven transverse strands, making a network with elongated hexagonal apertures. The strips are not one continuous piece. The bowl thus made is fastened to the handle by three pieces of stout seal thong. The whole lashing was put on wet, and allowed to shrink.

Nordenskiöld mentions and figures a scoop of almost identically the same pattern, but smaller, in general use for the same purposes at Pitlekaj.¹ A smaller scoop or skimmer (*ēlauatīn*) is also universally used. We inadvertently neglected to preserve a specimen of this very common implement, though we had two or three about the station for our own use. I shall therefore have to describe it from memory. The handle is a flat, straight stick with rounded edges, about 18 inches or 2 feet long, 1½ inches broad, and three-fourths inch thick. The bowl is made of two pieces of antler "palm" of such a shape that when they are fastened together on the end of the stick they make a shallow cup about 3½ inches long by 3 wide, with a longitudinal crevice along the middle which allows the water to drain off. The tip of the handle is beveled off on both sides so as to fit into the inside of this cup, along the junction of the two pieces, each of which is fastened to it by one or two neat stitches of whalebone. The two pieces are fastened together in front of the handle with a stitch.

In addition to the use of these scoops for skimming the fishing holes, and reeling up the line, as already described, they also serve as scrapers to remove snow and hoar frost from the clothing. In the winter most of the men and boys, especially the latter, carry these skimmers whenever they go out doors, partly for the sake of having something in their hands, as we carry sticks, and partly for use. The boys are very fond of using them to pick up and sling snowballs, bits of ice, or frozen dirt, which they do with considerable force and accuracy.

¹ Vega, vol. 1, p. 483.

IMPLEMENTS FOR PROCURING AND PREPARING FOOD.

Blubberhooks (ni'ksigû).—For catching hold of pieces of blubber or flesh when “cutting in” a whale or walrus, or dragging them round on shore or on the ice, or in the blubber rooms, they use hooks made by fastening a backward-pointing prong of ivory on the end of a wooden handle, which is bent into a crook at the other end. Those specially intended for use in the boats have handles 7 or 8 feet long, while those for shore use are only 2 or 3 feet long. These implements, which are common all along the Alaskan coast, may sometimes be used as boathooks, as appears to be the case farther south, though I never saw them so employed. We brought home two short hooks and one long one, No. 56766 [126], Fig. 311. This has a prong of walrus ivory fastened to a spruce pole, 7 feet 7 $\frac{3}{4}$ inches long, to the other end of which is fastened a short crook of antler. The pole is elliptical in section. The crook is a nearly straight “branch” of an antler with a transverse arm at the base made by cutting out a piece of the “beam” to fit against the pole, and is held on by three neat lashings of whalebone of the usual pattern. The upper two of these are transverse lashings passing through corresponding holes in the pole and crook. The lowest, which is at the tip of the arm, is at right angles to these, passing through wood and antler. The lashing of whalebone close to the tip of the crook, passing through a hole and round the under side of the latter, is to keep the



FIG. 311.—Long blubber hook. held on by two lashings of small seal thong, each passing through a large transverse hole in the prong and a corresponding one in the pole. The upper pair of holes do not exactly

match. There are also two unused holes, one in the pole below the upper hole and one above the upper hole in the prong. These holes and the new appearance of the lashings indicate that the prong is part of another hook recently fitted to this pole. The two lashings are made by a single piece of thong.

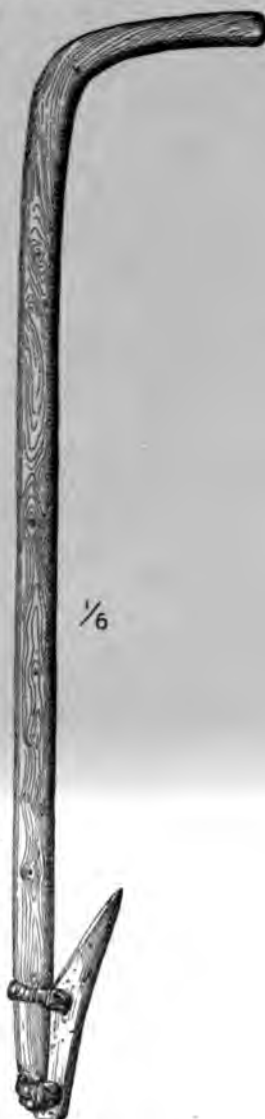


FIG. 312.—Short-handled blubber hook.

The whole is old and weathered and rather greasy about the prong and the tip of the pole.

Fig. 312 (No. 89836 [1203] from Utkiavwīñ) is a similar hook with a short handle, 34 inches long, for use on land. The crook is made by bending the handle. The prong, of walrus ivory as before, is 7 inches long, and held on by two stout lashings of whalebone, which pass round the end of the handle instead of through it. The prong and tip of the handle are very greasy.

No. 89837 [1353], from the same village, is a similar hook rather rudely made. The crook is bent only at an angle of about 45° , and there is somewhat of a twist to the whole handle. The prong, which is of antler, is $7\frac{3}{4}$ inches long and shouldered at the butt like that of the long hook described. It is fastened on by two thick lashings of stout seal thong passing around prong and handle and kept from slipping by notches in the latter, and on the butt end of the former and by a large flat-headed brass stud driven into the prong below the upper lashing.

Fish scaler.—Fig. 313 (No. 89461 [1279] from Utkiavwīñ) represents a little implement which we never saw in use, but which we were told was intended for scraping the scales off a fish. The specimen does not appear to be newly made. It is a piece of hollow "long" bone, 8 inches long, cut into the shape of the blade of a case knife, flat on one face with a broad, shallow, longitudinal groove on the other.



FIG. 313.—
Fish scaler.

MAKING AND WORKING FIBER.

Twisting and braiding.—We had no opportunity of seeing the process of twisting the sinew twine, which is sometimes used in place of the braid so often mentioned but more generally when an extra strong thread is desired, as in sewing on boot soles. Fig. 314 (No. 89431 [1332] from Utkiavwīñ) is a little shuttle of walrus ivory, 3 inches long and $1\frac{1}{8}$ broad, which we were told was used in this process. The body of this shuttle is reduced to a narrow crosspiece, and the prongs at one end are twice as long as those at the other. The tips of the long prongs are about $\frac{1}{4}$ inch apart, while those of the short ones nearly meet. There is a small round hole in one side of the body. This specimen was made for sale. As well as I could understand the seller, the ends of several strands of fine sinew were fastened into the hole in the shuttle and twisted by twisting it with one hand, while the other end was held perhaps by the other hand. The part twisted was then wound on the shuttle and a fresh length twisted. This would be a very simple form of spinning with a spindle.

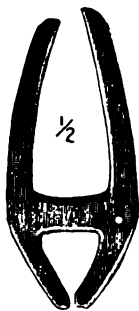


FIG. 314.—Ivory
shuttle.

No special implements for twisting have been described among other

Eskimo. Mr. E. W. Nelson (in a letter to the writer) says that the natives of Norton Sound informed him that the cable twisters (*kaputa-kibu'tuk* at Norton Sound) were also used for making twisted cord. He describes their use as follows: "The ends of the sinew cord are tied to the center holes in the two ivory pieces, one of the latter at each end of the cord, and then they are twisted in opposite directions, thus getting the hard-laid sinew cord used on the bows."

The sinew twine used at Point Barrow is generally braided, almost



FIG. 315.—Netting needle.

always in a three-ply braid, usually about the size of stout packthread, such as is found on many Eskimo implements from all localities represented in the Museum collections. That they also know how to braid with four strands is shown by the hair line already described (No. 56545 [410]). They also have a special word (which I can not recall) for braiding with four strands in distinction from braiding with three (*pidrá*).

Netting.—Two implements are used as usual in netting, a needle or long flat shuttle for carrying the twine (Fig. 315, No. 56570 [101]), and a mesh stick for gauging the length of the mesh. The knot is the universal "fisherman's knot" or becket hitch made in the usual manner. The method of using the mesh stick, however, is rather peculiar, and somewhat clumsy compared with that used by civilized net-makers, as it serves only to measure the mesh and not also to hold the successive meshes as they are made. It is a long flat piece of bone or antler, shaped like a case knife, with a blade square at heel and point. There is often also a little blunt hook (as in Fig. 316, No. 56581 [1021]) at the point, bending upward or toward the back of the blade. The blade is the part of the stick which measures the mesh, and its length from heel to point is always precisely half the length of the mesh to be made. It is used as follows: The workman, holding the mesh stick by the handle in his left hand, with the blade downward, catches the mesh into which the knot is to be made with the hook, and holds it while the twine is carried down the left side of the blade, round the heel and through the mesh as usual, and drawn up till the preceding knot comes just to the point of the blade. This makes a loop of the proper length for a mesh round the stick. The point where the next knot is to be made is now caught between the thumb and finger of the right hand and the mesh stick taken out of the loop. The left thumb and finger, while the other fingers of this hand still hold the



FIG. 316.—
Mesh stick.

handle of the stick, relieve the fingers of the right hand, which goes on to make the knot in the usual manner.¹

We collected thirteen needles of different patterns and sizes. No. 56570 [101], Fig. 315, has been selected as the type (*l'nmuvwifñ, mñ'kutñ.*) It is of walrus ivory, 11.9 inches long. The small hole near the tip of one prong is for a lanyard to hang it up by when not in use. This needle could be used only for making a large meshed net, perhaps a seal net.

We collected seven needles of almost the same pattern as this, varying a little in proportions. The faces are usually more deeply hollowed out and the ends usually sinuate instead of being straight. Three of these are of reindeer antler and the rest of ivory. The longest is 9.9 inches long and the shortest 4½. This needle (No. 56574 [24], from *Utkiavwifñ*) is rather broad in proportion, being nearly 1 inch wide. It is of walrus ivory. No. 89433 [942] is better suited for netting a small mesh, being only 0.7 inch broad at the widest part. It is made of reindeer antler and

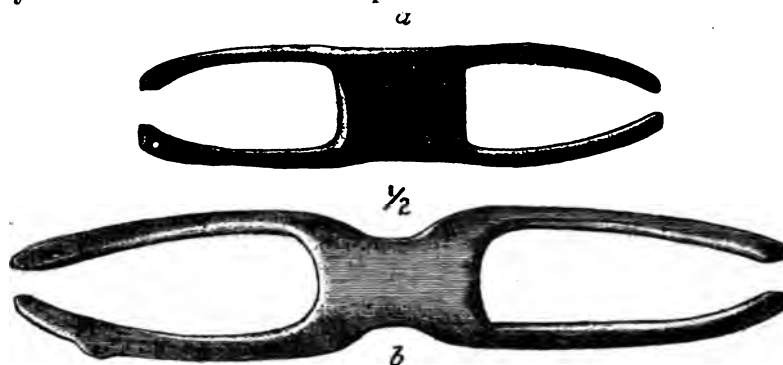


FIG. 317.—Netting needles.

is 7.3 inches long. These needles sometimes have a small hole through one end of the body for fastening the end of the twine, and most have some arrangement for fastening on a lanyard, either a hole as in the type or a groove round the tip of one prong as in No. 56574 [24].

No. 89427 [1283], from *Utkiavwifñ*, is a needle of a slightly different pattern, being rather thick and not narrowed at the middle. It is of reindeer antler, 8.7 inches long and 1 wide. No. 89430 [1286], Fig. 317*a*, from *Utkiavwifñ*, is a very broad needle, with short body and long prongs, one of which is expanded at the tip and perforated for a lanyard. It is a piece of the outside hard tissue of a reindeer antler, 5.4 inches long and 1.2 broad. It is but slightly narrowed at the middle, while No. 89428 [1381], Fig. 317*b*, from *Utkiavwifñ*, a somewhat similar broad needle of the same material is deeply notched on each side of the body. This is made from antler of smaller diameter than the preceding, and conse-

¹ We had no special opportunities for watching the natives at work netting, as but few nets happened to be made at the village during our stay. It was, however, observed that the mesh stick was taken out every time a knot was tied. Since my return, after a careful study of the different mesh sticks in our collection, I have convinced myself by experiment that the above method of using the tool is the only one which will account for the shape of the different parts.

quently is not flat, but strongly convex, on one face and correspondingly concave on the other. It is 8.2 inches long and $1\frac{1}{2}$ wide.

For making the seal nets a very large needle is used. The one in the collection, No. 56581 [102], Fig. 318, from Utkiavwīñ, is $20\frac{1}{2}$ inches long and only $1\frac{1}{2}$ wide. It is made of two nearly equal pieces of antler, which are nearly flat, and lap over each other about $3\frac{3}{4}$ inches near the middle.



FIG. 318.—Netting needle for seal net.

They are strongly fastened together by five whalebone stitches, one at each corner of the splice and one in the middle. The corner stitches run round the edge of the two parts, and through a hole through both parts. The prongs are stout and curved, nearly meeting at the tips. They are about 3 inches long. The lateral distortion appears to be due to warping.



FIG. 319.—Netting needle.

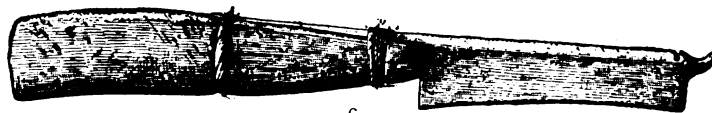
A peculiar netting needle is shown in Fig. 319 (No. 89429 [1333], from Utkiavwīñ), which is new and rather carelessly made from very coarse walrus ivory. The tips of the prongs, after nearly meeting, diverge again in the form of the letter U. This needle, which is $9\frac{1}{2}$ inches long, was said by the maker to be of the pattern used by the "Kāñmā'd'īñ."



a



b



c

FIG. 320.—Mesh sticks.

There are no specimens resembling it in the museum collections, though it curiously suggests certain implements from Norton Sound, labeled "reels for holding fine cord," consisting of slender rods of antler, terminating at each end in similar shallow U-shaped forks.

The mesh stick (*kú'brín*) belonging to the large netting needle, No. 56581 [102], may be taken as the type of this implement. It is a piece of the hard outside tissue of a reindeer antler. The three notches on the lower edge of the haft are for the fingers. The incised line along one face of the blade is probably a mark to which the twine is to be drawn in making a mesh. The blade is just the proper length, $7\frac{1}{2}$ inches, for the large mesh of the seal net. The remaining four mesh sticks are all small, and intended for making fish nets. Three are of reindeer antler and the fourth of hard bone, with a wooden haft.

Fig. 320*a* (No. 89436 [1284], from *Utkiavwñ*) is of antler, 7.2 inches long, with a blade of 2.7 inches, protected from splitting by a stout round peg of hard bone, driven through the handle so as to lie against the heel of the blade. It terminates in a blunt point instead of a hook, and has three finger notches in the haft. No. 89437 [942], also from *Utkiavwñ*, is of the same material, 5.2 inches long, without a hook and with a blade only 1 inch long. There are two finger notches in the haft. The last of the antler mesh sticks (No. 89439 [983], from *Utkiavwñ*, Fig. 320*b*) is double ended, having a hook and a short blade at each end. The blades are respectively 1.5 and 1.6 inches long, and the total length is 6.6 inches. Fig. 320*c* (No. 89435 [1019], also from *Utkiavwñ*) has a blade, with a small hook, of white compact bone, and what would be the handle lashed to one side of a haft of soft wood, which is shouldered to receive it. The haft is 4.3 inches long, and the two parts are held together by two lashings of fine sinew, kept from slipping by notches. The total length is 7.3 inches, that of the blade 2.7. Netting needles and mesh sticks of essentially the same type as those just described, but varying in material and dimensions, are in general use from the Anderson River to Bristol Bay, as is shown by the Museum collections.

Netting weights.—We collected 16 little ivory implements, each, when complete, consisting of the image of a fish about $3\frac{1}{2}$ to 4 inches long, suspended by a string about 4 inches long to a little ivory spring hook. We never happened to see these implements in use, but we were told that they were used in netting to keep the meshes in proper shape. They generally were made in pairs. The only way of using them that I can think of is first to hook one into the bight of the first mesh made in starting the net. This would make the successive meshes, as they were netted, hang down out of the way. On starting the next row in the opposite direction, the second weight hooked into the first mesh of this row would draw the successive meshes down on the left-hand side of the stick, while the other weight would keep the meshes of the first row stretched so that one could be easily caught at a time. On beginning the third row the first weight would be transferred to the first mesh of this, and so on. Fig. 321*a* is one of a pair of these *nēpitaúra* (No. 56596 [207]) which has been selected as the type. It is a rather rude figure of a salmon or trout 4 inches long, neatly carved out of walrus ivory. The string is of braided sinew and the hook of walrus ivory.

Fig. 321*b* (No. 89442 [899] from Nuwük) is a weight without the hook and made of compact whale's bone. It is 4.1 inches long, and very neatly carved, having all the fins in relief, the gill openings, mouth, and eyes incised.

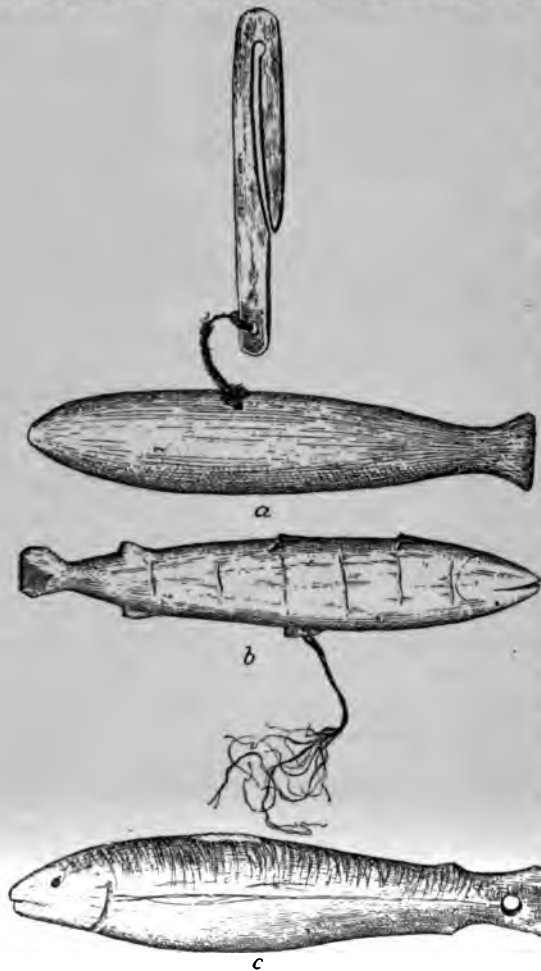


FIG. 321.—Netting weights.

Fig. 321*c* (No. 56578 [201] from Utkiawwīn) seems to be intended for a polar cod, and has the hole drilled through the root of the tail. The lateral line is marked by a scratch, colored with black lead, and the dark color of the back is represented by curved, transverse scratches also colored with black lead. When the carving is sufficiently good to show what sort of a fish is meant, it is generally a salmon or trout. Only 3 out of the 16 are of anything but walrus ivory. These 3 are of compact whale's bone, and one had small blue glass beads inlaid for eyes, of which one still remains.



$\frac{1}{2}$

FIG. 322.—Shuttle belonging to set of feather tools.

The shortest is 3.4 inches long, and the longest 4.3, but most of them are almost exactly 4 inches long.

Weaving.—A set of little tools made of bone and reindeer antler were brought over for sale, which were said to be those used in weaving the

feather belts. I had no opportunity of seeing a belt made, but the work evidently does not require all three of these tools. The little netting needle or shuttle of bone (Fig. 322, No. 89434 [1338]) can not be used in feather weaving, because, as already mentioned, the strips of feather are

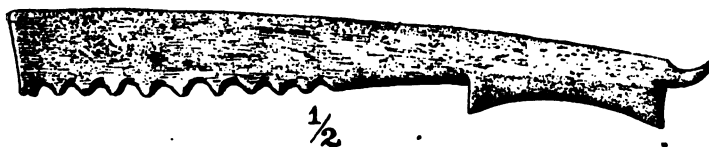


FIG. 323.—Mesh stick.

not fastened together into a continuous cord which could be carried on a shuttle. It is 5.9 inches long and 0.7 wide. There is also a little mesh stick of antler (Fig. 323, No. 89438 [1338]) 6.7 inches long, with a blade 1.9 inches in length, and a little hook, which appears to be fitted for nothing except netting a small net. The lower edge of the handle, however, is cut into 10 deep rounded notches, which perhaps serve the purpose of a rude "frame" for keeping apart the strands of the warp, while the woof of feather is passed through with the fingers. It would be held with this edge up, and the beginning of the belt being fastened to the wall, the warp strands would be stretched over this, as over a violin bridge, each resting in one of the notches. The last tool of the set (Fig. 324, No. 89462 [1338]) is undoubtedly a "sword" for pushing home the woof, and probably also serves to separate the strands of the warp into a "shed." It is a flat, thin piece of antler, 9 inches long and three-fourths wide, of which about $6\frac{1}{2}$ inches forms a straight blade $6\frac{1}{2}$ inches long, and the rest is bent round to one side and slightly down, forming a handle. When the strands of the warp are stretched over the bridge as above described, pushing this horizontally through them alternately over and under the successive strands, would make a "shed" through which the end of the woof could be thrust with one motion, and pushed up against the preceding strand of the woof by sliding the sword forward. It would then be withdrawn and passed through again, going over the strands it went under before and vice versa, so as to open a "shed" for the next strand of the woof.

Sewing.—For sewing furs and leather they always use thread made by stripping off thin fibers from a piece of dried sinew of the reindeer, as is usual with Eskimo. Cotton or linen thread of civilized manufacture is now often used for sewing the cotton frocks, etc., and sometimes for making an or-

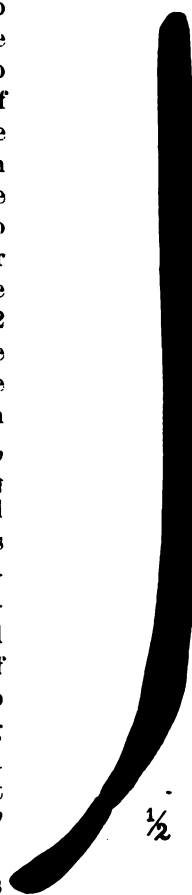


FIG. 324.—"Sword" for feather weaving.

namental seam on the waterproof gut shirts. The stitches employed have already been described under the head of clothing (which see). They hold the needle between the thumb and middle finger, with the thimble on the forefinger (both are called by the same name, *tí'kyə*) and sew toward them. This appears to be the regular Eskimo method of sewing.¹



FIG. 325.—Quill case of bone needles.

At the present day they are well supplied with steel needles (*miksun*) of all sizes and patterns, but formerly they used bone needles made from the fibula (*amilyərûñ*) of the reindeer. We collected sixty of these needles, eighteen of which appear to be old and genuine. The rest were more or less carefully made for sale. *Nikawáalu* told us that once when he and a young man were out deer hunting a long distance from camp their boots gave out. Having killed a deer he made thread from the sinew, a needle from the bone, and with pieces of the skin repaired their boots, so that they got home in comfort.

No. 89389 [1191], Fig. 325 will serve as the type of these needles. This is a case $3\frac{1}{2}$ inches long, made of the butt of a large quill, closed with a plug of walrus hide, and contains 6 needles. One is 1.8 inches long, stout, and round-pointed, with a large eye. It is much discolored from age. The second is also round-pointed but more slender, 1.9 inches long, and flattened and expanded at the butt. The third is 2.4 inches long, and has a four-sided point like a glover's needle. All three of these are very neatly made and appear old. The other three are stout, roughly made, and flat, respectively 2.1, 2.2, and 2.5 inches long. Two of them look suspiciously new. This set was said to have been the property of the wife of *Puka*, *Nikawáalu's* father.

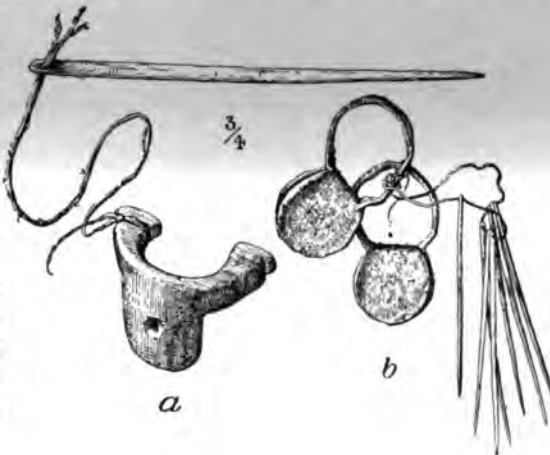


FIG. 326.—Needles and thimbles: (a) large bone needle and peculiar thimble; (b) leather thimbles with bone needles.

Fig. 326a is a peculiarly large and flat needle (No. 89392 [1195] from *Utkiavwíñ*) 3.2 inches long, with a round, sharp point and a large eye, with little grooves running to the butt on each side for the thread to lie in. This needle was perhaps specially

¹See Parry, *Second Voy.*, p. 537; *Lyon, Journal*, p. 93; *Kumlien, Contributions*, p. 25.

meant for sewing boat skins. With this needle belongs a peculiar large bone or ivory thimble. The remaining needles are all very much alike, though some are more roughly made than the others. Three of them have the butt square instead of rounded, and half of them, including some which are undoubtedly old, are four-sided at the point like a glover's needle. The longest is 3 inches long and the shortest 1.4 inches, but the commonest length is about 2 or 2½ inches. Similar bone needles are mentioned by various authors.¹

Nearly all the women now use ordinary metal thimbles, obtained in trade, but they wear them in the old-fashioned way, on the tip of the forefinger. Some of the older women, however, still prefer the ancient leather thimble. There are two patterns of these: one intended for the fore-finger only, and the other of such a shape that it may also be worn on the other fingers as a guard against chafing in pulling stout thread through thick leather. It is often so used at the present day.

We collected three of the first-mentioned pattern, which is represented by Fig. 326*b* (No. 89396 [1202, 1246]). It is made by cutting out a narrow ring of raw sealskin 0.7 inch in diameter, with a circular flap 0.5 inch in diameter on the outside of the ring and a corresponding one on the inside of the same size, cut out of the middle of the ring. The flaps are doubled over so as to make a pad on the inside of the forefinger when the tip of the latter is inserted into the ring. The butt of the needle presses against this pad.

The third thimble, which belongs with the needlecase (No. 89371 [1276]), is of precisely the same form and dimensions.

There appeared to be little if any variation among those which we saw. Capt. Lyon² figures two similar thimbles from Iglulik, which are described on page 537 of the same work as being made of leather. The flaps, however, seem to be only semicircular and not folded over, so that the shield consists of only one thickness of leather.

A similar thimble with the flap also not folded is used at Cumberland Gulf.³

The other pattern, of which we brought home nine specimens, is represented by No. 89389 [1191], which belongs with the set of bone needles of the same number. It is a tube, open at both ends, one of which is larger than the other, made by bending round a strip of split walrus hide and sewing the ends together. It is 0.4 inch long and 2.1 in circumference at the larger end. It is worn smooth with handling, and impregnated with grease and dirt and marked with small pits where it has been pressed against the butt of the needle in use.

Four other old thimbles (No. 89393 [1194], from Utkiavwīñ, are made

¹Formerly they used the bones of fishes or the very fine bones of birds instead of needles. Crantz, vol. 1. p. 136.

²"Their own clumsy needles of bone." Parry, *Second Voy.*, p. 537 and pl. opposite p. 548, Fig. 11. Kumlien also speaks of "steel needles or bone ones made after the same pattern" at Cumberland Gulf (*Contributions*, p. 25).

³Parry, *Second Voy.*, pl. opposite p. 550, Fig. 25.

⁴Boas, *Central Eskimo*, p. 524, Fig. 473 and Kumlien, *Contributions*, p. 25.

in the same way, but are a trifle larger. As they show no needle-marks, they were probably used only as finger guards. The remaining four are similar to the above, but newly made, for sale.

A most peculiar thimble, the only one of the kind seen, is shown in Fig. 326*a* (No. 89392 [1195] from Utkiavwĩñ, belonging with the large bone needle of the same number already described and figured). This is made of a single piece of walrus ivory, browned with age, and the round shallow socket is for the butt of the needle. The ends of the half ring are slightly expanded and notched on the outside to receive a string to complete the ring so that it can be fitted round the finger, with the flange in the same position as the pad of a leather thimble.

Needles are kept in a case (ujyami), consisting of a tube of bone or ivory about 5 or 6 inches long, through which is drawn a broad strap of leather furnished with a knot at one end to keep it from slipping wholly through. Into one side of this strap the needles are thrust obliquely, so that when the strap is pulled in they are covered by the tube. To the other end of the strap is usually attached an ivory snap hook for fastening the needle case to the girdle of the pantaloons. These needle cases are made of two slightly different patterns, of which the first is represented by No. 89365 [1277], Fig. 327*a*. It is of white walrus ivory, 4½ inches long, and the strap is of seal thong about 11 inches long and 0.3 inch wide. At one end of this is a pear-shaped knob of walrus ivory, which is shouldered off at the small end and worked into a short flattened shank perforated with a large eye, through which the end of the strap, which is cut narrow, is thrust. It is fastened by doubling it back and sewing it to the standing part. A sky-blue transparent glass bead is inlaid in the large end of the knob. The other end of the strap is fastened in the same way into a transverse slot in the end of the belt hook (t'ʔtkĩbwĩñ) of ivory, 4.7 inches long.



FIG. 327.—Needle cases with belt hooks.

This pattern appears to be usually made of walrus ivory. Only one of the six brought home is of bone, and this is an unusually small one, only 3.6 inches long, made for sale. The usual length is 4½ to 5 inches. No. 89363 [1105], Fig. 327*b*, from Utkiavwĩñ, is a tube very much like the one described, but is ornamented with an incised pattern colored with red ocher, and has a differently shaped belt hook. When the latter is hooked over the girdle the ring is pushed up the shank over the point of the hook till it fits tight, and thus keeps the hook from slipping off the belt.

Fig. 328*a* (No. 89364 [1243] from Utkiavwñ) is another ivory needle case, 4.7 inches long. The tube was once ornamented with incised patterns, but these are almost wholly worn off by constant handling. The knob is carved into an ornamental shape, having a circle of six round knobs round the middle. It has been suggested that this is meant to represent a cloud-berry (*Rubus chamæmorus*), a fruit known to the "Nunatañmiun" though not at Point Barrow. The hook is a snap hook very much like those described in connection with the netting weights, but larger (3 inches long) and very broad at the upper end, which is made into a broad ring. The point of a steel needle still sticking in the flesh side of the strap shows how the needles are carried with the points toward the knob.

No. 89370 [1033], also from Utkiavwñ, has no knob, but the end of the strap is kept from slipping through by rolling it up transversely and catching it with a stitch of sinew. It has a broad flat snap hook similar to the last, but cut on the edges into ornamental scallops. The tube is ornamented with an incised pattern colored red with ocher, and is 5.2 long. No. 56575 [7] is an old tube of brown walrus ivory, enlarged into a knob at one end. It has no knob or hook, but a new strap of white seal skin, in the lower end of which is tied a large knot. The other pattern has the cylinder made of a hollow "long" bone, in its natural shape. This bone appears to be almost always the humerus of some large bird, probably

a swan. The strap has usually no knob, but is kept from slipping through by knotting the end or tying on a large bead or a bear's toe, or some such object too large to go through the tube. None of these have belt hooks except one new and roughly made specimen.

These bone tubes are apparently older than the neat ivory cylinders, and it is not unlikely that the belt hook was not invented till the former was mostly out of fashion. No. 89361 [1239], Fig. 328*b* from Utkiavwñ, is one of these which has for knob one of the large dark blue glass beads which used to bring such enormous prices in the early days of Arctic trading, and which are still the kind most highly prized. The

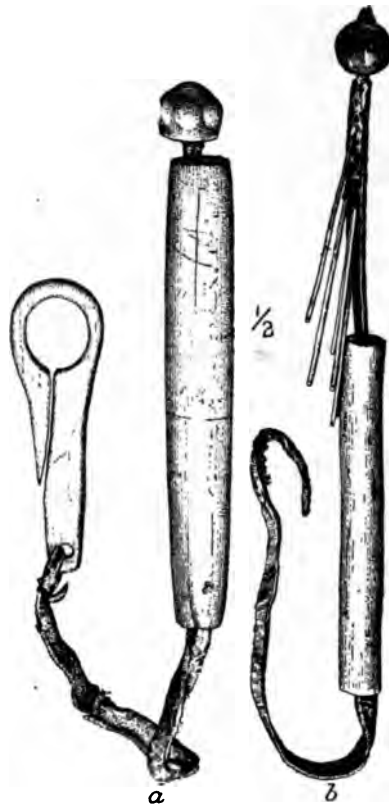


FIG. 328.—Needle cases: (a) case with belt hook; (b) case open, showing bone needles.

end of the strap is cut narrow, passed through the bead, and knotted on the end. This case carries a half-dozen of the old-fashioned bone needles, which appear to be genuine. It is 3.7 inches long and, roughly speaking, 0.4 in diameter. No. 89369 [1201], also from Utkiavwīn, resembles the above, but has a wolverine's toe sewed to the end of the strap. No. 89371 [1276], from Utkiavwīn, also has the toe of a wolverine for a knob, and has a belt hook with two tongues made of reindeer antler. No. 89366 [1137], from Utkiavwīn, is a highly ornamented case of this pattern, which has a short cylindrical knob, also ornamented. No. 89368 [1089], from Utkiavwīn, is not made of bird's bone, but is a piece of a long bone from some mammal, and has a brown bear's toe for a knob. No. 89367 [1339], from the same village, is roughly made of a branch of antler, 3.9 inches long and 0.8 wide, hollowed out. It has a knob of whale's bone, but no belt hook, the end of the strap being knotted into a leather thimble of the first pattern. Of the six specimens of this pattern in the collection only the first is a genuine old implement. All the others are merely commercial imitations rather carelessly made.

This kind of needle case is very commonly used throughout Alaska, as is shown by the enormous collections in the National Museum brought home by various explorers, Nelson, Turner, Dall and others. The needle case from Iglulik, figured by Capt. Lyon,¹ resembles the second or older pattern, being of bone, not tapered at the ends, and having neither knob nor belt hook. To the ends of the strap are hung thimbles "and other small articles liable to be lost."² Dr. Simpson³ speaks of the needle case in use at Point Barrow, but merely describes it as "a narrow strip of skin in which the needles are stuck, with a tube of bone, ivory, or iron to slide down over them, and kept from slipping off the lower end by a knob or large bead." This appears to refer only to the second or older pattern.

The old-fashioned ring thimbles were usually carried on the belt hook of the needlecase, but modern thimbles require a box. These boxes (*kigiunø*), which are usually small and cylindrical, also serve for holding thread, beads, and all sorts of little trinkets or knickknacks, and many of them are so old that they were evidently used for this purpose long before the introduction of metal thimbles. Little tin canisters, spice boxes, etc., are also used for the same purpose nowadays. We brought home thirteen of these boxes, of which No. 89407 [1158] Fig. 329*a* has been chosen as the type. It is a piece of the beam of a stout antler, 4.3 inches long, cut off square on the ends and hollowed out. Into the large end is fitted a flat bottom of thin pine, fastened in by four little treenails of wood. The cover is of the same material. It is held on by a string of sinew braid about 11 inches long, which passes out through the lower of the two little holes on one side of the box, being held by a knot at

¹ Parry's Second Voyage, pl. opposite p. 550, Fig. 25.

² *Ibid.*, p. 537.

³ *Op. cit.* p. 245.

the end, in through the upper, then out and in through two similar holes in the middle of the cover, and out through a hole on the other side of the box. Pulling the end of this string draws the cover down snugly into its place.

Some of the remaining boxes are made of antler, and vary in length from 4.7 to 8 inches. The last is, however, unusually large, most of the others being about 5 inches long. The covers are generally held on by strings much in the manner described, and the ends are both usually of wood, though two old boxes have both ends made of antler, and one has a top of hard bone. The last is a specimen newly made for sale. These boxes are sometimes ornamented on the outside with incised lines, colored red or blackened, either conventional patterns as in Fig. 329*b*

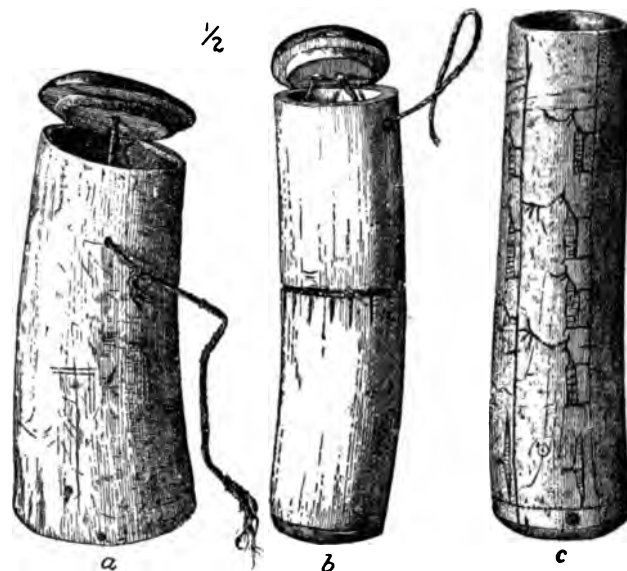


FIG. 329.—Trinket boxes.

(No. 89405 [1335], from Utkiavwīn) or figures of men and animals as in Fig. 329*c* (No. 56615 [41] from the same village). The former is a new box, 4.7 inches long, and has the wooden ends both shouldered to fit tightly. The cover is worked with a string.

No. 56615 [41] on the other hand is very old, and has lost its cover. The wooden bottom is shouldered and held in with treenails. The surface is elaborately ornamented with incised and blackened figures. It is divided by longitudinal lines into four nearly equal panels, on which the figures are disposed as follows (the animals all being represented as standing on the longitudinal lines, and facing toward the right, that is, toward the open end of the box): On the first panel are 4 reindeer, alternately a buck and a doe, followed by a man in a kaiak, and over his head two small "circles and dots," one above the other.

All the deer on this box are represented strictly in profile, so as to show only two legs and one antler each. On the second panel are 4 deer, all does, followed by a man with a bow slung across his back. On the third, a man in the middle appears to be calling 2 dogs, who, at the left of the panel, are drawing a railed sled. Reversed, and on the upper border of the panel, is a man pushing behind a similar sled drawn by 3 dogs. The head dog has stopped and is sitting down on his haunches. The dogs, like the reindeer, are all strictly in profile and rather conventionalized. In the fourth panel are 3 reindeer followed by a man in his kaiak, and upside down, above, a deer without legs,



FIG. 330.—Trinket boxes.

supposed to be swimming in the water, and a very rude figure of a man in his kaiak. These figures probably represent actual occurrences, forming a sort of record.

Fig. 330*a* (No. 89408 [1371] from Sidaru) is a piece of stout antler, 4.7 inches long, which has the bottom of pine fitted tightly in without fastenings. The cover is of wood, covered, to make it fit tight, with parchment, apparently shrunk on and puckered on the upper surface. A thick hank of untwisted sinew is fastened as a handle through the middle of the cover. This box is old and dirty, and contains an unfinished flint arrow-head. No. 56505 [59] from Utkiavwīñ, is a new box, closed at the ends with thick shouldered plugs of pine wood. The tube is 8 inches long and ornamented with a conventional pattern of incised lines colored with red ocher.

Fig. 330*b* (No. 89402 [1359] also from Utkiavwñ), is peculiar from the material of which it is made. It is of about the same pattern as the common antler boxes, but is made of the butt end of the *os penis* of a large walrus, cut off square and hollowed out, and has ends of hard whale's bone. Its length is 4.2 inches. No. 89403 [1425] Fig. 331 from Sidaru, is made of the hollow butt of a good-sized walrus tusk, 3.2 inches long. It has a neatly fitted wooden bottom, held in with 6 treenails, two of ivory and four of wood. The box has been cracked and split and



FIG. 331.—Ivory box.

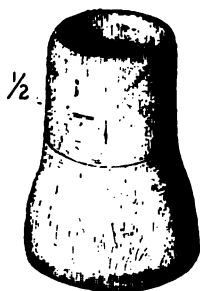


FIG. 332.—Bone box.

mended with stitches of sinew and whale-bone. Peculiar conventional patterns are incised on the box and

cover. A peculiar box is shown in Fig. 332 (No. 56583 [37] from Utkiavwñ). This is of compact white bone, with a flat wooden bottom. I do not recollect seeing any other boxes of the same sort.

Fig. 333 (No. 89409 [1372]) is the tip of a walrus tusk cut off and hollowed out into a sort of flask, 3.8 inches long, closed at the large end by a flat wooden bottom, fastened in with treenails and at the small end by a stopper of soft wood.

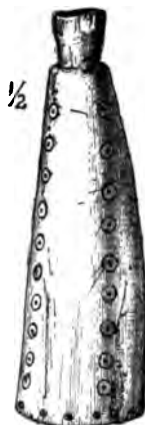


FIG. 333.—Little flask of ivory.

The most peculiar box of all, however, is shown in Fig. 334 (No. 56512 [2] from Utkiavwñ), the only specimen of the kind seen. It is 5.5 inches long, made of reindeer antler, and very neatly carved into a most excellent image of a reindeer lying on its left side, with the head, which has no antlers, turned down and to the left. The legs are folded up against the belly, the forelegs with the hoofs pointing backward, the hind hoofs pointing forward. The eyes are represented by small sky-blue glass beads, and the mouth, nostrils, and navel neatly incised, the last being particularly well-marked. The tips of the hoofs are rounded off, which, taken in connec-



FIG. 334.—Box in shape of deer.

tion with the attitude and the well marked navel, lead me to believe

that the image is meant to represent an unborn fetus. The whole of the body is hollowed, the aperture taking up the whole of the buttocks, and closed by a flat, thick plug of soft wood. A round peg of wood is driven in to close an accidental hole just above the left shoulder. The box is old and discolored, and worn smooth with much handling.



FIG. 335.—Small basket.

Rarely these little workboxes are made of basketwork. We obtained four specimens of these small baskets, of which No. 56564 [88] Fig. 335, workbasket (*águ-ma, áma, ipiáru*), will serve as the type. The neck is of black tanned sealskin, $2\frac{1}{2}$ inches long, and has 1 vertical seam, to the middle of which is sewed the middle of a piece of fine seal thong, a foot long, which serves to tie up the mouth. The basket appears to be made of fine twigs or roots of the willow, with the bark removed, and is made by winding an osier spirally into the shape of the basket, and wrapping a narrow splint spirally around the two adjacent parts of this, each turn of the splint being separated from the next by a turn of the succeeding tier. The other basket from Utkiavwîñ (No. 56565 [135]) is almost exactly like this, but larger (3.5 inches in diameter and 2.2 high), and has holes round the top of the neck for the drawstring.

Two baskets from Sidaru are of the same material and workmanship, but somewhat larger and of a different shape, as shown in Fig. 336, No. 89801 [1366], and Fig. 337, No. 89802 [1427]. This was the only species of basketwork seen among these people and is probably not of native manufacture.

Prof. O. T. Mason, of the National Museum, has called my attention to the fact that the method of weaving employed in making these baskets is the same as that used by the Apaches and Navajos, who have been shown to be linguistically of the same stock as the Athabaskan or Tinné group of Indians of the North. The first basket collected, No. 56564 [88], was said by the owner to have come from the "great river" in the south. Now, the name *Kuwúk* or *Kowak*, applied to the western stream flowing into Hotham Inlet, means simply "great river," and this is the region where the Eskimo come into very intimate commercial relations with Indians of Tinné stock.¹ Therefore, in consideration of the Indian



FIG. 336.—Small basket.

¹ Dall, American Association, Address, 1885, p. 13.

workmanship of these baskets, and the statement that one of them came from the "great river, south," I am well convinced that they were made by the Indians of the region between the Koyukuk and Silawik Rivers, and sold by them to the Kuwūmīun, whence they could easily find their way to Point Barrow through the hands of the "Nunatañmīun" traders.

The Eskimo of Alaska south of Bering Strait make and use baskets of many patterns, but east of Point Barrow baskets are exceedingly rare. The only mention of anything of the kind will be found in Lyon's Journal.¹ He mentions seeing at Iglulik a "small round basket composed of grass in precisely the same manner as those constructed by the Tibboo, in the southern part of Fezzan, and agreeing with them also in its shape." Now, these Africans make baskets of precisely the same "coiled" work (as Prof. Mason calls it) as the Tinné, so that in all probability what Lyon saw was one of these same baskets, carried east in trade, like other western objects already referred to. The name áma applied to these baskets at Point Barrow (the other two names appear to be simply "bag" or receptacle) corresponds to the Greenlandic amât, the long thin runners from the root of a tree, "at present used in the



FIG. 337.—Small basket.

plural also for a basket of European basketwork," (because they had no idea that twigs could be so small)—Grønlandske Ordbog.

No. 89799 [1329] from Utkiavwīn, is a peculiar bag, the only one of the kind seen, used for the same purpose as the boxes and baskets just described. It is the stomach of a polar bear, with the muscular and glandular layers removed, dried and carefully worked down with a skin scraper into something like goldbeater's skin. This makes a large, nearly spherical bag $7\frac{1}{2}$ inches in diameter, of a pale brownish color, soft and wrinkled, with a mouth 6 inches wide. A small hole has been mended by drawing the skin together and winding it round tightly on the inside with sinew.

¹ P. 172.

MEANS OF LOCOMOTION AND TRANSPORTATION.

TRAVELING BY WATER.

Kaiaks and paddles.—Like all the rest of the Eskimo race, the natives of Point Barrow use the kaiak, or narrow, light, skin-covered canoe, completely decked over except at the middle, where there is a hole or cockpit in which the man sits. Although nearly every male above the age of boyhood owns and can manage one of these canoes, they are much less generally employed than by any other Eskimo whose habits have been described, except the "Arctic highlanders," who have no boats, and perhaps those of Siberia and their Chuckche companions. The kaiak is used only during the season of open water, and then but little in the sea in the neighborhood of the villages. Those who remain near the villages in the summer use the kaiak chiefly for making the short excursions to the lakes and streams inland, already described, after reindeer, and for making short trips from camp to camp along the coast. At Pernyû they are used in setting the stake-nets and also for retrieving fowl which have fallen in the water when shot.

According to Dr. Simpson¹ the men of the parties which go east in the summer travel in their kaiaks after reaching the open water "to make room in the large boat for the oil-skins." We obtained no information regarding this. It is at this time, probably, that the kaiak comes specially in play for spearing molting fowl and "flappers", and for catching seals with the kûkiga. They manage the kaiak with great skill and confidence, but we never knew them to go out in rough weather, nor did we ever see the practice, so frequently described elsewhere, of tying the skirts of the waterproof jacket round the coaming of the cockpit so as to exclude the water.

It should, however, be borne in mind that from the reasons above stated our opportunities for observing the use of the kaiak were very limited. At all events it is certain that the people depend mainly on the umiak, not only for traveling, but for hunting and fishing as well, which places them in strong contrast with the Greenlanders, who are essentially a race of kaiakers and have consequently developed the boat and its appendages to a high state of perfection.

We brought home one complete full-sized kaiak, with its paddle, No. 57773 [539], Fig. 338*a* and *b*, which is a very fair representative of the canoes used at Point Barrow. This is 19 feet long and 18 inches wide amidships. The gunwales are straight, except for a very slight sheer at the bow, and the cockpit is 21 inches long and 18½ inches wide. It has a frame of wood, which appears to be all of spruce, held together by treenails and whalebone lashings, and is covered with white-tanned seal-skins with the grain side out. The stoutest part of the frame is the two gunwales, each 3¼ inches broad and ½-inch thick, flat, and rounded off on the upper edge inside, running the whole length of the boat and meet-

¹ Op. cit. p. 264.

ing at the stem and stern, gradually tapered up on the lower edge at each end. The ribs, of which there are at least forty-three, are bent into nearly a half-circle, thus making a U-shaped midship section, and are $\frac{3}{4}$ -inch wide by $\frac{1}{2}$ -inch thick, flat on the outer side and round on the inner. Their ends are mortised into the lower edge of the gunwale and fastened with wooden treenails. They are set in about 3 inches apart and decrease gradually in size fore and aft. Outside of these are seven equidistant streaks running fore and aft, $\frac{3}{4}$ inch to 1 inch wide and $\frac{1}{2}$ inch

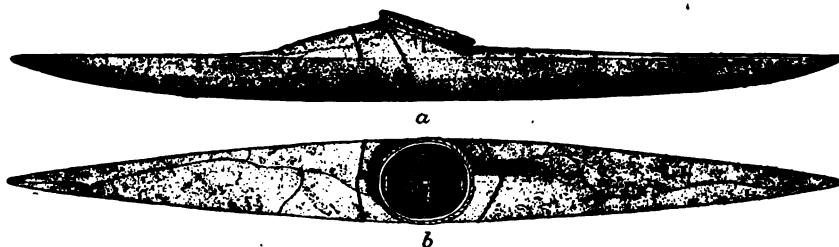


FIG. 338.—Kaiak.

thick, of which the upper on each side reaches neither stem nor stern. These are lashed to the ribs with a strip of whalebone, which makes a round turn about one rib, above the streak, going under the rib first, and a similar turn round the next rib below the streak (Fig. 339).

There is a stout keelson, hemi-elliptical in section, under the cockpit only. This is $4\frac{1}{2}$ feet long, about 2 inches deep, and $1\frac{1}{2}$ inches wide, and is fastened in the middle and about 1 foot from each end by a strip of whalebone, which passes through a transverse hole in the keelson, round the rib on one side, back through the keelson, and round the rib on the other side twice. The end is wrapped spirally round the turns on one side and tucked into the hole in the keelson. The deck beams

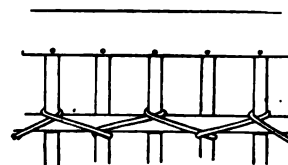


FIG. 339.—Method of fastening together frame of kaiak.

are not quite so stout as the ribs and are mortised into the upper edge of the gunwales a little below the level of the deck. The ends are secured by lashings or stitches of some material which are concealed by the skin cover. They are about as far apart as the ribs, but neither exactly correspond nor break joints with the latter.

At the after end of the cockpit is an extra stout beam or thwart to support the back, $1\frac{3}{4}$ inches wide and three-quarters inch thick, with rounded edges, the ends of which are apparently lashed with thong. The first beam forward of the cockpit is rounded, and appears to be a natural crook forming a U-shaped arch, and is followed by seven V-shaped knees, thickest in the middle and enlarged a little at the ends, successively decreasing in height to the seventh, which is almost straight. This makes the rise in the deck forward of the cockpit.

Every alternate deck beam is braced to the gunwale at each end by an oblique lashing of whalebone, running from a transverse hole in the beam about 1 inch from the gunwale to a corresponding hole in the gunwale, three-quarters inch from the lower edge. The lashing makes three or four turns through these holes and around the lower edge of the gunwale, and the end is wrapped spirally round these turns for their whole length. Above these beams a narrow batten runs fore and aft amidships from cockpit to stem and stern, mortised into the two beams at the cockpit, and lashed to the others with whalebone. The coaming of the cockpit is made of a single flat piece of wood, $1\frac{3}{4}$ inches broad and one-quarter inch thick, bent into a hoop with the ends lapping about 6 inches and "sewed" together with stitches of whalebone. Round the upper edge of this, on the outside, is fitted a "half-round" hoop, which appears to be made of willow, three-quarters by one-third inch, with its ends lapped about 4 inches, this lap coming over the joint of the larger hoop. It is fastened on by short stitches of whalebone about 5 or 6 inches apart, leaving room enough between the two hoops to allow a lacing of fine whalebone to pass through. The coaming is put on over the edge of the skin cover, which is drawn up tight inside of the coaming and over its upper edge and fastened by a lacing of whalebone, which runs spirally round the outer hoop and through holes about one-half inch apart in the edge of the cover.

The coaming fits over the crown of the arch of the forward deck beam and rests on the middle of the thwart aft, and is secured by lashings of whalebone, which pass through holes in the coaming and over its upper edge. The forward lashing makes three turns, which pass round the beam with the end wrapped spirally round the parts between beam and coaming; the after lashing, four similar turns, which pass through a hole in the thwart and around its forward edge. On each side is a stout vertical brace of wood $3\frac{1}{4}$ inches long, 1 inch wide, and one-half inch thick, with rounded edges and corners. The ends are cut out parallel to the breadth, so that one end fits on to the upper edge of the gunwale, while the other receives the lower edge of the coaming, protruding on the outside through a hole in the cover.

The cover is of six sealskins, put together heads to tails, so that there is only one longitudinal seam, which runs irregularly along the deck. The transverse seams, which run obliquely across the bottom are double and sewed



FIG. 340.—Double kayak paddle.

with a blind stitch, like the seams already described on the waterproof boots, from the inside. These seams are nearly 2 inches wide. The longitudinal seam is sewed in the same way from the outside, but not so broadly lapped, with the edge turned over into a roll. There are two pieces of stout thong stretched across the deck, one forward of the cockpit and the other aft, which serve to fasten articles to the deck. The thong passes out through a hole in the gunwale, one-half inch from the upper edge and 6 inches from the cockpit, on the starboard side forward and on the port side aft, and is secured by a knot in the end inboard. The other end passes in through a corresponding hole in the other gunwale and is loosely knotted to the deck beams, so that the line can be slackened off or tautened up at pleasure. Three feet from the bow is a becket for holding spears, etc., fastened into two little holes bored diagonally outward through the edge of the gunwales. It is of two parts of seal thong, one part twisted round the other, but is broken in the middle, so that only one-half of it is left. The weight of this kaiak in its present dry condition is 32 pounds.

This is about the ordinary pattern of kaiak used at Point Barrow, and is a medium-sized one. These boats are made to fit the size of the owner, a youth or small man using a much smaller and lighter kaiak than a heavy adult. They are never made to carry more than one person, and I have never heard of their being used by the women. In carrying the kaiak across the land from lake to lake, it is held horizontally against the side with the bow pointing forward, by thrusting the forearm into the cockpit. We never saw them carried on the head, in the manner practised at Fury and Hecla Straits.¹

In entering the canoe the man takes great care to wipe his feet clean of sand and gravel, which would work down under the timbers and chafe the skin. The canoe is launched in shoal water, preferably alongside of a little bank, and the man steadies it by sticking down his paddle on the outer side and holding it with his left hand, while he balances himself on his right foot, and with his free hand carefully wipes his left foot. He then steps with his left foot into the kaiak, and still balancing himself with the help of the paddle, lifts and wipes his right foot before he steps in with that. He then pushes his feet and legs forward under the raised deck, settles himself in a proper position for trimming the boat, and shoves off. As elsewhere, the kaiak is always propelled with a paddle.

No. 89246 [539], Fig. 340, is the paddle which belongs to the kaiak just described. It is 7 feet long. The shaft joining the blades is elliptical in section, with its greatest width at right angles to the plane of the blades so to present the greatest resistance to the strain of paddling. The shape of the blade, with rounded tip and thin rounded edges is admirably adapted to give the blade a clean entry into the

¹Lyon, Journal, p. 233. See also Capt. Lyon's figure in Parry's 2d Voy., pl. opposite p. 274.

water. The whole is very neatly and smoothly made, and the blades are painted with red ochre. This is a much more effective paddle than those used by the Greenlanders and other eastern Eskimo, the blades of which, probably from the scarcity of wood¹ are very narrow, not exceeding 4 inches in width. In Greenland and Labrador, also, the blades are square at the ends like those of ordinary oars, and are usually edged with bone to prevent them from splitting. The absence of this bone edging on the paddles from Point Barrow perhaps indicates that they are meant for summer use only and not for working among the ice. In accordance with the general custom in northwestern America, the double-bladed paddle (páutfiñ) is used only when great speed is desired, as in chasing game. It is handled in the usual way, being grasped with both hands near the middle, and dipped alternately on opposite sides. For ordinary traveling they use a single-bladed paddle (áñun), of the same shape as those used in the umiak but usually somewhat smaller, of which we neglected to procure a specimen. With this they make a few strokes on one side, till the boat begins to sheer, then shift it over and make a few strokes on the other side. They do this with very great skill, getting considerable speed, and making a remarkably straight wake. The use of this single paddle appears to be universal along the coast of Alaska, from Point Barrow southward, and it is also used at the Mackenzie and Anderson rivers, as shown by the models collected by MacFarlane in that region. It is, however, unknown among the eastern Eskimo about whom we have any definite information on the subject, namely, the Greenlanders, the people of Baffin Land, Hudson Strait, and Labrador.²

Curiously enough the Greenlanders had a superstition of a sort of malevolent spirits called kajariak, who were "kayakmen of an extraordinary size, who always seem to be met with at a distance from land beyond the usual hunting grounds. They were skilled in the arts of sorcery, particularly in the way of raising storms and bringing bad weather. Like the umiarissat [other fabulous beings], *they use one-bladed paddles*, like those of the Indians."³ This tradition either refers back to a time when the ancestors of the Greenlanders used the single paddle or to occasional and perhaps hostile meetings between eastern and western Eskimo.

Though the kaiak is essentially the same wherever used, it differs considerably in size and external appearance in different localities. The kaiak of the Greenlanders is perhaps the best-known model, as it has

¹ It is a curious fact, however, that the narrowest kaiak paddles I have ever seen belonged to some Eskimo that I saw in 1876, at Rigolette, Labrador, who lived in a region sufficiently well wooded to furnish them with lumber for a small schooner, which they had built.

² For information concerning the last two regions I am indebted to Mr. L. M. Turner; for the others to the standard authorities.

³ Rink, *Tales and Traditions*, p. 47. See also p. 374 for a story of the meeting of a Greenlander with one of these beings.

been figured and described by many authors. It is quite as light and sharp as the Point Barrow model, but has a flat floor, the bilge being angular instead of rounded, and it has considerably more sheer to the deck, the stem and stern being prolonged into long curved points, which project above the water, and are often shod with bone or ivory. The coaming of the cockpit also is level, or only slightly raised forward. The kaiaks used in Baffin Land, Hudson Straits, and Labrador are of a very similar model, but larger and heavier, having the projecting points at the bow and stern rather shorter and less sharp, and the coaming of the cockpit somewhat more raised forward. Both of these forms are represented by specimens and numerous models in the museum collections. I have seen one flat-floored kaiak at Point Barrow. It belonged to a youth and was very narrow and light.

The kaiak in use at Fury and Hecla Straits, as described by Capt. Lyon¹ and Capt. Parry² is of a somewhat different model, approaching that used at the Anderson River. It is a large kaiak 25 feet long, with the bow and stern sharp and considerably more bent up than in the Greenland kaiaks, but round-bottomed, like the western kaiaks. The deck is flat, with the cockpit coaming somewhat raised forward.³

In the kaiaks used at the Anderson and Mackenzie rivers, as shown by the models in the National Museum, the bending up of the stem and stern posts is carried to an extreme, so that they make an angle of about 130° with the level of the deck. The bottom is round and the cockpit nearly level, but sufficient room for the knees and feet is obtained by arching not only the deck beams just forward of the cockpit, but all of them from stem to stern, so that the deck slopes away to each side like the roof of a house. At Point Barrow, as already described, the deck beams are arched only just forward of the cockpit, and the stem and stern are not prolonged. This appears to be the prevailing form of canoe at least as far south as Kotzebue Sound and is sometimes used by the Malemiut of Norton Sound. At Port Clarence the heavy, large kaiak, so common from Norton Sound southward, appears to be in use from Nordenskiöld's description, as he speaks of the kaiaks holding two persons, sitting back to back in the cockpit.⁴ The kaiaks of the southwestern Eskimo are, as far as I have been able to learn, large and heavy, with level coamings, with the deck quite steeply arched fore and aft, and with bow and stern usually of some peculiar shape, as shown by models in the Museum. See also Dall's figure (Alaska, p. 15.)⁵

¹Journal, p. 233.

²Second voyage, p. 506, and pls. opposite pp. 274 and 508.

³There is quite a discrepancy in regard to this between Capt. Lyon's description referred to above and the two plates drawn by him in Parry's second voyage. In his journal he speaks of the coaming of the cockpit being about 9 inches higher forward than it is aft, while from his figures the difference does not appear to be more than 3 or 4 inches.

⁴Vega, vol. 2, p. 228.

⁵I have confined myself in the above comparison simply to the kaiaks used by undoubted Eskimo. I find merely casual references to the kaiaks used on the Siberian coast by the Asiatic Eskimo and their companions the Sedentary Chuckchis, while a discussion of the canoes of the Aleuts would carry me beyond the limits of the present work.

While the kaiak, however, differs so much in external appearance in different localities, it is probable that in structure it is everywhere essentially the same. Only two writers have given a detailed description of the frame of a kaiak, and these are from widely distant localities, Iglulik and western Greenland, both still more widely distant from Point Barrow, and yet both give essentially the same component parts as are to be found at Point Barrow, namely, two comparatively stout gunwales running from stem to stern, braced with transverse deck-beams,¹ seven streaks running fore and aft along the bottom, knees, or ribs in the form of hoops, and a hoop for the coaming, bound together with whalebone or sinew.²



FIG. 341.—Model kaiak and paddle.

The double-bladed paddle is almost exclusively an Eskimo contrivance. The only other hyperborean race, besides the Aleuts, who use it, are the Yukagirs, who employ it in their narrow dugout canoes on the River Kolyma in Siberia.³ Double-bladed paddles have also been observed in the Malay Archipelago.

Fig. 341, (No. 56561 [224] from Utkiavwiñ) is a very neatly made model of a kaiak, 13.3 inches long. It is quite accurate in all its details, but has only five streaks on the bottom, and its width and depth are about twice what they should be in proportion to the length. The frame is lashed together with fine sinew and covered with seal entrail. The paddle is also out of proportion. Many similar neatly fin-

¹Since the above was written Boas has published a detailed description of the central kaiaks, in which he says there are only four streaks besides the keel (Central Eskimo, p. 486).

²Dr. Kane's description, though the best that we have of the flat-bottomed Greenland kaiak and accompanied by diagrams, is unfortunately vague in some important respects. It is in brief as follows: "The skeleton consists of three longitudinal strips of wood on each side * * * stretching from end to end. * * * The upper of these, the gunwale * * * is somewhat stouter than the others. The bottom is framed by three similar longitudinal strips. These are crossed by other strips or hoops, which perform the office of knees and ribs. They are placed at a distance of not more than 8 to 10 inches from one another. Wherever the parts of this framework meet or cross they are bound together with reindeer tendon very artistically. * * * The *pah* or manhole * * * has a rim or lip secured upon the gunwale and rising a couple of inches above the deck." (First Grinnell Exp., p. 477.) It will be seen that he does not mention any deck beams, which would be very necessary to keep the gunwales spread apart. They are shown, however, in Crantz's crude section of a kaiak frame. (History of Greenland, vol. 1, pl. vii), and are evidently mortised into the gunwale, as at Point Barrow. Crantz also (op. cit., p. 159) speaks of the use of whalebone for fastening the frame together.

Capt. Lyon's description of the round-bottomed kaiak used at Fury and Hecla Straits (Journal, p. 233) is much more explicit. He describes the frame as consisting of a gunwale on each side 4 or 5 inches wide in the middle and three-fourths inch thick, tapering at each end, sixty-four hoop-shaped ribs (on a canoe 25 feet long), seven slight rods outside of the ribs, twenty-two deck-beams, and a batten running fore and aft, and a hoop round the cockpit. These large kaiaks weigh 50 or 60 pounds. There is a very good figure of the Point Barrow kaiak, paddled with a single paddle, in Smyth's view of Nuwük (Beechey's Voyage, pl. opposite p. 307).

³Wrangell, Narrative of an Expedition, etc., p. 161, footnote.

ished models were made for sale. The natives are so skillful in making them that it is possible that they are in the habit of making them for the children to play with. I do not, however, recollect ever seeing a child with one.

Umiaks and fittings.—The large skin-covered open boat, essentially the same in model as that employed by almost all Eskimo, as well as the Aleuts and some Siberian races, is the chief means of conveyance by water, for traveling, hunting, and fishing. Though the women do a great share of the work of navigating the boat when a single family or a small party is making a journey, it is by no means considered as a woman's boat, as appears to be the case among the Greenlanders and eastern Eskimo generally.¹ On the contrary, women are not admitted into the regularly organized whaling crews, unless the umialik can not procure men enough, and in the "scratch" crews assembled for walrus hunting or sealing there are usually at least as many men as women, and the men work as hard as the women. I do not, however, recollect that I ever saw a man pull an oar in the umiak. They appear always to use paddles alone. This is interesting in connection with the Greenland custom mentioned by Egede in the continuation of the passage just quoted: "And when they first set out for the whale fishing, the men sit in a very negligent posture, with their faces turned towards the prow, pulling with their little ordinary paddle; but the women sit in the ordinary way, with their faces towards the stern, rowing with long oars."

We were unable to bring home any specimen of these boats on account of their size, but Fig. 342, from a photograph by Lieut. Ray, will give a good idea of the framework. These boats vary considerably in size, but are usually very nearly the dimensions of an ordinary whale-boat—that is, about 30 feet in length, with a beam of 5 or 6 feet and a depth of about 2½ feet. The boat resembles very much in model the American fisherman's dory, having a narrow flat bottom, sharp at both ends, with flaring sides, and considerable rake at stem and stern. Both floor and rail have a strong sheer, fore and aft, and the gunwales extend beyond the stem so as to meet at the bow. Both stem and stern are sharp nearly to the rail, where they flare out and are cut off square. These boats are exceedingly light and buoyant, and capable of considerable speed when fully manned. They are very "quick" in their motion and quite crank till they get down to their bearings, but beyond that appear to be very stiff.

I never heard of one being capsized, though the natives move about aboard of them with perfect freedom. The frame is neatly made of pieces of driftwood, which it usually takes a considerable time to accumulate.²

¹ For example: "For they think it unbecoming a man to row such a boat, unless great necessity requires it." Egede, *Greenland*, p. 111. "It would be a scandal for a man to meddle, except the greatest necessity compels him to lend a hand." Crantz, vol. 1, p. 149.

² Part of the description of the umiak frame is taken from the model (No. 56563 [225]), as the writer not only had few opportunities for careful examination of these canoes, but unfortunately did not realize at the time the importance of detail.

A stout square timber, of perhaps 3 inches scantling, runs along the middle of the bottom forming a keel or keelson. This of necessity is usually made of several pieces of wood scarfed together and fastened with treenails and whalebone lashings. At each end it is fastened in the same way to the stem and sternpost, which are both of the same shape, broad and flat above or inside, but beveled off to a keel outside, and curving up in a knee, at the same time tapering off to the point where the bow (or stern) begins to flare. Here it is mortised into the under side of a trapezoidal block of wood, widest and thickest on the inboard end, and concaved off on the under face, to a thin edge outboard. It is held on by a transverse lashing passing through holes in the end of the post and the thickest part of the block. Along each side of the bottom, at what would be the bilge of a round-bottom boat, runs a stout streak,

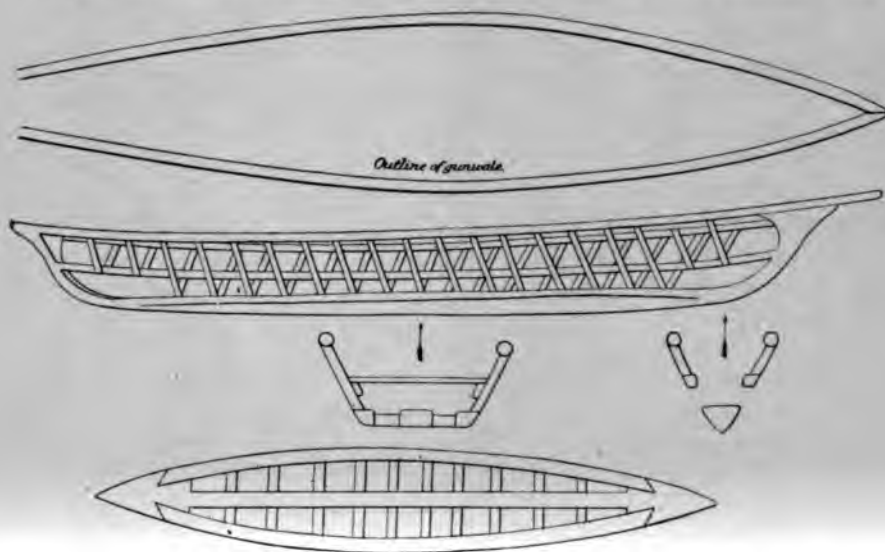


FIG. 342.—Frame of umiak.

thinner and wider than the keelson and set up edgewise. These are spread apart amidships, but bent together fore and aft so as to be scarfed into the stem and sternpost (see diagram, Fig. 343a).

On the model they are fastened here with treenails, and this is probably also the case on the large canoes. They are spread apart by cross pieces or floor timbers, flat rather broad boards laid across the keelson with their ends mortised into the bilge streaks. These are longest amidships and decrease regularly in length fore and aft. There were fifteen of them on Nikawáalu's umiak. On the model they are pegged to the keelson and bilge streaks. The ribs are straight, slender, square timbers, eighteen on each side (on Nikawáalu's umiak; the canoe photographed has fifteen). These are all of the same length, but fitted obliquely to the outer edge of the bilge-streaks in such a way (see diagram, Fig.

343b) that those amidships slant considerably outward while the others become gradually more and more erect fore and aft, thus producing the sheer in the lines. To these ribs, inside, a little below the middle of each, is fastened a streak on each side, of about the dimensions of the bilge streak, running from stem to stern, and the gunwales are fitted into the notched ends of the ribs, where they are secured by lashings of whalebone. These on Nikawáalu's umiak were each a single round pole about 2 inches in diameter. Such long pieces of wood as this were probably obtained by trade from the Nunatañmeun. These extend about 2½ or 3 feet beyond the stem, to which they are fastened on each side by whalebone lashings, and meet at a sharp angle, being lashed together with whalebone. On the model, this lashing passes through holes in both gunwales and round underneath. The gunwales are fastened to the sternpost in the same way as to the stem, in both cases resting on the upper surface of the block so as to form a low rail, but project only 5 or 6 inches.

Between the post and the last pair of long ribs at each end are two pairs of short ribs running only from the gunwale to the inside streak. The frame is still further strengthened by an outside streak between the bilge streak and the inside streak, and Nikawáalu's canoe had an extra streak of "half-round" willow outside of the latter. The thwarts rest on the inside streak and are secured by whalebone lashings. The block or head of the stern-post serves as a high seat for the steersman. Crantz's¹ description and diagram show that the frame of the Greenland umiak consists of essentially the same timbers, lacking only the two outside streaks.

The cover is made of the skins of the larger marine animals. Walrus hide is often used and sometimes the skin of the polar bear, which makes a beautifully white cover, but the skin of the bearded seal is preferred, the people from Point Barrow sometimes making journeys to Wainwright Inlet in search of such skins, which are dressed with their oil in them in the manner already referred to. We were informed that six of these skins were required to cover one umiak. They are put together in the same way as the skins for the kaiak and sewed with the same seam. The edges of the cover are stretched over the gunwale, and laced to the inside streak with a stout thong, which passes through holes in the edge of the cover. At stem and stern the cover is laced with a separate thong to a stout transverse lashing of thong running from gunwale to gunwale close to the edge of the posthead.

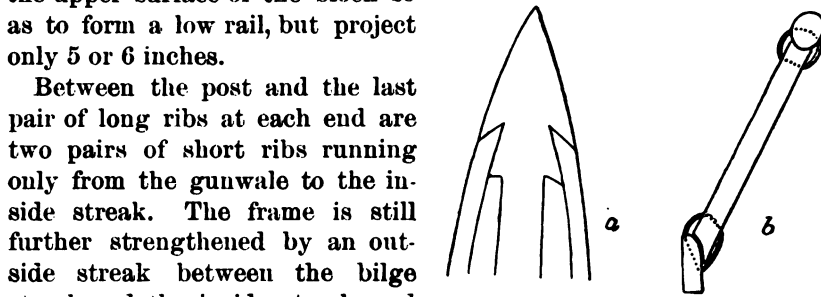


FIG. 343.—Construction of umiak: (a) method of fastening bilge streaks to stem; (b) method of framing rib to gunwale, etc.

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¹ History of Greenland, vol. 1, p. 148, and pl. vi.

The cover is removed in the winter and stowed away on the cache frame or some other safe place (Mûñialu, when preparing to start for the spring deer hunt in 1883, carefully buried his boat cover in a snow-bank) out of reach of the dogs, and the frame is placed bottom upwards on a staging 4 or 5 feet from the ground.

When they are ready to refit the canoe for the spring whaling, a hole is cut in the sea ice close to the shore, and the cover immersed in the sea water for several days to soften it, the hole being covered with slabs of snow to keep it from freezing up. Crantz¹ mentions a similar custom in Greenland. After removing the hair from the boat-skins "they lay them in salt water for some days to soften them again, and so cover the women's boats and kajaks with them." When not in use, the umiak is drawn up on the beach and usually laid bottom upward with the gear, spears, etc., underneath it, but sometimes propped up on one gunwale to make a shelter against the wind. This is a common practice in the camp at Pernyû, where there is usually at least one boat set up edgewise, sheltered by which the men sit to whittle and gossip.

In the whaling camp at Imêkpûñ in 1883, the boats which were not ready to go out to the open water were laid up bottom up with one end resting on a sled set up on its side and the other supported by a block of snow. They do not appear to be in the habit of using the canoe for a tent, as is said to be the custom among the more southern natives,² as they always carry a tent with them on their journeys. The umiak is propelled by paddles, oars, and a sail, and in smooth weather when the shore is clear of ice by "tracking" along the beach with men and dogs, one person at least always remaining on board to steer with a paddle at the stern.

The sail, which they are only able to use with a free wind, is square, narrow, and rather high, and is nowadays always made of drilling. Dark blue drilling appeared to be the most popular sort at the time of our visit. The head of the sail is laced to a light yard, and hoisted to the masthead by a halyard through a hole in the latter. The mast is a stout square pole 10 or 12 feet long and is set up well forward of amidships, without a step, the square butt resting against a bottom board, and held up by two forestays and two backstays, running from the masthead to the inside streak. All the rigging, stays, halyards, towing line, etc., are made of stout thong. The Greenlanders set up the mast in the bow of the umiak—as a sailor would say, "in the very eyes of her,"³ but as far as I can learn the Western Eskimo all set it up as at Point Barrow.

The oars are very clumsily made with very narrow blades not over 3 inches broad. They are about 7 feet long and somewhat enlarged at the loom. Instead of resting in rowlocks, they are secured by two long

¹ Vol. 1. p. 167.

² See Kotzebue's Voyage, etc., vol. 1, p. 216.

³ This is also the custom among the Central Eskimo. (See Boas "Central Eskimo," p. 528, Fig. 481.)

loops of thong as in the diagram Fig. 344. To keep the oar from chafing the skin on the gunwale, they lash to the latter a long plate of bone. No. 89696 [1197] from Utkiavwīn is one of these plates. Two of these oars are commonly used in an umiak, one forward and one aft, and the women row with great vigor, swinging well from the hips, but do not keep stroke. The use of oars is so unusual among savages that it would be natural to suppose that these people had adopted the custom from the whites. If this be the case, the custom reached them long ago, and through very indirect channels.

When Thomas Simpson, in 1837, bought an umiak from some Point Barrow natives at Dease Inlet, he bought with it "four of their slender oars, which they used as tent poles, besides a couple of paddles; fitted the oars with lashings, and arranged our strange vessel so well that the ladies were in raptures, declaring us to be genuine Esquimaux, and not poor white men."¹ The custom, moreover, appears to be widespread since Lyon speaks of seeing in 1821, "two very clumsy oars with flat blades, pulled by women," in the umiaks at Hudson Strait.² It was practiced at a still earlier date in Greenland.³

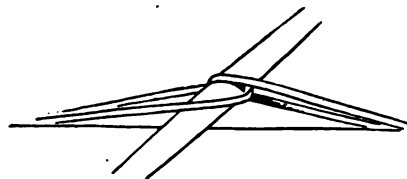


FIG. 344.—Method of slinging the oar of umiak.

While at Point Barrow the oars have very narrow blades and the double paddles very broad ones, the reverse seemed to be the case in Greenland, where the double paddle, as already noticed, has blades not over 3 or 4 inches broad. Crantz describes the oars as "short and broad before, pretty much like a shovel, but only longer, and * * confined to their places on the gunnel with a strap of seal's leather." (Vol. 2, p. 149 and pl. VI) Although both oars and sails are undoubtedly quite ancient inventions (Frobisher in his description of *Meta Incognita* in Hakluyt's *Voyages* (1589) pp. 621 and 623, speaks of skin boats with sails of entrail),⁴ I am strongly inclined to believe that they are both considerably more recent than the paddles, not only on general principles, but from the fact that the whaling umiaks at Point Barrow use only paddles. There is no practical reason against using either oars or sails, and in fact the latter would often be of great advantage in silently approaching a whale, as the American whalers have long

¹ Narrative, p. 148.

² Journal, p. 30. Compare also Chappell, "Hudson Bay," p. 57.

³ See Egede, Greenland, p. 111.

⁴ These passages being, as far as I know, the earliest description of the umiak and kaiak are worth quotation: "Their boats are made all of Seale skins, with a keel of wood within the skinne; the proportion of them is like a Spanish shallop, saue only they be flat in the bottome, and sharp at both endes" (p. 621, 1576). Again: "They haue two sorts of boats made of leather, set out on the inner side with quarters of wood, artificially tyed with thongs of the same; the greater sort are not much unlike our wherries, wherein sixteene or twenty men may sitte; they haue for a sayle, drest the guttes of such beasts as they kill, very fine and thinne, which they sewe together; the other boate is but for one man to sitte and rowe in, with one oare" (p. 628, 1577).

ago discovered. It seems to me that this is merely another case of adhering to an obsolete custom on semireligious grounds. The paddles are usually about 4 or 5 feet long, made of one piece of driftwood, with slender round shafts, and lanceolate blades about 6 inches broad, and a short rounded cross handle at the upper end. (Fig. 345 shows two of the paddles belonging to the model.) The steersman uses a longer paddle, and stands in the stern or sits up on the head of the sternpost.

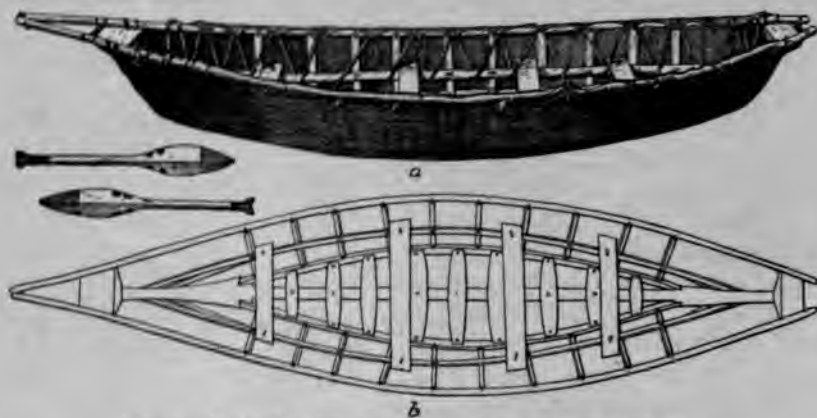


FIG. 345.—Model of umiak and paddles: (a) side view; (b) inside plan.

Fig. 345a represents the model (No. 56563 [225] from Utkiavwīñ), which gives a very good idea of the shape of one of these boats. It is quite correct in all its parts, though the timbers are rather too heavy, and there are not so many ribs and floor timbers as in a full-sized canoe. The breadth of beam, 6.2 inches, is at least 1 inch too great in proportion to the length, 25 inches. The cover is one piece of seal skin which has been partially tanned by the "white-tanning" process, and put on wet. In drying it has turned almost exactly the color of a genuine



FIG. 346.—Ivory bailer for umiak.

boat cover. The frame, as is often the case with a full-sized boat, is painted all over with red ocher. (See Fig. 345b, inside plan.)

For bailing these boats a long narrow dipper of ivory or bone is used, of such a shape as to be especially well suited for working in between the floor timbers. Fig. 346 represents one of these (No. 56536 [40] from Utkiavwīñ). It is a piece of walrus tusk 16.3 inches long. The cavity is 1.1 inches deep and was excavated by drilling vertical holes and cutting away the substance between them. Some of the holes have not been completely worked out. A similar bailer (No. 89835 [1010] also

from Utkiavwīū) is made of reindeer antler, a substance much more easily worked than the ivory, as the soft interior tissue exposed by cutting the upper side flat is readily carved out. As with the walrus tusk, the natural curve of the material gives the proper inclination to the handle. It is 18.3 inches long.

When the umiak is fitted out for whaling a stout U-shaped crotch of ivory or bone, about 7 inches long and 5 wide, is lashed between the gunwales where they meet at the bow. In this the heavy harpoon rests when they are approaching a whale. It is only used when whaling. The Museum collection contains specimens of this sort from as far south as the Diomed Islands.

We brought home five specimens of these *ku'nnē*, of which No. 56510 [117] Fig. 347 has been selected as the type. This is made of two bilaterally symmetrical pieces of white walrus ivory, each piece consisting of one arm of the crotch and half the shank. Its total length is 7.8 inches. The two pieces are held together by a stout wooden tree-nail, and above this a lashing of sinew-braid, lodged in two deep vertical channels one on each side of the shank just below the arms, and wedged above and below on both sides with slips of wood. A hole is drilled through each side of the butt close to the end, and through these a lashing is stretched across the reentering angle of the butt consisting of four turns of sinew braid with the end closely wrapped round the parts between the holes, and neatly tucked in.

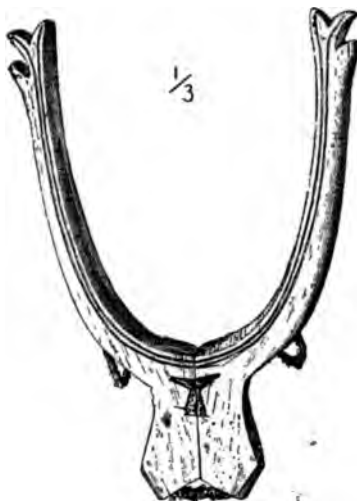


FIG. 347.—Ivory crotch for harpoon.

Just at the bend of each arm is a small round becket hole, running obliquely from the back to the outer side. In each of these is a neat becket, about $\frac{3}{4}$ inches long, made of several turns of sinew braid, with the end neatly wrapped around them. These beckets serve to receive the lashings for attaching the crotch to the gunwales. All the ornamental figures are incised and blackened.

Three of the remaining four specimens are of walrus-ivory, and of essentially the same pattern, differing only in ornamentation and other minor details. No. 56511 [116], from Utkiavwīū, is almost exactly like the type and of very nearly the same size. It is fastened together with a lashing only, but no treenail, and the beckets have been removed from the becket holes. The border is colored with red ocher, and there are two whales' tails instead of one on the shank. The other two have the tips of the arms carved into the shape of whales' heads. No. 89418 [1224], Fig. 348, from Utkiavwīū, is otherwise of the same shape as those already described, but is lashed together with stout seal thong,

and has four beckets of the same material, two in the usual position and two at the widest part of the shank. These take the place of the loop running across the butt. On the middle of the back of each arm is a small cross incised and blackened with a small blue glass bead inlaid in the center, and there are two whale's tails on the opposite face of the shank. It is 8 inches long.

No. 89419 [926], from Nuwuk, has a nearly straight shank with a flange on each side at the butt. It is lashed together with whalebone and has also a treenail, like the type. The upper beckets are of sinew-braid. A large becket at the butt is made by looping and knotting the ends of a bit of thong into a hole in each flange. There is one whale's tail engraved on the front of the shank. When lashed in posi-



FIG. 348.—Ivory crotch for harpoon.



FIG. 349.—Crotch for harpoon made of walrus jaw.

tion the front or ornamental side faces inboard, as is indicated by the shape of the shank, which is slightly narrower behind than in front, so as to fit between the converging gunwales. No. 8917 [1104], Fig. 349, from Nuwuk, the only one of the kind seen, is a very interesting form. It is made by cutting a horizontal slice out of the lower jaw of a walrus, so that it form the arms of the crotch, while the thick symphysis is cut into a shank of the usual shape, with the two upper beckets in the usual place and a large one at the butt, passing through a transverse hole. These beckets are roughly made of thong. Its total length is 6.6 inches.

This specimen from its soiled condition is undoubtedly quite ancient, and probably of an older type than the highly ornamented ivory crotches

of the present day. The latter are evidently only copies of the jaw-bone crotch in a material susceptible of a higher finish than the coarse bone. The only reason for making them in two pieces is that it is impossible to get a single piece of walrus ivory large enough for a whole one. It seems to me highly probable that the crotch was suggested by the natural shape of the walrus jaw, since these are frequently used for crotches to receive the cross pieces of the cache frames. Perhaps, for a while, the whole jaw was simply lashed to the bow of the boat. The next step would obviously be to cut out the shank and reduce the weight of the crotch by trimming off the superfluous material. The reason for making the crotch of ivory is perhaps purely esthetic; but more likely connected with the notions already referred to which lead them to clean up their boats and gear and adorn themselves and paint their faces when they go to the whale fishery.

Although, as I have already stated, there appears to be no essential difference in the general plan of the frame of the Greenland umiaks and those used at Point Barrow, there seems to be considerable difference in the size and outward appearance. As well as can be judged from the brief descriptions and rude figures of various authors¹ and various models in the National Museum (the correctness of which, however, I can not be sure of, without having seen the originals) the umiak not only in Greenland, but among the Eskimo generally as far west as the Mackenzie, is a much more wall sided square ended boat than at Point Barrow, having less sheer to the gunwales with the stem and stern-post nearly vertical.² Mr. L. M. Turner informs me that this is the case at Ungava Bay. It was also a larger boat. Egedes says that they "are large and open * * * some of them 20 yards long;"³ Crantz gives their length as "commonly 6, nay 8 or 9 fathoms long;"⁴ Kumlien says that it required "about fifteen skins of *Phoca barbata*" to cover an umiak at Cumberland Gulf,⁵ and Mr. Turner informs me that eight are used at Ungava. Capt. Parry found no umiaks at Fury and Hecla straits⁶ and Kumlien says that they are becoming rare at Cumberland Gulf. The so-called Arctic Highlanders of Smith Sound have no boats of any kind. The model used at Point Barrow probably prevails as far south as Kotzebue Sound. The boats that boarded us off Wainwright Inlet in the autumn of 1883, and those of the Nunatañmiun who visited Point Barrow, seemed not to differ from those with which we were familiar, except that the latter were rather light and low sided, nor do I remember anything peculiar about the boats which we saw at Plover Bay in 1881.

¹ Compare for instance Kane's figure 1st Grinnell Exp. p. 422, and Lyon, Journal, p. 30.

² See Beechey Voyage, p. 252. In describing the umiaks at Hotham Inlet he says: "The model differs from that of the umiak of the Hudson Bay in being sharp at both ends." Smyth gives a good figure of the Hotham Inlet craft in the plate opposite p. 250.

³ Greenland, p. 111.

⁴ Vol. 1. p. 148.

⁵ Contributions, p. 43. Boas, however, says three to five skins. (Central Eskimo, p. 528.)

⁶ 2d Voy., p. 507

There is very little accessible detailed information regarding the umiaks used in the rest of Alaska. From Dall's figure¹ and a few models in the Museum, the Norton Sound umiak appears to have the gunwales united at both stem and stern. Those that we saw at St. Michael's in 1883, were so much modified by Russian ideas as to be wholly out of the line of comparison. The same is true of the Aleutian "baidara," if, indeed, the latter be an umiak at all.

TRAVELING ON FOOT.

Snowshoes (túglu).—Snowshoes of a very efficient pattern and very well made are now universally employed at Point Barrow. Although the snow never lies very deep on the ground, and is apt to pile up in hard drifts, it is sufficiently deep and soft in many places, especially on the grassy parts of the tundra, to make walking without snowshoes very inconvenient and fatiguing. I have even seen them used on the sea ice for crossing level spaces when a few inches of snow had fallen. Practically, every man in the two villages, and many of the women and boys, have each their own pair of snowshoes, fitted to their size. Each shoe consists of a rim of light wood, bent into the shape of a pointed oval, about five times as long as the greatest breadth, and much bent up at the rounded end, which is the toe. The sides are braced apart by two stout cross-bars (*toe and heel bar*) a little farther apart than the length of the wearer's foot. The space between these two bars is netted in large meshes (*foot netting*) with stout thong for the foot to rest upon, and the spaces at the ends are closely netted with fine deerskin "babiche"² (*toe and heel netting*). The straps for the foot are fastened to the foot netting in such a way that while the strap is firmly fastened round the ankle the snowshoe is slung to the toe. The wearer walks with long swinging strides, lifting the toe of the shoe at each step, while the tail or heel drags in the snow. The straps are so contrived that the foot can be slipped in and out of them without touching them with the fingers, a great advantage in cold weather. When deer hunting, according to Lieut. Ray, they take a long piece of thong and knot each end of it to the toe of one snowshoe. The bight is then looped into the belt behind so that the snowshoes drag out of the way of the heels. When they wish to put on the shoes they draw them up, insert their feet in the straps, and fasten the slack of the lines into the belt in front with a slip knot. When, however, they come to a piece of ground where snowshoes are not needed, they kick them off, slip the knots, and let them "drop astern."

We brought home three pairs of snowshoes, which represent very well the form in general use. No. 89912 [1736], Fig. 350, has been selected as the type. The rim is of willow, 51 inches long and 10½ inches

¹ Alaska, p. 15.

² Twisted sinew is sometimes used. A pair of snowshoes from Point Barrow, owned by the writer, are netted with this material.

wide at the broadest part, and is made of two strips about 1 inch thick and $\frac{3}{4}$ wide, joined at the toe by a long lap-splice, held together by four short horizontal or slightly oblique stitches of thong. Each strip is elliptical in section, with the long axis vertical, and keeled on the inner face, except between the bars. Each is tapered off considerably from the toe bar to the toe, and slightly tapered toward the heel. The two points are fastened together by a short horizontal stitch of whalebone. The tip is produced into a slight "tail," and the inner side of each shoe is slightly straighter than the outer—that is to say, they are "rights and lefts."

The bars are elliptical in section, flattened, and have their ends mortised into the rim. They are about a foot apart, and of oak, the toe bar 9.2 inches long and the heel bar 8.5. Both are of the same breadth and thickness, 1 by $\frac{1}{2}$ inch. There is also an extra bar for strengthening the back part of the shoe 10 inches from the point. It is also of oak, 4.8 inches long, 0.5 wide, and 0.3 thick. The toe and heel nettings are put on first. Small equidistant vertical holes run round the inside of each space. Those in the rim are drilled through the keel already mentioned, and joined by a shallow groove above and below; those in the bars are about $\frac{1}{2}$ inch from the edge and joined by a groove on the under side of the toe bar only. Into these holes is laced a piece of babiche, which is knotted once into each hole, making a series of beackets about $\frac{3}{4}$ inch wide round the inside of the space. There are no lacing holes in the parts spliced at the toe, but the lacing passes through a bight of each stitch. At the toe bar the lacing is carried straight across from rim to rim about three times, the last part being wound round the others.

On the left shoe the end is brought back on the left-hand side, passed through the first hole in the bar from above, carried along in the groove on the underside to the next hole, up through this and round the lacing, and back through the same hole, the two parts being twisted together between the bar and lacing. This is continued, "stopping" the lacing in festoons to the bar, to the last hole on the right,



FIG. 350.—Snowshoe.

where it is finished off by knotting the end round the last "stop." The stops are made, apparently, by a separate piece on the right shoe. The lacing on the heel bar is also double or triple, but the last part, which is wound round the others, is knotted into each hole as on the rim. The lacings on the rim of the heel space are knotted with a single knot round each end of the extra bar.

In describing the nettings it will always be understood that the upper surface of the shoe is toward the workman, with the point upward, if describing the heel nettings, and vice versa for the toe. To begin with the heel netting, which is the simpler: This is in two parts, one from the heel bar to the extra bar (heel netting proper) and one from the latter to the point (point netting). The netting is invariably fastened to the lacing by passing the end through the becket from above and bringing it back over itself. In making the point netting the end of the babiche is knotted round the bar at the right-hand lower corner with a single knot. The other end goes up to the lacing at the point and comes down to the left-hand lower corner, where it is

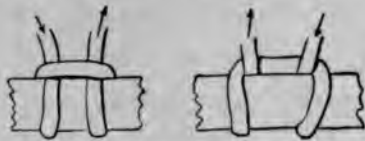


FIG. 351.—Knot in snowshoe.

hitched round the bar, as in Fig. 351, then goes up to the lowest becket on the left side, crosses to the corresponding one on the right, and comes down and is hitched as before round the bar inside of the starting point.

This makes a series of strands round the outside of the space, two running obliquely from right to left, a long one on the right side and a short one on the left side; two similar strands from left to right, the long one on the left and the short one on the right, and one transverse strand at the base of the triangle (see diagram, Fig. 352*a*). The next round goes up to the first becket at the top on the left hand, crosses to the corresponding one on the right, and then makes the same strands as the first round, running parallel to them and about half an inch nearer the center of the space (see diagram, Fig. 352*b*). Each successive round follows the last, coming each time about $\frac{1}{2}$ inch nearer the center, till the space is all filled in, which brings the end of the last round to the middle of the bar, round which it is knotted with a single knot. This makes three sets of strands, two obliquely longitudinal, one set from right to left and one from left to right, and one transverse, all of each set parallel and equidistant, or nearly so, and each interwoven alternately over and under each successive strand it meets.

The right shoe has fourteen longitudinal strands in each set and thirteen transverse; the left, one less in each set. On the left shoe the end is carried up from the last knot to the lacing at the point, and then comes back to the bar, fastening the other part to the netting with six equidistant half-hitches. The heel netting proper is put on in a slightly

different fashion, as the space to be filled is no longer triangular. It starts as before in the right hand lower corner, where it is knotted into the becket, running across from the rim to the heel-bar; goes up to the middle of the extra bar, round which it is hitched as already described, then down to the left hand lower corner; up to the first becket on the left rim, across to the corresponding one on the right, and down to the first becket on the heel bar. This completes the first round (see diagram, Fig. 353a). The second round goes up to the hind bar at the left of the first, comes down only to the transverse strand of the first round on the left, goes up to the becket on the rim above the first, crosses to the right, and comes back to the transverse turn of the first rounds. All these strands except the transverse one are on the left of the first round. The third round follows the first, which brings all its strands except the transverse one to the right of the first round (see diagram,

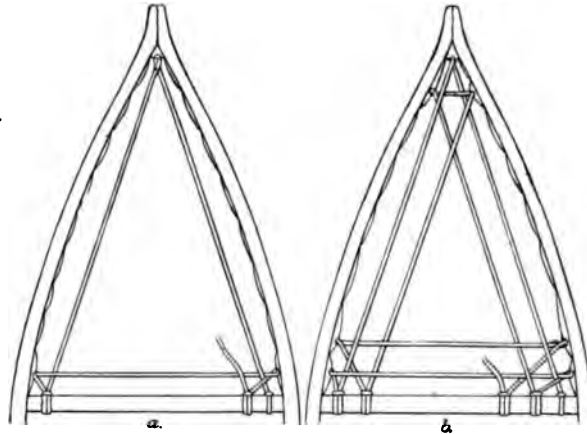


FIG. 352.—Point netting of snowshoe heel: (a) first round; (b) first and second rounds.

Fig. 353b). The successive odd rounds follow the first and the even rounds the second, bringing the longitudinal strands alternately to the right and left of the first round, until the ends of the hind bar are reached—that is to say, till the space *outside* of the first round is filled—each transverse strand coming above the preceding. This is done regularly on the left shoe, the tenth round coming to the left end of the bar, and the eleventh to the right. The twelfth round comes to the becket in the left hand upper corner, and crosses to the corresponding becket on the other side. It then follows the odd rounds, thus making six strands, four longitudinal and two transverse, as in the point nettings. All the remaining rounds follow this till the whole space is filled in, which brings the end of the last round to the middle of the heel bar, where it is knotted do the becket.

On the right shoe the maker seems to have made a mistake at the eighth round, which obliged him to alter the order of the other strands

and finish with half a round. Instead of taking the end of the eighth round down to the preceding transverse strand only, he has brought it down to the heel bar, which brings the ninth round to the left, following the even rounds, and coming to the end of the hind bar, the tenth to the right end of the bar, so that it is the eleventh which makes the first transverse turn at the top. The pattern is the same as in the point nettings. The right shoe has 25, 24, and 19 strands in the three sets respectively, and the left, 25, 25, and 19. The toe nettings are put on in the same way, the first round going to the middle becket at the toe, and crossing to the first becket on the right hand, the second going to the first becket on the left hand and crossing on the right to the first round, and the third going to the first round at the toe and crossing on the right to the becket.

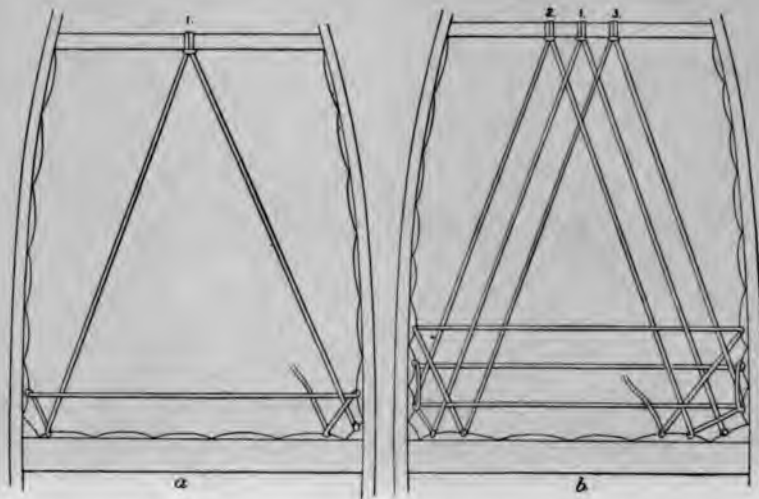


FIG. 353.—Heel netting of snow shoe; (a) first round; (b) first, second, and third rounds.

All the even rounds go to the becket at the toe and cross to the preceding even round, and all the odd rounds go to the preceding odd round at the toe and cross to the becket, until the space outside of the first round is filled with longitudinal strands, when they begin to make descending transverse turns across the toe, going from the becket on the left to the corresponding one on the right and thus following the odd rounds. The fourteenth round on the right shoe begins this, the twelfth on the left. This brings the end of the last round to the middle of the toe bar. It is then carried up to the becket at the toe, brought down and up again, and the end is used to fasten these three parts to the netting with equidistant half hitches—fourteen on the right shoe and thirteen on the left. The pattern, of course, is the same as before, with 33, 33, and 26 strands on the right shoe, and 31, 31, and 25 on the left, in each set respectively.

The foot-netting is of a very different pattern, and consists of seven transverse and thirteen longitudinal strands, of which six, in the middle, do not reach the toe bar, leaving an oblong transverse hole, through which the toe presses against the snow at the beginning of the step. The cross strands are a piece of stout thong (the skin of the walrus or bearded seal), to the end of which is spliced with double slits a long piece of thinner seal thong, which makes the longitudinal ones. The seven transverse strands pass in and out through holes in the rim, while the longitudinal strands pass over the bars, except the middle three pairs, which pass round the horizontal strand behind the toe hole, drawing it down to the next strand. The end of the thirteenth strand wattles these two firmly together, as it does also the two pairs of longitudinal strands on each side of the toe hole, and finishes off the netting by whipping the two sets of strands together with a "bird-cage stitch."

The object of the complicated wattling round the toe hole is, first, to strengthen the hind border against which the toe presses in walking, and second to give a firm attachment for the straps, which are fastened at the junction of the doubled and twisted longitudinal strands with the first and second transverse ones. Each strap is a single piece of stout seal thong fastened to the shoe with two loops as follows: At the inner side of the shoe the end is passed into the toe hole and makes a round turn about the doubled longitudinal strands, and then goes under the two cross strands, coming out behind them and between the twelfth and thirteenth longitudinal strands. It is then spliced into the standing part with two slits, making a becket about 3 inches in diameter. The other end, leaving a loop large enough to go round the wearer's heel, is passed through the becket just made, wound in the same way as before round the strands at the other corner of the toe hole, and made into a similar becket by knotting the end to the standing part with a marlinghitch with the bight left in. On the right shoe this hitch is made in a slit in the standing part. The end is probably left long for the purpose of adjusting the length of the strap to the wearer's foot.

In putting on the shoe, the toe is thrust sideways through the loop till the bight comes well up over the heel, and then turned round and stuck under the two beckets, which together form a strap to fasten the toe down to the shoe, leaving the latter free to swing when the heel is raised. By reversing the process the shoe is easily kicked off. These straps must be fitted very nicely or else the shoe is apt to come off. This is a very neatly made pair of shoes, and the woodwork is all painted red above.

No. 89913 [1737] is a pair of similar shoes also from Utkiavwīi. The frame is made in the same way and is wholly of willow except the extra hind bar, which is of walrus ivory. These shoes are shorter and somewhat broader than the preceding and not so well made. They are 48·5

inches long and 11 broad. The two shoes are not perceptibly different in shape. The lacing, which is of sinew braid, is put on in the same way as on the preceding pair, except that it is fastened directly into the holes on the toe bars. The whole of the heel netting is in one piece, and made precisely in the same way as the point nettings of the first pair, the end being carried up the middle to the point of the heel and brought down again to the bar as on the toe nettings, but fastened with marling hitches. The number of strands is the same in each shoe, twenty-three in each set. The toe nettings follow quite regularly the pattern of the preceding pair.



FIG. 354.—Small snowshoe.

The shoes are not quite the same size, as the right has 35, 35, and 28 strands, and the left 33, 33, and 25, in each set respectively. There is no regular rule about the number of strands in any part of the netting, the object being simply to make the meshes always about the same size. The foot netting is made of stout and very white thong from the bearded seal. These shoes have no strings.

No. 89914 [1738], is a pair of rather small shoes from Utkiavwliñ, one of which is shown in Fig. 354. They are rights and lefts, and are 42 inches long by 10 broad. The frame is wholly of oak, and differs from the type only in having no extra hind bar, and having the heel and toe bars about equal in length. The points are fastened together with a treenail, as well as with a whalebone stitch. The heel-nettings are put on with perfect regularity, as on the pair last described, but the toe-nettings, though they start in the usual way, do not follow any regular rule of succession, the rounds being put on sometimes inside and sometimes outside of the preceding, till the whole space is filled. The foot-nettings are somewhat clumsily made, especially on the right shoe, which appears to have been broken in several places, and "cobbled" by an unskillful workman. There are only five transverse strands which are double on the left shoe, and the longitudinal strands are not whipped to these, but interwoven, and each pair twisted together between the transverse strands.

There is no wattling back of the toe hole, and one pair of longitudinal strands at the side of the latter is not doubled on the left shoe. The strings are put on as on the type except that the ends are knotted instead of being spliced. This pair of shoes was

used by the writer on many short excursions around the station during the winters of 1881-'82 and 1882-'83. They were old when purchased.

I had but one opportunity of seeing the process of making the frames of the snowshoes. *Ilúbw'ga*, the "inland" native frequently mentioned, a particularly skillful workman, undertook to make a pair of snowshoes for Lieut. Ray at our quarters, but did not succeed in finishing them, as the ash lumber which we brought from San Francisco proved too brittle for the purpose. Having a long piece of wood, he "got out" the whole rim in one piece. Ordinarily the splice at the toe must be made, at least temporarily, before the frame can be bent into shape. He softened up the wood by wrapping it in rags wet with hot water. Some of the other natives, however, recommended that the wood should be immersed in the salt water for a day or two, from which I infer that this is a common practice. After slowly bending the toe, with great care, nearly into shape, he inserted into the bend a flat block of wood of the proper shape for the toe and lashed the frame to this. A pointed block was also used to give the proper shape to the heel; the bars being inserted in the mortises before the ends were brought together. The temporary lashings are kept on till the wood dries into shape. The toes are turned up by tying the shoes together, sole to sole, and inserting a transverse stick between the tips of the toes.

The use of finely finished snowshoes of this pattern is of comparatively recent date at Point Barrow. Dr. Simpson¹ is explicit concerning the use of snowshoes in his time (1853-'55). He says: "Snowshoes are so seldom used in the north where the drifted snow presents a hard frozen surface to walk upon, that certainly not half a dozen pairs were in existence at Point Barrow at the time of our arrival, and those were of an inferior sort." I have already mentioned the universal employment of these snowshoes at the present day, so that the custom must have arisen in the last thirty years. The pattern of shoe now used is identical with those of the Tinné or Athabascan Indians (as is plainly shown by the National Museum collections), and I am inclined to believe that the Point Barrow natives have learned to use them from the "Nunatañmiun," from whom, indeed, they purchase ready-made snowshoes at the present day, as we ourselves observed. The "Nunatañmiun," or the closely related people of the Kuwúk River, are known to have intimate trading relations with the Indians, and even in Simpson's time² used the Indian shoe, sometimes at least. The fact that in recent times families of the "Nunatañmiun" have established the habit of spending the winter with the people of Point Barrow and associating with them in the winter deer-hunt, would explain how the latter came to recognize the superior excellence of the Indian shoe.

This is more likely than that they learned to use them from the eastern natives, whom they only meet for a short time in summer, though

¹ Op. cit., p. 243.

² Op. cit., p. 244.

the latter used the Indian style of snowshoes at least as early as 1826. Franklin¹ speaks of seeing, at Demarcation Point, a pair of snowshoes netted with cords of deerskin and shaped like those of the Indians of the Mackenzie.

Most of the other Eskimo of Alaska, who need to use snowshoes at all, use a style of shoe very much less efficient and more roughly made, the rim being of heavy, rather crooked pieces of willow or alder. Simpson's description will apply very well to this form, which is used even as far north as Icy Cape, whence Mr. Nelson brought home a pair. It also appears to be the prevailing, if not the only, form on the Siberian coast and St. Lawrence Island, judging from Nordinskiöld's figure² and Mr. Nelson's collections.

Simpson says:³ "The most common one is two pieces of alder, about two feet and a half long, curved towards each other at the ends, where they are bound together, and kept apart in the middle by two cross-pieces, each end of which is held in a mortise. Between the crosspieces is stretched a stout thong, lengthwise and across, for the foot to rest upon, with another which first forms a loop to allow the toes to pass beneath; this is carried round the back of the ankle to the opposite side of the foot, so as to sling the snowshoe under the joint of the great toe."

When there are toe and heel nettings, they are of seal thong with a large open mesh. The snowshoe from Norton Sound, figured by Dall,⁴ is a rather neatly made variety of this form. South of the Yukon, the use of the snowshoe appears to be confined to the Indians. As shown by the Museum collections, the strings are always of the pattern described throughout the whole northwestern region.⁵

Snowshoes appear to be rarely used among the eastern Eskimo. The only writer who mentions them is Kumlien.⁶ He says: "When traveling over the frozen wastes in winter, they [i. e., the natives of Cumberland Gulf] use snowshoes. These are half-moon shaped, of whalebone, with sealskin thongs tightly drawn across. They are about 16 inches long. Another pattern is merely a frame of wood, about the same length and 8 or 10 inches wide, with sealskin thongs for the foot to rest on."

The latter is apparently quite like the western snowshoes described by Simpson.

Staff.—The only staff used by the young and vigorous is the shaft of the spear, when one is carried. The aged and feeble, however, support their steps with one or two staffs about 5 feet long, often shod with bone or ivory. (The old man whom Franklin met on the Coppermine River walked with the help of two sticks.⁷) Fig. 355 from a photograph represents old Yûksîna from Nuwûk, with his two staffs, without which he was hardly able to walk.

¹2d Exped., p. 142.

²Vega, vol. 2, p. 102 a.

³Op. cit., p. 243.

⁴Alaska, p. 190, Fig. A.

⁵See, also, Dall, Alaska, p. 190, and Figs. A and C.

⁶Contributions, p. 42.

⁷1st Exp., vol. 2, p. 180.

LAND CONVEYANCES.

Sledges.—The only land conveyance employed at Point Barrow is the universal sledge of the Eskimo, of which there are two forms in general use, one, *kä'motf*, with a high rail on each side, and especially intended for carrying loads of the smaller articles, clothing, camp equipage, etc., and the other (*unia*) low and flat, without rail or "up-stander," for carrying bulky objects, like whole carcasses of deer, frozen seals, rough dried deerskins, etc., and especially used for carrying the *umiak* across the land or solid ice. Both kinds are made without nails, but are fastened together by mortises and lashings and stitches of thong and whalebone. I have, however, seen one *unia*, which was made in 1883, fastened together with nails, a rather inferior substitute for the lashings, as they not only would not hold so firmly, but would also be liable to break in cold weather.

Both kinds of sledge are made of drift-wood and shod with strips of whale's jaw, about three-fourths of an inch thick, fastened on with bone treenails. These bone runners, which are about 2 inches wide, run sufficiently well over ice, hard snow, the frozen gravel of the beach or even on the bare tundra, but for carrying a heavy load over the softer snow of the interior they are shod with ice in a manner peculiar to this region.

It is well known that not only the Eskimo generally, but other hyperborean people coat the runners of their sleds with ice to make them run more smoothly, but this is usually only a comparatively thin crust, produced by pouring water on the runners or applying a mixture of snow or mud and water.¹ Mr. Turner informs me that at Ungava they are particular to use fine black vegetable mold for this purpose.

The method at Point Barrow is quite different from this. To each



FIG. 355.—Old "Chief" with staffs.

¹ For example, Lyon says that at Fury and Hecla Straits the runners are coated with ice by mixing snow and fresh water (Journal, p. 235); (See also Parry, 2d Voyage, p. 515). At Cumberland Gulf "they pour warmed blood on the under surface of the bone shoeing; some use water, but this does not last nearly so long as the blood and is more apt to chip off." Kumlien, Contributions, p. 42; (See also Hall, Arctic Researches, p. 582). Around Repulse Bay they ice the runners by squirting over them water which has been warmed in the mouth, putting on successive layers till they get a smooth surface. This is renewed the first thing every morning. Gilder, Schwatka's Search, p. 66. A native of the eastern shore of Labrador, according to Sir John Richardson (Searching Expedition, vol. 2, p. 82), applied to the runners coat after coat of earth or clay tempered with hot water, and then washed the runners with water, polishing the ice with his naked hand. MacFarlane in his MS. notes speaks of covering the sled runners with "earth, water, and ice" in the Mackenzie region. Petitot (Monographie, etc., p. xvii) says the runners in the Mackenzie and Anderson district are shod with "un bonrrelet de limon et de glace," which has to be often renewed. Nordenskiöld says that at Piteleka "the runners, before the start, are carefully covered with a layer of ice from two to three millimeters in thickness by repeatedly pouring water over them," (Vega, vol. 2, p. 94). and according to Wrangell (Narrative, etc., p. 101, footnote) it is the common custom in northern Siberia to pour water over the runners every evening to produce a thin crust of ice.

runner is fitted a heavy shoe of clear ice, as long as the runner, and fully 1 foot high by 6 inches thick. The sledge with these ice runners is estimated to weigh, even when unloaded, upwards of 200 or 300 pounds, but it appears that the smoothness of running more than counterbalances the extra weight. At any rate these shoes are almost universally employed on the sleds which make the long journey from the rivers in the spring with heavy loads of meat, fish, and skins. One native, in 1883, shod his sledges with salt-water ice in this way before starting for the hunting grounds. As these ice shoes are usually put on at the rivers, I had no opportunity of seeing the process, though I have seen the sledges thus shod after their return to the village. Lieut. Ray, who saw the process, describes it as follows:

"From the ice on a pond that is free from fracture they cut the pieces the length of a sled runner, 8 inches thick and 10 inches wide; into these they cut a groove deep enough to receive the sled runner up to the beam; the sled is carefully fitted into the groove, and secured by pouring in water, a little at a time and allowing it to freeze. Great care is taken in this part of the operation, for should the workman apply more than a few drops at a time, the slab of ice would be split and the work all to do over again; after the ice is firmly secured the sled is turned bottom up and the ice-shoe is carefully rounded with a knife, and then smoothed by wetting the naked hand and passing it over the surface until it becomes perfectly glazed."¹

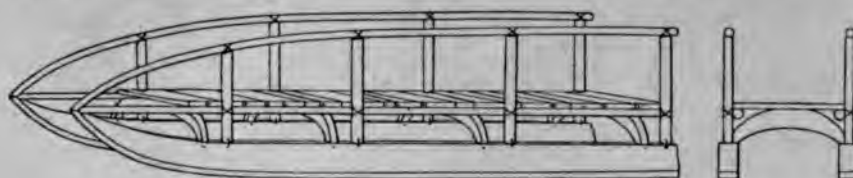


FIG. 356.—Railed sledge, diagrammatic (from photograph).

In traveling they take great care of these runners, keeping them smooth and polished, and mending all cracks by pouring in fresh water. They are also careful to shade them from the noonday sun, which at this season of the year is warm enough to loosen the shoes, for this purpose hanging a cloth or skin over the sunny side of the sled.²

We were unfortunately not able to bring home specimens of either style of large sled. The rail sled (*kāmōtī*) is usually about 8 or 9 feet long, and 2½ to 3 feet wide, and the rail at the back not over 2½ feet high. The thick curved runners, about 5 or 6 inches wide (see diagram, Fig. 356,

¹ Rep. Point Barrow Exp., p. 27.

² Schwatka, in "Nimrod in the North," (p. 159) describes a practice among the "Netschillik," of King William's Land, which appears very much like this, though his description is somewhat obscure in details. It is as follows: "We found the runners shod with pure ice. Trenches the length of the sledge are dug in the ice, and into these the runners are lowered some two or three inches, yet not touching the bottom of the trench by fully the same distance. Water is then poured in and allowed to freeze, and when the sledge is lifted out it is shod with shoes of perfectly pure and transparent ice." Strangely enough, these curious ice shoes are not mentioned by Schwatka's companions, Gilder and Klutschak, nor by Schwatka himself in his paper on the "Netschillik" in *Science*, although Klutschak describes and figures a sledge made wholly of ice among the Netsillingmiu.. ("Als Eskimo, etc." p. 76). Also referred to by Boas ("Central Eskimo," p. 533).

made from a small photograph) meet the curved slender rails (which are usually round) in front, but are separated from them behind by four stout vertical posts on each side, increasing in length toward the other end and mortised into the runners and rails. An equal number of stout wooden arches half the height of the posts are mortised into the runners, each arch a little in front of each pair of posts. A longitudinal strip runs along the middle of each side, and slats are laid across these, supported by the arches. The sledge is rather heavy and clumsy, but usually carefully made and often painted with red ocher.



FIG. 357.—Flat sledge.

Of the unia or flat sledge we have, fortunately a good photograph, Fig. 357. To the thick straight wooden runners are fastened directly seven cross slats, which project about 2 inches at each end beyond the runner, to which they are fastened by two stitches of whalebone each. A longitudinal strip runs along above the slats on each side. These sledges are generally made on the same pattern, varying somewhat in

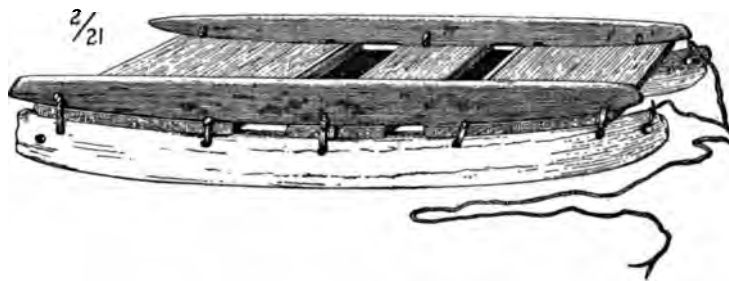


FIG. 358.—Small sledge with ivory runners.

size. A common size is about 6 feet long, about $2\frac{1}{2}$ feet wide, and 9 or 10 inches high. Very small sledges of this pattern are sometimes made, especially for the purpose, as we were told, of carrying provisions, perhaps when one or two persons desire to make a rapid journey of some length, or for carrying a small share of meat from camp to camp.

One of these (Fig. 358, No. 89889 [1140], from Utkiavwīñ), which shows signs of long use, was brought home. It is 20·7 inches long and 13 broad, and has ivory runners, with three wooden slats across them, held down

¹The word used was "kau-kau." Perhaps it referred to a seal for food, as the sledge appears very like one described by Hooper (Corwin Report, p. 105) as used on the "Arctic Coast." "When sealing on solid ice a small sled is sometimes used, the runners of which are made of walrus tusks. It is perhaps 16 inches long by 14 inches wide and 3 inches high. It is used in dragging the carcass of the seal over the ice."

We, however, never saw such sleds used for dragging seals. This one may have been imported from farther south. See also, Beechey, Voyage, etc., p. 251, where he speaks of seeing at Kotzebue Sound, a drawing on ivory of "a seal dragged home on a small sledge."

by a low wooden rail on each side. Each runner is a slice from a single large walrus tusk, with the butt at the back of the sled. The slats, which are pieces of a ship's paneling, are lashed to the upper edge of the runners so as to project about one-half inch on each side. The rails flare slightly outward. The whole is fastened together by lashings of rather broad whalebone, passing through a hole near the upper edge of the runner, a notch in the end of the slat and a hole in the slat inside of the rail. There are two lashings at each end of each broad slat and one in the middle, at each end of the narrow one. The last and the ones at each end of the sled also secure the rail by passing through a hole near its edge, in which are cut square notches to make room for the other lashings. The trace is a strip of seal thong about 5 feet long and one-fourth inch wide, split at one end for about 1 foot into two parts. The other end is slit in two for about 3 inches. This is probably a broken loop, which served for fastening the trace to a dog's harness.

I do not recollect ever seeing so small a sled in actual use, though Lieut. Ray says he has frequently seen them drawn by one dog. The people who came down from Nuwük with a small load of things for trade sometimes used a small unia about 3 feet long, with one dog, and the same was often used by the girls for bringing in firewood from the beach.

A very peculiar sled was formerly used at Point Barrow, but we have no means of knowing how common it was. It was a sort of toboggan, made by lashing together lengthwise slabs of whalebone, but is now wholly obsolete, since whalebone has too high a market value to permit of its being used for any such purpose. We obtained one specimen about 10 feet long, but it was unfortunately in such a dilapidated condition that we were unable to bring it home. I find no previous mention of the use of such sleds by any Eskimo. It is not necessary to suppose that this sled is modeled after the toboggan of the Hudson Bay voyagers, of which these people might have obtained knowledge through the eastern natives, since the simple act of dragging home a "slab" of whalebone would naturally suggest this contrivance.

We did bring home one small sled of this kind (No. 89875 [772], Fig. 359, from Utkiavwīū), which from its size was probably a child's toy, though from its greasy condition it seems to have been used for dragging pieces of blubber. It is made of the tips of 6 small "slabs" of black whalebone, each about 2 inches wide at the broad end, and put together side by side so as to form a triangle 19½ inches long and 9¾ wide, the apex being the front of the sled, and the left-hand edge of each slab slightly overlapping the edge of the preceding. They are fastened together by three transverse bands, passing through loops in the upper surface of each slab, made by cutting two parallel longitudinal slits about one-half inch long and one-fourth inch apart part way through, and raising up the surface between them. The hindmost band is a strip of whalebone nearly one-half inch wide, passing through these

loops, and wound closely in a spiral around a straight rod of whalebone, 0.4 inch wide and 0.1 inch thick, as long as the band. The ends of the band are knotted into rings or beckets about $2\frac{1}{4}$ inches in diameter. The other two bands are simple, narrow strips of whalebone, running straight across through the loops and knotted at the ends into similar beckets. These beckets were obviously for tying on the load.

The sled with side rails does not appear to be used east of the Mackenzie region, but is found only slightly modified at least as far south as Norton Sound.¹ The sledge used on the Asiatic coast, however, as shown in Nordenskiöld's figure,² belongs to a totally different family, being undoubtedly borrowed from the reindeer Chukches.³ The sleds of the eastern Eskimo vary somewhat in pattern and material, but may be described in general terms as essentially the same as the unia, but usually provided with what is called an "upstander," namely, two upright posts at each side of the back of the sled, often connected by a

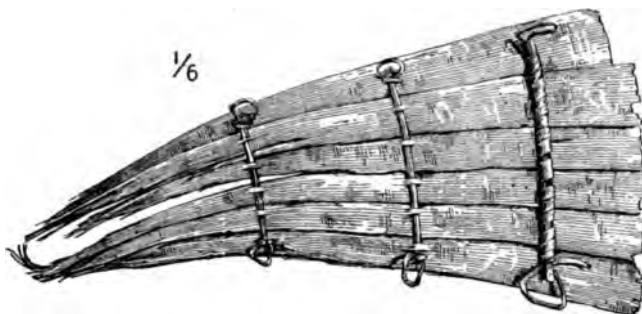


FIG. 359.—Small toboggan of whalebone.

cross rail, which serve to guide the sled from behind. Many descriptions and figures of these sleds will be found in the various descriptions of the eastern Eskimo.

Dogs and harness.—These sledges are drawn by dogs, which, as far as I am able to judge, are of the same breed as those used by the eastern Eskimo. They are, as a rule, rather large and stout. A number of the dogs at Utkiaywñ would compare favorably in size with the average Newfoundland dogs, and they appear to be capable of well sustained exertion. The commonest color is the regular "brindle" of the wolf, though white, brindle-and-white, and black-and-white dogs are not uncommon. There was, however, but one wholly black dog in the two villages. This was a very handsome animal known by the name of Allúa ("coal").

Every dog has his name and knows it. Their disposition is rather quarrelsome, especially among themselves, but they are not particularly ferocious, seldom doing more than howl and yelp at a stranger, and it is not difficult usually to make friends with them. There was

¹ See Dall's figure, *Alaska*, p. 165.

² Vega, vol. 1, p. 498.

³ Compare also the various illustrations in Hooper's "Tents of the Tusk."

very little difficulty in petting the half dozen dogs which we had at the station, and they grew to be very much attached to the laborer who used to feed them. The natives treat their dogs well as a rule, seldom beating them wantonly or severely. Though they do not allow them to come into the houses, the dogs seem to have considerable attachment to their masters. Considerable care is bestowed on the puppies. Those born in winter are frequently reared in the iglu, and the women often carry a young puppy around in the jacket as they would a child.

We saw no traces of the disease resembling hydrophobia, which has wrought such havoc in Greenland and Baffin Land. I once, however, saw a puppy apparently suffering from fits of some kind, running wildly round and round, yelping furiously, and occasionally rolling over and kicking. The natives said, "Mûlukû'lrna, asi'rua", ("He is howling [?];¹ he is bad"), and some of the boys finally took it out on the tundra and knocked it on the head.

The dog harness, *ánun* (Gr. *anut*), consists of a broad strip of stout rawhide (from the bearded seal or walrus), with three parallel loops at one end, frequently made by simply cutting long slits side by side in the thong and bending it into shape. The head is passed through the middle loop and a foreleg through each of the side-loops, bringing the main part of the thong over the back. This serves as a trace, and is furnished at the end with a toggle of bone or wood, by which it is fastened to beackets in a long line of thong, the end of which is usually made fast to the middle of the first slat of the sledge. The dogs are attached in a long line, alternately on opposite sides of this trace, just so far apart that one dog can not reach his leader when both are pulling.

The most spirited dog is usually put at the head of the line as leader, and the natives sometimes select a bitch in heat for this position, as the dogs are sure to follow her. The same custom has been observed by **Kumlien at Cumberland Gulf.**² Ten dogs are considered a large team, and few of the natives can muster so many. When the sledge is heavily loaded men and women frequently help to drag it. The dogs are never *driven*, and except over a well known trail, like that between Utkiavwîñ and the whaling camp in 1883, will not travel unless a woman trots along in front, encouraging them with cries of "Añ! añ! tû'lla! tû'lla! (Come! come on!), while the man or woman who runs behind the sled to guide it and keep it from capsizing, urges them on with cries of "Kû! kû! (Get on! get on!), occasionally reproving an individual dog by name. After they are well started, they go on without much urging if nothing distracts their attention. It is not easy to stop a dog team when the destination is reached. Commands and shouts of "Lie down!" are seldom sufficient, and the people generally have to pull

¹I failed to get the translation of this word, but it seems to be connected with the Greenlandic *málavok*, he howls (a dog—).

²Contributions, p. 51.

back on the sled and drag back on the harness till the team comes to a halt.

The leader, who is usually a woman or child sometimes guides the team by a line attached to the trace, and Lieut. Ray says he has seen them, when traveling in the interior, tie a piece of blubber or meat on the end of a string and drag it on the snow just ahead of the leader. The natives seldom ride on the sledge except with a light load on a smooth road. A few old and decrepit people like Yû'ksîñia always traveled on sledges between the villages, and the people who came down with empty sledges for provisions from the whaling camp, always rode on the well beaten trail where the dogs would run without leading.¹ The dog whip so universally employed by the eastern Eskimo, is not used at Point Barrow, but when Lieut. Ray made a whip for driving his team, the natives called it Ipirau'ta, a name essentially identical with that used in the east. They especially distinguished Ipirau'ta, a whip with a lash, from a cudgel, anau'ta. The latter word has also the same meaning in the eastern dialects.

We saw nothing of the custom of protecting the dogs' feet with seal-skin shoes, so prevalent on the Siberian coast.² Curiously enough the only other localities in which the use of this contrivance is mentioned are in the extreme east.³ During the first warm weather in the spring, before the dogs have shed their heavy winter coats, they suffer a great deal from the heat and can go only a short distance without lying down to rest.

The method of harnessing and driving the dogs varies considerably in different localities. Among the eastern natives the dogs are usually harnessed abreast, each with a separate trace running to the sledge, and the driver generally rides, guiding the dogs with a whip. The leader usually has a longer trace than the rest. The harness used at Fury and Hecla Straits is precisely the same as that at Point Barrow, but in Greenland, according to Dr. Kane, it consists of a "simple breast-strap," with a single trace. The illustration, however, in Rink's *Tales and Traditions*, opposite p. 232, which was drawn by a native Greenlander, shows a pattern of harness similar to that used in Siberia and described by Nordenskiöld⁴ as "made of inch-wide straps of skin, forming a neck or shoulder band, united on both sides by a strap to a girth, to one side of which the draft strap is fastened." It is a curious fact that the two extremes of the Eskimo race (for even if the people of Pitlekaj be Chukchi in blood, they are Eskimo in culture) should use the same pattern of harness, while a different form prevails between them. The Siberians also habitually ride upon the sledges, and use a whip, and on some parts of the coast, at least, harness the dogs abreast. In

¹ Compare Dall. *Alaska*, p. 25.

² See Hooper, *Tents, etc.*, p. 195, and Nordenskiöld, *Vega*, vol. 2, p. 96, where one of these shoes is figured.

³ See Kumlien. *Contributions*, p. 42.

⁴ *Vega*, vol. 2, p. 95.

the region about Pitlekaj, however, the dogs are harnessed "tandem" in pairs, as is the case at Norton Sound, where a more efficient harness is also used, which is probably not Eskimo, but learned from the whites.¹ Nordenskiöld² expresses the opinion that the Eskimo method of harnessing the dogs abreast indicates that the Eskimos have lived longer than the Chukchis north of the limit of trees; in other words, that the method of harnessing the dogs tandem is the older one, and that the Eskimo have learned to harness them abreast since they left the woodland regions. I can hardly agree with these conclusions, for it seems to me that the easiest and most natural method of attaching the dogs would be to fasten each directly to the sled by its own trace. Now, when many dogs are attached to the sled in this way, the outer dogs can not apply their strength in a direct line but must pull obliquely, and, moreover, as we know to be the case, so many long traces are constantly becoming entangled, and each individual dog has to be kept straight by the driver. If, however, the dogs be made fast to a long line, one behind the other, not only does each pull straight ahead, but if the leader be kept to the track he pulls the other dogs after him, relieving the driver of the greater part of the care of them.

It seems to me therefore, that the tandem method is an improvement in dog harnessing, which has been adopted only by the natives of northeastern Siberia, and northwestern America, and has no connection with the wooded or unwooded state of the country.³

HUNTING SCORES.

The only thing that we saw of the nature of numerical records were the series of animals engraved upon ivory, already alluded to. In most cases we were unable to learn whether the figures really represented an actual record or not, though the bag handle, No. 89424 [890] already figured, was said to contain the actual score of whales killed by old Yû'ksîña. The custom does not appear to be so prevalent as at Norton Sound (see above, p. 117). Many of these possible scores being engraved on ivory implements have already been described. With one exception they only record the capture of whales or reindeer. The exception (No. 89425 [1732], Fig. 153*b*) presents a series of ten bearded seals. The reindeer are usually depicted in a natural attitude, and some of the circumstances of the hunt are usually represented. For instance, a man is figured aiming with a bow and arrow toward a line of reindeer, indicating that such a number were taken by shooting, while a string of deer, represented without legs as they would ap-

¹See Dall, *Alaska*, pp. 163 and 166.

²Vega, vol. 2, p. 95, foot note.

³For descriptions of the sledges and methods of harnessing used by the eastern Eskimo, see Bessel's *Naturalist*, vol. 18, pt. 9, p. 868, figs. 4 and 5 (Smith Sound); Kane, 2d Grinnell Exp., vol. 1, p. 205 (Smith Sound) and first Grinnell Exp., p. 443 (Greenland); Kumlien, *Contributions*, p. 42, and Boas, "Central Eskimo," pp. 529-538 (Cumberland Gulf); Parry, 2d voyage, p. 514, and Lyon, *Journal*, p. 235 (Iglulik); Gilder, Schwatka's Search, pp. 50, 52, and 66, and Schwatka's "Nimrod in the North," pp. 152, 153 (N.W. shore of Hudson Bay and King Williams Land).

pear swimming, followed by a rude figure of a man in a kaiak, means that so many were lanced in the water. Other incidents of the excursion are also sometimes represented. On these records the whale is always represented by a rude figure of the tail cut off at the "small," and often represented as hanging from a horizontal line.

We also brought home four engraved pieces of ivory, which are nothing else than records of real or imaginary scenes. I have figured all of these. Fig. 360 (No. 89487 [1026] from Nuwtik) is a narrow flat tablet of ivory, 4.8 inches long and 1 inch wide, with a string at one end to hang it up by. On each face is an ornamental border inclosing a number of incised figures, which probably represent actual scenes, as the tablet is not new.

The figures on the obverse face are colored with red ocher. At the upper end, standing on a cross line, with his head toward the end, is a rudely drawn man, holding his right hand up and his left down, with the fingers outspread. At his left stands a boy with both hands down. These figures probably represent the hunter and his son. Just below the cross line is a man raising a

spear to strike an animal which is perhaps meant for a reindeer without horns. Three deer, also without horns, stand with their feet on one border with their heads toward the upper end, and on the other border near the other end are two bucks with large antlers heading the other way, and behind them a man in a kaiak. Between him and the animal which the first man is spearing is an object which may represent the crescent moon. The story may perhaps be freely translated as follows: "When the moon was young the man and his son killed six reindeer, two of them bucks with large antlers. One they speared on land, the rest they chased with the kaiak."

On the reverse the figures and border are colored black with soot. In the left-hand lower corner is a she bear and her cub heading to the left, followed by a man who is about to shoot an arrow at them. Then come two more bears heading toward the right, and in the right-hand

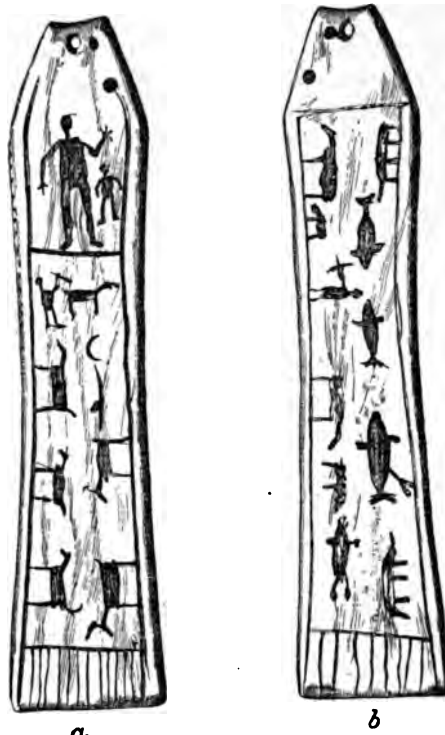


FIG. 360.—Hunting score engraved on ivory.

lower corner is a whale with two floats attached to him by a harpoon line. Above this is an umiak with four men in it approaching another whale which has already received one harpoon with its two floats. The harpoon which is to be thrust at him may be seen sticking out over the bow of the boat. Then come two whales in a line, one heading to the left and one to the right. In the left-hand upper corner is a figure which may represent a boat, bottom up, on the staging of four posts. We did not learn the actual history of this tablet, which was brought down for sale with a number of other things.

Fig. 361 (No. 89473 [1349] from Utkiavwīñ) is a piece of an old snowshovel edge with freshly incised figures on both faces, which the artist



FIG. 361.—Hunting score engraved on ivory, obverse and reverse.

said represented his own record. The figures are all colored with red ochre. On the obverse the figures all stand on a roughly drawn ground line. At the left is a man pointing his rifle at a bear, which stands on its hind legs facing him. Then comes a she bear walking toward the left followed by a cub, then two large bears also walking to the left, and a she bear in the same attitude, followed by two cubs, one behind the other. This was explained by the artist as follows: "These are all the bears I have killed. This one alone (pointing to the 'rampant'



FIG. 362.—Hunting score engraved on ivory.

one) was bad. All the others were good." We heard at the time of his giving the death shot to the last bear as it was charging his comrade, who had wounded it with his muzzle-loader. On the reverse, the figures are in the same position. The same man points his rifle at a string of three wolves. His explanation was: "These are the wolves I have killed."

Fig. 362 (No. 89474 [1334] from Utkiavwīñ) is newly made, but was said to be the record of a man of our acquaintance named Mūñīñolu. It is a flat piece of the outside of a walrus tusk 9.7 inches long and 1.8 wide at the broader end. The figures are incised on one face only, and

colored with red ocher. The face is divided lengthwise into two panels by a horizontal line. In the upper panel, at the left, is a man facing to the right and pointing a gun at a line of three standing deer, facing toward the left. Two are bucks and one a doe. Then come two bucks, represented without legs, as if swimming in the water, followed by a rude figure of a man in a kaiak. Below the line at the left is an umiak with five men, and then a row of twelve conventionalized whales' tails, of which all but the first, second, and fifth are joined to the horizontal line by a short straight line. The record may be freely translated as follows: "I went out with my gun and killed three large reindeer, two bucks and a doe. I also speared two large bucks in the water. My whaling crew have taken twelve whales." The number of whales is open to suspicion, as they just fill up the board.

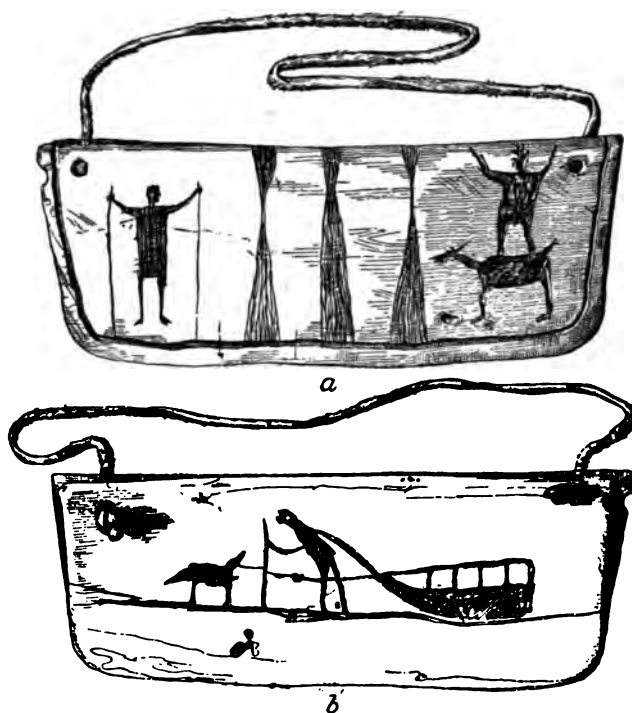


FIG. 363.—Hunting score engraved on ivory, obverse and reverse.

Fig. 363 (No. 56517 [121] from Utkiavwñ) is a piece of an old snowshovel edge 4.2 inches long, with a loop of thong at the upper side to hang it up by. It is covered on both faces with freshly incised figures, colored with red ocher, representing some real or imaginary occurrence.

The obverse is bordered with a single narrow line. At the left is a man standing with arms outstretched supporting himself by two slender staffs as long as he is. In the middle are three rude figures of tents, very high and slender. At the right is a hornless reindeer heading to the left, with a man standing on its back with his legs straddled

apart and his arms uplifted. On the reverse, there is no border, but a single dog and a man who supports himself with a long staff are dragging an empty rail sledge toward the left.

I find no mention of the use of any such scores among the eastern Eskimo, but they are very common among those of the west, as shown by the Museum collections. They record in this way, not only hunting exploits but all sorts of trivial occurrences.

GAMES AND PASTIMES.

Gambling.—These people have only one game which appears to be of the nature of gambling. It is played with the twisters and marline spikes used for backing the bow, and already described, though Lieut. Ray says he has seen it played with any bits of stick or bone. I never had an opportunity of watching a game of this sort played, as it is not often played at the village. It is a very popular amusement at the deer-hunting camps, where Lieut. Ray often saw it played. According to him the players are divided into sides, who sit on the ground about 3 yards apart, each side sticking up one of the marline spikes for a mark to throw the twisters at. Six of the latter, he believes, make a full set. One side tosses the whole set one at a time at the opposite stake, and the points which they make are counted up by their opponents from the position of the twisters as they fall. He did not learn how the points were reckoned, except that twisters with a mark on them counted differently from the plain ones, or how long the game lasted, each side taking its turn of casting at the opposite stake. He, however, got the impression that the winning side kept the twisters belonging to their opponents. Mr. Nelson informs me in a letter that a similar game is played with the same implements at Norton Sound.

No. 56532 [9], from Utkiavwīn, is a bag full of these tools as used for playing this game. It contains 18 twisters, of different patterns, and 7 marline spikes. The bag is of membrane, perhaps a bladder. It is ovoid in shape, all in one piece, with a long opening in one side, which is closed by a piece of sinew braid about 40 inches long. This is knotted by one end round a fold of membrane at one end of the mouth, and when the bag is shut up is wrapped round the middle of it.

Some of these people have learned what cards are from the Nunatañmiun, though they do not know how to use them. They described how they were used by the "Nunatañmiun," however, going through the motions of dealing cards. They told us that the latter played a great deal, and "gave much." This "giving much" evidently referred to gambling, for they told Capt. Herendeen how two of the "Nunatañmiun" would sit down to play, one with a big pile of furs and one without any, and when they got up the furs would all belong to the other man.

Fig. 364 (No. 56531 [21]) represents some of a bunch of 25 little ivory images which were strung on a bit of seal thong. One is a neatly carved fox, 2.7 inches long, and the rest are ducks or geese, rather

roughly carved, with flat bellies. The largest of these is 1.3 inches long and the smallest 0.8 inch. These were purchased at Plover Bay, eastern Siberia, during our brief visit in August, 1881, and were sup-

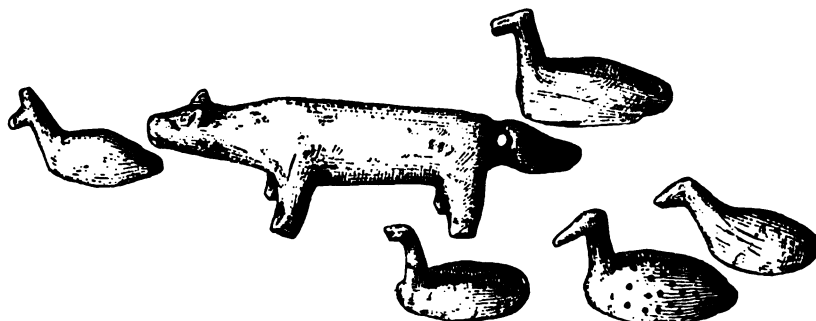


FIG. 364.—Game of fox and geese, from Plover Bay.

posed to be merely works of art. I was, however, very much interested on my return to Washington to find that Dr. Franz Boas had brought from Cumberland Gulf a number of precisely similar images, which are there used for playing a game of the nature of "jackstones." The player tosses up a handful of these images, and scores points for the number that sit upright when they fall.¹ It is therefore quite likely that they are used for a similar purpose at Plover Bay. If this be so, it is a remarkable point of similarity between these widely separated Eskimo, for I can learn nothing of a similar custom at any intermediate point.

Festivals.—The most important festivals are apparently semireligious in character and partake strongly of the nature of dramatic representations. At these festivals they make use of many articles of dress and adornment, not worn on other occasions, and even some "properties" and mechanical contrivances to add to the dramatic effect. All festivals are accompanied by singing, drumming, and dancing.

At the formal festivals, in the early winter, the performers are dressed in new deerskin clothing, with the snow-white flesh side outward, and in certain parts of the performance wear on their heads tall conical caps covered with rows of mountain sheep teeth which rattle as the wearer dances.

We brought home one of these dancing caps (kä'brû, käluka') (No. 89820 [863] Fig. 365), made of deerskin with the hair inward and



FIG. 365.—Dancing cap.

¹ This game is briefly referred to by Hall, *Arctic Researches*, p. 570.

clipped close. The outside is painted all over with red ocher. The front is nearly all in one piece, but the back is irregularly pieced and gored. It is surmounted by a thick tuft of brown and white wolverine fur about 5 inches long, sewed into the apex. To the middle of one side at the edge is sewed a narrow strip of deerskin with the hair clipped close, which is long enough to go under the wearer's chin and be knotted into a slit close to the edge of the other side of the cap. On the front edge is sewed a row of thirty-five incisor teeth of the mountain sheep by a thread running through a hole drilled through the root of each.

The series is regularly graduated, having the largest teeth in the middle and the smallest on the ends. Above this is a narrow strip of brown deerskin running two-thirds round the cap and sewed on flesh side out so that the hair projects as a fringe below. Above this are three ornamental bands about 2 inches apart running two-thirds round the cap, each fringed on the lower edge with sheep teeth strung as on the edge of the cap. The lower row contains 54 teeth, the middle 29, and the upper 31. The lowest band is made of 2 strips of mountain sheepskin with a narrow strip of black sealskin between them, and a narrow strip of brown deerskin with the hair out; the next is of coarse gray deerskin with the hair out; and the uppermost of brown deerskin with the flesh side out. The cap is old and dirty, and has been long in use.



FIG. 306.—Wooden mask.

The custom of wearing this style of cap appears to be peculiar to the northwestern Eskimo, as I find no mention for it elsewhere. It is perhaps derived indirectly from the northern Indians, some of whom are represented as wearing a similar headdress.

In certain parts of the same ceremony as witnessed by Lieut. Ray the dancers also wore rattle mittens, which were shaken in time to the music. A pair of these were offered for sale once, but Lieut. Ray did not consider them sufficiently of pure Eskimo manufacture to be worth the price asked for them. They were made of sealskin and covered all over the back with empty Winchester cartridge shells loosely attached by a string through a hole in the bottom, so as to strike against each other when the mitten was shaken. The five men who wore these mittens wore on their heads the stuffed skins of various animals, the wolf, bear, fox, lynx, and dog, which they were supposed to represent. These articles were never offered for sale, as they were probably too highly valued.

We collected twelve wooden masks, which we were told were worn in some of these ceremonies, though none of our party ever witnessed any

performance in which they were used. Some of them are of undoubted age. No. 56499 [6] (Fig. 366) has been selected as the type of these masks. (ki'nau, from ki'na, face). This is a rather good representation of a male human face, 8.8 inches long and 5.8 wide. It is quite smoothly carved out of cottonwood, and the back is neatly hollowed out, being more deeply excavated round the eyes and mouth and inside of the nose. The mouth is represented as wide open, showing the tip of the tongue attached to the underlip, and has six small teeth which look like dog's incisors inserted in a row in the middle of the upper lip. The eyebrows and moustache are marked out with blacklead, and there are traces of red ocher on the cheeks. The holes for the strings are in the edge about on a level with the eyes. One end of a string of seal thong long enough to go around the wearer's head is passed out through the hole on the right side, slit close to the tip, and the other end passed through this. The other end is passed out through the hole on the left



FIG. 367.—Wooden mask and dancing gorget.

and made fast with two half hitches. A row of small holes round the edge of the mask shows where a hood has been tacked on. This mask is rather old and somewhat soiled.

A very old weathered mask (No. 56497 [235] from Utkiavwīñ), 7.8 inches long, and made of soft wood, apparently pine, is similar to the preceding, but has no tongue, and the teeth in both jaws are represented as a continuous ridge. It has an "imperial" as well as a moustache, marked with blacklead like the eyebrows. The cheeks are colored with red ocher. The edge is much gapped and broken, but shows the remains of a deep narrow groove running round on the outside about $\frac{1}{4}$ inch from the edge, and pierced with small holes for fastening on a hood.

Figure 367 (No. 89817 [856] also from Utkiavwīñ) is a mask much like the preceding, 7.5 inches long, and made of spruce. It is peculiar

in having the outer corners of the eyes rather depressed, and in addition to the moustache and imperial has a broad "whaleman's mark" drawn with black lead across the eyes. It is grooved round the edge for fastening on a hood. The lower part of the face has been split off at the corners of the mouth and mended on with two stitches of whalebone, and a piece which was broken out at the left-hand corner of the mouth is secured by a wooden peg at the inner edge and a stitch of whalebone on the lower side. This mask has been for a long time fastened to an ornamented wooden gorget, and appeared to have been exposed to the weather, perhaps at the cemetery. The string is made of unusually stout sinew braid.

The remaining four ancient human masks are all masculine, and only one has any indication of labrets. On this mask, No. 89812 [1063], there are two small holes in the position of the labrets. It is probable that the wearers of these masks are supposed to represent the ancient Eskimo, who wore no labrets. A mask which was carelessly made for sale (No. 89814 [1056] from Utkiavwñ), however, has large plug-labrets



Fig. 368.—Old grotesque mask.

carved out. Though roughly carved this mask is a very characteristic Eskimo face, and would almost pass as the portrait of a man of our acquaintance in Utkiavwñ. The two little roughly carved human faces on the top of this mask are probably merely for ornament. No such things are to be seen on any of the old masks which have been actually used. This mask seems to have been whittled out of the bottom of an old meat tray, and has a string of whalebone. Most of the genuine masks are of excellent workmanship, but two are quite roughly carved. One of these espe-

cially is such a bungling piece of work that it would be set down as commercial were it not weathered and evidently old. The painting never goes farther than marking out the beard and eyebrows with soot or black lead, and sometimes reddening the cheeks with ocher. Fig. 368 (No. 89816 [1583] from Utkiavwñ) is a very old mask of cottonwood, blackened with age and so rudely carved that the work was probably done with a stone tool. It is grooved around the edge for fastening on a hood and is 6·8 inches long.

The only female human masks seen are new and made for sale. One of these (No. 89819 [1057], Fig. 369, from Utkiavwñ) is roughly whittled from the bottom of an old meat tray, and has the hair, eyebrows, and a single line of tattooing on the chin painted with soot. It is 8·7 inches long and has strings of whalebone.

Another (No. 56498 [73] from Utkiavwñ) is about the size of the common masks and tolerably well made. It has the hair and eyebrows marked with black lead. The last is a foot long, and like the one fig-

ured is roughly whittled out of the bottom of an old meat tray. It has the hair, eyebrows, and a single stripe of tattooing on the chin marked with black lead. This came from Utkiavwñi (No. 89811 [1037]).

Another "commercial" mask (No. 89813) [1074] from Utkiavwñi) is very elaborate, but roughly and carelessly made. It is almost flat, with the features hardly raised in relief. In each corner of the mouth is inserted a slender ivory tusk about 1 inch long, and besides the eyebrows, moustache, and imperial, there is a broad "whaleman's mark" running obliquely across the right cheek from the bridge of the nose. Six long feathers are stuck in the edge of the forehead. Curiously enough these are the feathers of the South American ostrich, and came from the feather duster in use at our station.



FIG. 369.—Rude mask of wood.

Fig. 370 (No. 56496 [258] from Utkiavwñi) represents, rather rudely, a wolf's face and ears, and is the only animal mask we obtained or saw. It is of cottonwood, old and weathered, and is 4.7 inches long and 6.5 wide. It is painted on the edge with red ocher and has a streak

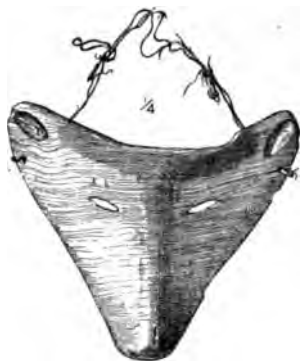


FIG. 370.—Wolf mask of wood.

of the same color down the ridge of the nose. The string is of whalebone and unbraided sinew pieced together.

Fig. 371 (No. 89815 [1050] from Utkiavwñi) is a mask that seems almost too small to have been worn, being only 6.1 inches long and 4.7 wide. It is very old, made of blackened cot-



FIG. 371.—Very ancient small mask.

tonwood, and is the rudest representation of the human face which we saw. It is simply an oval disk, concavo-convex, with holes cut for the eyes, nostrils, and mouth. The rough cutting about the chin appears to have been done with a stone tool, and the mouth seems to be smeared with blood. The string passed through the holes in the forehead to hang it up by is much newer than the mask, being braided from cotton twine and fastened to a common galvanized boat nail.

The more southern Eskimo of Alaska are in the habit of using in their dances very elaborate and highly ornamented and painted masks, of which the National Museum possesses a very large collection. The ancient Aleuts also used masks.¹ On the other hand, no other Eskimo, save those of Alaska, ever use masks in their performances, as far as I can learn, with the solitary exception of the people of Baffin Land, where a mask of the hide of the bearded seal is worn on certain occasions.² Nordenskiöld saw one wooden mask among the people near the *Vega's* winter quarters, but learned that this had been brought from Bering Strait, and probably from America.³

The masks appear to become more numerous and more elaborate the nearer we get to the part of Alaska inhabited by the Indians of the Tlinket stock, who, as is well known employ, in their ceremonies remarkably elaborate wooden masks and headdresses. It may be suggested that this custom of using masks came from the influence of these Indians, reaching in the simple form already described as far as Point Barrow, but not beyond.⁴ With these masks was worn a gorget or breast-plate, consisting of a half-moon shaped piece of board about 18 inches long, painted with rude figures of men and animals, and slung about the neck. We brought home three of these gorgets. all old and weathered.

No. 89818 [1132], Fig. 372*a*, has been selected as the type of the gorget (sûkîmûñ). It is made of spruce, is 18.5 inches long, and has two beackets of stout sinew braid, one to go round the neck and the other round the body under the wearer's arms. The figures are all painted on the front face. In the middle is a man painted with red ocher; all the rest of the figures are black and probably painted with soot. The man with his arms outstretched stands on a large whale, represented as spouting. He holds a small whale in each hand. At his right is a small cross-shaped object which perhaps represents a bird, then a man facing toward the left and darting a harpoon with both hands, and a bear facing to the left. On the left of the red man are two umiaks with five men in each, a whale nearly effaced, and three of the cross-shaped objects already mentioned. Below them, also, freshly drawn with a hard, blunt lead pencil or the point of a bullet, are a whale, an umiak, and a three-cornered object the nature of which I can not make out.

Fig. 372*b* (No. 56493 [266] from Utkiavwîñ) is a similar gorget, which has evidently been long exposed to the weather, perhaps at the cemetery, as the figures are all effaced except in the middle, where it was probably covered by a mask as in Fig. 367 (No. 89817 [855] from the same village). There seems to have been a red border on the serrated edge. In the middle is the same red man as before standing on the

¹ See Dall, *Alaska*, p. 389, and contributions to *N. A. Ethn.*, vol. 1, p. 90.

² See Kumlien, *Contributions*, p. 43. Kumlien says merely "a mask of skins." Dr. Boas is my authority for the statement that the skin of the bearded seal is used.

³ *Vega*, vol. 2, p. 21.

⁴ See also Dall's paper in the *Third Annual Report of the Bureau of Ethnology*, pp. 67-203, where the subject of mask-wearing is very thoroughly discussed in its most important relations.

black whale and holding a whale in each hand. At his right is a black umiak with five men in it, and at his left a partially effaced figure which is perhaps another boat. The strings are put on as before, except that the two beckets are separate. The upper is made of sinew braid, and the lower, which is now broken, of seal thong. This gorget is 15.5 inches long and 4.7 wide. No. 89817 [855] (Fig. 367 already referred to) has a mask tied over the middle by means of the beckets, so that the figures in the middle are much fresher than those on the ends. The edges are

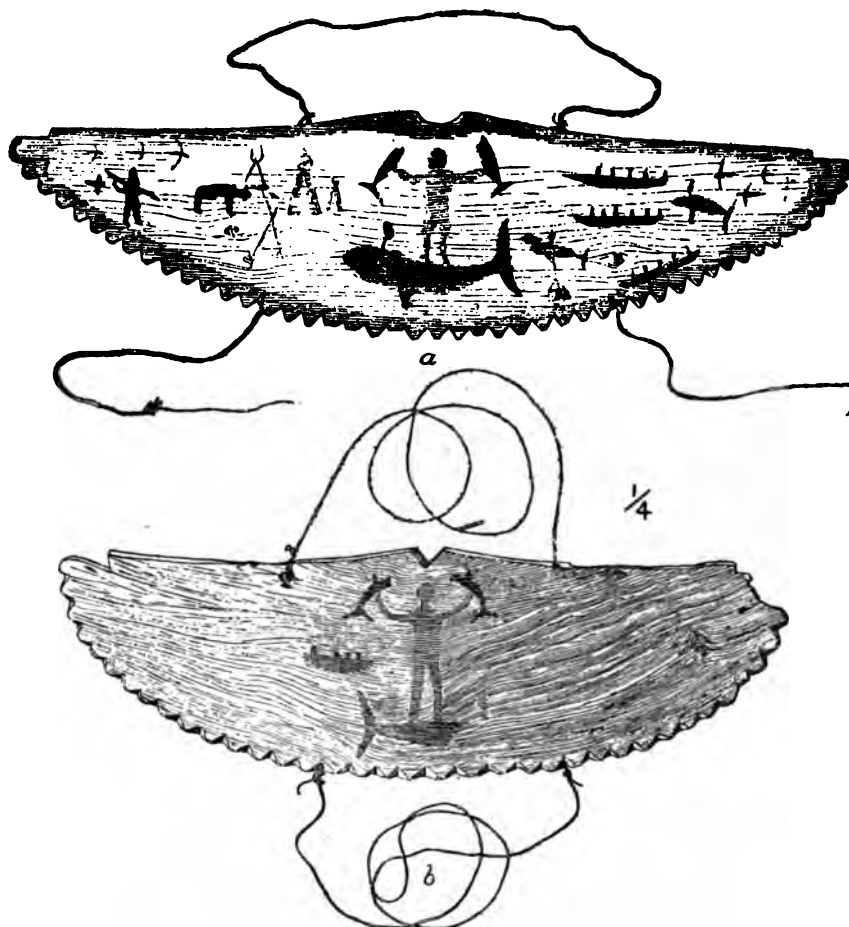


FIG. 372.—Dancing gorgets of wood.

painted red. In the middle is the same red man or giant holding the whale. The other figures are painted with soot.

This man or giant, able to hold out a whale, appears to be a legendary character, as we have his image carved in ivory. We unfortunately did not succeed in learning anything more about him, except that his name (apparently) was "kikámigo." Hanging by the head to each elbow of this figure is a seal, and opposite its thighs two of the usual conventional

whale's tails, one on each side, with the flukes turned from him. The one on his left is attached to his waist by a straight line from its upper corner. At its right hand are a number of objects irregularly grouped. At the top an umiak with five men towing at a three-cornered object, which probably represents a dead whale; then a smaller umiak containing five men and apparently "fast" to a whale, which is spouting. A figure above this, almost obliterated, appears to be a small whale. Below are a large seal, three of the cross-shaped figures, four small whales, and one figure so much effaced that it can not be made out. On the left hand of the figure are two umiaks, and a whale with a line and float attached to him, then four crosses and a large seal in the corner. Below are four whales of different sizes, two bears, and a dog or wolf.

These gorgets appear to have gone out of fashion, as we saw none which were not very old, or which appeared to have been used recently. From the nature of the figures upon them, they were probably used in some of the ceremonies connected with the whale fishing. *Kika'migo* may be the "divinity" who controls the whales and other sea animals.¹

Mechanical contrivances.—In one of the performances which Capt. Herendeen witnessed, there stood in the middle of the floor facing each other, the stuffed skins of a fox and a raven. These were mounted on whalebone springs and moved by strings, so that the fox sprang at the raven and the raven pecked at the fox, while the singing and dancing went on. These animals were never offered for sale, but they brought over a stuffed fox very cleverly mounted so as to spring at a lemming, which by means of strings was made to run in and out of two holes in the board on which the fox was mounted. (No 89893 [1378] from *Utkiaywñ.*) We unfortunately did not learn the story or myth connected with this representation.² It was the skin of an Arctic fox in the summer pelage, with the paws and all the bones removed, and clumsily stuffed with rope yarn, not filling out the legs. A stick was thrust into the tail to within about two inches of the tip, so that it was curled up over the back. The skin was taken off whole by a single opening near the vent, which was left open, and through which was thrust into the body a strip of whalebone 2 inches wide and about $\frac{1}{8}$ inch thick, which protruded about $4\frac{1}{2}$ inches and was fastened to the front edge of the hole by tying the flap of skin to the whalebone with three or four turns of sinew braid, kept from slipping by a notch in each edge of the whalebone.

The fox was attached to a piece of the paneling of a ship's bulkhead, 29 inches long and 7.5 wide, by bending forward $2\frac{3}{4}$ inches of the end of the whalebone, and lashing it down parallel to the length of the board with four turns of stout thong, kept from slipping by a notch in each edge of the whalebone and running through holes in the board.

¹ Cf. Crantz, vol. 1, p. 206.

² This very interesting specimen was unfortunately destroyed by moths at the National Museum after the description was written, but before it could be figured.

The fox was thus held up by the spring parallel to the length of the board with its head and forelegs raised. A string of sinew braid 10 feet long was passed through a hole in the septum of the fox's nose and knotted once so as to leave two equal ends. These ends were carried down through two holes, one in each edge of the board $9\frac{1}{2}$ inches from the forward end, and each was tied to a roughly-rounded bit of pine stick round which it was reeled when not in use. By pulling these strings together, the fox was made to dart down his head, which was raised by the spring as soon as the string was slackened. By pulling one or the other string the fox could be made to dart to one or the other side of the board.

One man manipulated the fox, pulling a string with each hand. The lemming's holes were about $1\frac{1}{4}$ inches in diameter, one in each edge of the board and at such a distance from the end that when the string, which was 7 feet 4 inches long, was drawn through them, it crossed the board just where the fox's nose struck, when it was pulled down. The ends of the string were reeled round bits of stick. The lemming was a narrow strip of wolf's fur, about 3 inches long, doubled in the middle, with the middle of the string hitched into the bight. By pulling the ends of the string alternately, the lemming was made to jump out of the hole on one side, run across the board and into the other, very much as a live lemming runs from one tunnel to another on the tundra. It took two persons, one on each side, to handle the lemming. The fox-skin and spring appeared to be older than the rest of the machine. The board was originally 10 inches or 1 foot longer at each end, but had to be cut off to pack it.

Petroff mentions a similar custom among the "Nushegagmute" of Bristol Bay, of introducing stuffed animals moved with hidden strings in their performances;¹ and Dall² describes a festival at Norton Sound, where a dead seal was brought in and moved about with strings.

Description of festivals.—It is greatly to be regretted that we had not established such intimate relations with the natives, as afterwards was the case, in the winter of 1881-'82, since this was the only one of the two seasons that the great winter festival was held at Utkiavwii. In the winter of 1882-'83 there had been so many deaths in the village that the natives did not feel like celebrating any regular festival, and only indulged in a few impromptu dances late in the season. These were unfortunately held in the evening when the writer's tour of duty at the station prevented his witnessing them. Those of the party who did go over brought back only fragmentary and rather vague accounts of the performance. The confining nature of the work at the station prevented our witnessing any of the celebrations at Nuwuk or at Pernyû, when the "Nunatañmiun" visitors were entertained.

The best accounts we have of any performance is given by Lieut.

¹ Report, p. 135.

² Alaska, p. 156.

Ray. He and Capt. Herendeen went over to Utkiavwīñ by special invitation on December 3, 1881, and witnessed one scene of the "wood," or "tree dance." Many visitors were present from Nuwūk on the occasion of this dance, which lasted for two days and nights. On arriving at the village they found a crowd of upwards of 200 people assembled round the entrance of the kû'dyīgī. In front of the entrance were drawn up in line five men and two women dancing to the music of a drum and two singers.

They were all dressed in new deerskin clothes, with the snow-white flesh side turned out, and wore conical dance caps like that already described. They kept time to the music with their feet, moving their bodies to right and left with spasmodic jerks. To quote from Lieut. Ray's MS. notes:

Each dancer in turn sprang to the front and in extravagant gestures went through the motions of killing seal, walrus, and deer, and the pursuit of the whale. Each, as he finished, took his place in the line, was cheered by the crowd, then added his voice to the monotonous chant of the singers.

After all had finished as many as could get in entered the "dance house." At one end of this a small space was partitioned off with a piece of an old sail, and from the roof in the middle hung an object intended to represent a tree. This was made of two oblong boxes about 6 inches in diameter, open at both ends, the lower about 2½ feet long and the upper about 1½, hinged together with seal thong. At one side hung a wolf's skull, and on the other a dried raven. Two performers sat in the middle of the floor with their legs extended one between the other's legs, with his nose touching the tree. A row of old men beat drums and sang, while the performers chanted a monotonous song, in which could be heard the words "rum, tobacco, seal, deer, and whale."

Presently the bottom of the curtain was lifted and out crawled five men on all fours, wearing on their heads the stuffed skins of the heads of different animals—the wolf, bear, fox, lynx, and dog. They swung their heads from side to side in unison, keeping time to the music, uttering a low growl at each swing and shaking their rattle mittens. This they kept up for fifteen or twenty minutes, while the chant still went on, and the chief performer, with excited gestures, embraced the tree and rubbed his nose against it from time to time. At last all "sprang to their feet with a howl, and ended the dance with wild gestures." Similar scenes, with new performers, which our party did not stay to witness, succeeded this, with feasting in the different houses.

Capt. Herendeen also witnessed a small dance, lasting only one evening, which bore a curious resemblance to some of the so-called "favor figures" performed in the "German cotillon" of civilized dancers. This kind of dance was performed purely for pleasure, and had nothing re-

ligious or dramatic about it. The music was furnished by the usual orchestra of old men, who beat drums and sang a monotonous song. Each person who intended to take part in the dance came provided with some small article to be given away as a "favor," and rising in his turn, danced a few minutes, and then called out the name of the partner he wished to give it to. The latter then rose, and having received the "favor," danced a while with him, and then both resumed their places among the spectators.

We never heard of any such elaborate "donation parties" as are described at Norton Sound and the Yukon region, where a man "saves up his property for years" to distribute it among his guests.¹ A festival, however, was held at Nuwük in June, 1883, which apparently resembled the second kind described by Dall.² Two men came down from Nuwük to invite Lieut. Ray and Capt. Herendeen, telling them what presents they were expected to bring. Unfortunately it was considered that too much was asked and the invitation was declined. The messengers carried "notched sticks."³

Dances in which the children only take part, entirely for amusement, sometimes take place in the *kü'dyígt*, and people occasionally amuse themselves by dancing in the *iglu*. I have often seen the natives, especially the children and young people, dancing in the open air, and the dancing was always of very much the same character. The feet were but slightly moved, keeping time to the music, while the body swayed gracefully and the arms were waved from side to side. All the dancing which I saw was rather quiet and graceful, but they told us that when they got warmed up at a great dance they went at it with tremendous vigor, throwing off their garments to the waist. The dance which accompanies the song sung by the children to the aurora, however, is more violent. The dancer clenches his fists and, bending his elbows, strikes them against the sides of his body, keeping time to the song and stamping vigorously with the right foot, springing up and down with the left knee (see Fig. 373, from a sketch by the writer).



FIG. 373.—Youth dancing to the aurora.

We never heard of any of the licentious festivals or orgies described by Egede⁴ and Kumlien.⁵

¹See Dall, *Alaska*, p. 151.

²*Ibid.*, p. 154.

³Compare the wand "curiously ornamented and carved" carried by the messenger who was sent out to invite the guests to the festival at Norton Sound, *Alaska*, p. 154.

⁴*Greenland*, p. 139.

⁵*Contributions*, p. 43.

The festivals of the eastern Eskimo appear to be less formal and elaborate than those in the west, consisting simply of singing and dancing.¹

TOYS AND SPORTS FOR CHILDREN AND OTHERS.

Playthings.—Though the children amuse themselves with a great many sports and plays, we saw very few toys or playthings in use. We brought home six objects which appear to have no use except as playthings.

Fig. 374a (No. 89806 [1189] from Nuwük) is a whirligig in principle very like that made for civilized children. It is a block of spruce, fitted with a shaft of narwhal ivory. This fits loosely in the straight tubular handle, which is a section of the branch of an antler, with the soft inside tissue cut out. A string of seal thong passes through a hole in the middle of the handle and is fastened to the shaft. This string is about 8 feet long, and about half of it is tied up into the hank to make a handle for pulling it. It works very much like a civilized child's whirligig. The string is wound around the shaft and a smart pull on the handle unwinds it, making the block spin round rapidly. The reaction, spinning it in the opposite direction, winds up the string again. A couple of loose hawk's feathers are stuck into the tip of the block, which is painted with red ocher for about an inch. Four equidistant stripes of the same color run down the sides to a border of the same width round the base. This was made for sale and appears to be an unusual toy. I do not recollect ever seeing the children play with such a toy. It is called kai'psa (Gr. kâvsák, "a whirligig or similar toy").

Fig. 374b is a similar whirligig from Utkiavwîñ (No. 89807 [1356]). The block, which is 4.2 inches long, is made of the solid tip of a mountain sheep's horn, and is elaborately ornamented with a conventional pattern of lines and "circles and dots," incised and colored red with ocher. The shaft is of hard bone, and the line has a little wooden handle at the end. The block is so heavy that it will hardly spin.

Fig. 375 (No. 56491 [46] from Utkiavwîñ) is a teetotum (also called kaipsa). The shaft is of pine and the disk of spruce and is ornamented with black lead marks, forming a border about one-quarter inch broad

¹Descriptions of Eskimo festivals are to be found in Egede's *Greenland*, p. 152, and Crantz, *History of Greenland*, vol. 1, p. 175, where he mentions the sun feast held at the winter solstice. This very likely corresponds to the December festival at Point Barrow. If the latter be really a rite instituted by the ancestors of the present Eskimo when they lived in lower latitudes to celebrate the winter solstice, it is easy to understand why it should be held at about the same time by the people of Kotzebue Sound, as stated by Dr. Simpson, *op. cit.*, p. 262, where, as he says, the reindeer might be successfully pursued throughout the winter. It is much more likely, considering the custom in Greenland, that this is the reason for having the festival at this season than that the time should be selected by the people at Point Barrow as a season when "hunting or fishing can not well be attended to," as Simpson thinks. We should remember that this is the very time of the year that the seal netting is at its height at Point Barrow. See also Parry, *Second Voyage*, p. 538; Kumlien, *Contributions*, p. 43; Gilder, *Schwatka's Search*, p. 43; Beechey, *Voyage*, p. 288 (Kotzebue Sound); Dall, *Alaska*, p. 149 (very full and detailed); Petroff, *Report, etc.*, pp. 125, 126, 129, 131 (quoted from Zagoskin), 135, 137 (quoted from Shelikhof), and 144 (quoted from Davidof); Hooper, *Tents, etc.*, pp. 85, 136; and Nordenskiöld, *Vega*, vol. 2, pp. 22, 131.

on each face. The upper face is divided into quadrants by four narrow lines radiating from the hole, and each quadrant is divided into two by bands one-quarter inch broad. The order of these lines is reversed on

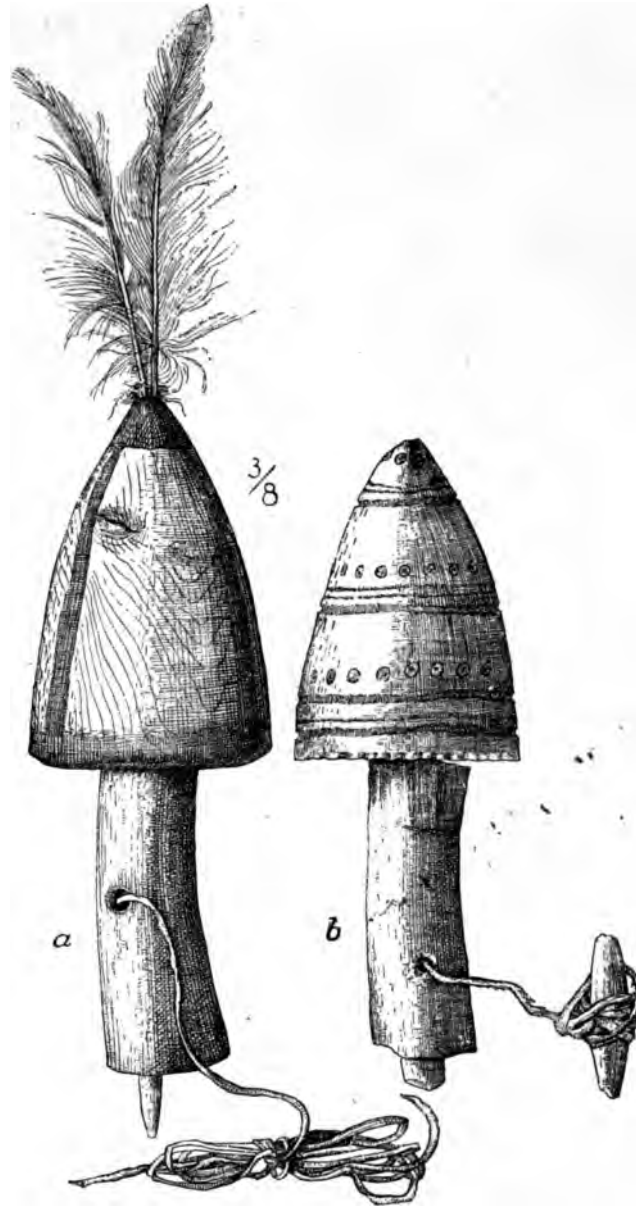


FIG. 374.—Whirligigs.

the under face. This is spun, like a common teetotum, with the fingers, and does not seem to be common. I do not recollect ever seeing any one except the maker of this toy spinning one.

The same is true of No. 89722 [1087] (Fig. 376, from Utkiavwīñ) which is what American boys would call a "buzz" toy. It is of pine wood,



FIG. 375.—Teetotum.

and through two round holes in the middle are passed the ends of a piece of stout sinew braid, which are knotted together. When the board is placed in the middle of the string it can be made to spin round and whiz by alternately pulling and relaxing the ends of the string. The board is rather elaborately painted. One end has a border of black lead on both faces, the other a similar border of red paint, which appears to be red lead. Broad red bands form a square 1 inch across around the holes, with lines radiating from each corner to the corners of the board, on both faces. On the spaces between these lines are figures rudely drawn with black lead.

On one face, in the first space, is a goose; in the second, a man with a staff; in the third, the conventional figure of a whale's tail; and in the fourth, a whale with line and float attached to him, pursued by a whaling umiak. On the other side, the first space contains a dog or wolf walking; the second, two of these animals, sitting on their haunches, facing each other; the third, another walking; and the fourth, a reindeer in the same attitude.

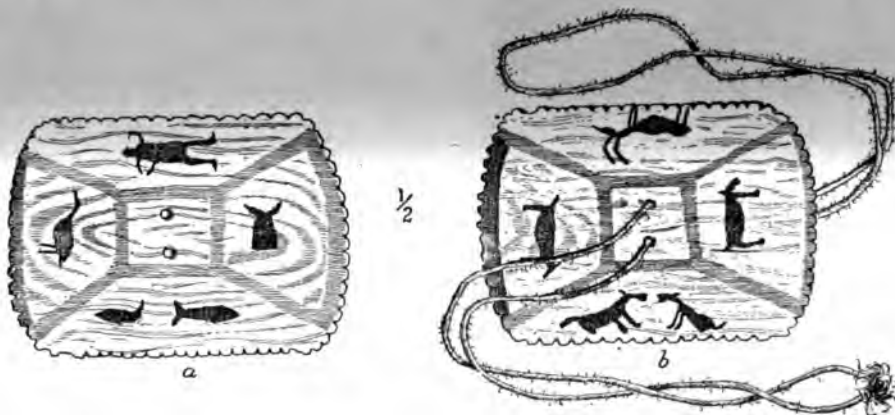


FIG. 376.—Buzz toy.

Fig. 377 (No. 89800 [1331] from Utkiavwīñ), on the other hand, is a toy which the children often play with. It is the well known "whizzing-stick" found among savages in so many widely distant parts of the world, and often used in religious ceremonies. The Eskimo name is Imglúta. It consists of a thin board of pine wood, fastened by a string

of sinew braid about 1 foot long to the end of a slender rod, which serves as a handle. When swung rapidly round by the handle it makes a loud, whizzing sound. It is very neatly made, and painted with black lead and red ocher. The tips of the board are black for about one-half inch and the rest is red, and the upper half of the handle marked with five rings about one-half inch wide and 1 inch apart, alternately black and red. This appears to be purely a child's toy and has no mystical signification. I never saw one in the hands of an adult. This specimen was made and brought over for sale by a lad about thirteen or fourteen years old.



FIG. 377.—Whizzing stick.

tip, is a little hollow, large enough to hold a small pebble, and the other is cut into sharp teeth. This is purely an instrument of mischief and is used for shooting tiny pebbles at people when they are looking the other way. Mûñialu showed us, with great glee, in an expressive pantomime, how a boy would hit a person in the eye with a little pebble, and, when the man turned round angrily, would have the snapper slipped up his sleeve and be looking earnestly in another direction. The toothed end, he said, was for mischievously scratching hairs out of a man's coat when he was looking another way. The "snapper" is used as follows: It is held in the left hand, a little pebble is set in the socket, and the tip of the whalebone bent back with the right hand. When this end is let go the elasticity of the whalebone drives the pebble at the mark with considerable force. As far as I can learn this mischievous toy is peculiar to the Northwest.

Fig. 378 (No. 56687 [181] from Utkiavwîñ) is another plaything rather common with the boys, which takes the place of the American boy's "bean snapper." It is known by the name of mîtî-glîgaun, and is a rod of whalebone, stiff and black, 4·8 inches long and 0·5 wide, narrowed and bent sharply up for about an inch at one end. On the upper side of this end, close to the



FIG. 378.—Pebble snapper.

Dolls.—Though several dolls and various suits of miniature clothing were made and brought over for sale, they do not appear to be popular with the little girls. I do not recollect ever seeing a child playing with a doll. Those in the collection, indeed, seem rather less intended for playthings than as, so to speak, works of art to catch the fancy of the strangers. Such an object is No. 89728 [1304] (Fig. 379 from Utkiavwñ.) This is a human head carved out of pine wood, and shouldered off at the neck into a stout round peg, which is fitted into the middle of a thick elliptical pedestal of the same wood, flat on the bottom and convex on top. The head is dressed in a neatly made hood of thin deerskin with the flesh side cut off round the shoulders and exposing only the face. The face is very neatly carved, and has bits of green oxidized copper inlaid for the eyes. The cheeks, gums, and inside of the mouth are colored with red ocher, and the hair, eyebrows, and beard with black lead. The top of the pedestal is painted red and divided into eight equal parts by shallow grooves colored with black lead. The height of the whole object is $4\frac{1}{2}$ inches, and the workmanship is remarkably good.



FIG. 379.—Carving of human head.

No. 89827 [1138] (from Utkiavwñ), on the other hand, is very roughly and carelessly made. It is 18.2 inches long, roughly whittled out of a flat piece of redwood board into the shape of a man with his legs wide apart and holding up his hands on each side of his head. The arms are very short and broad, with five fingers all nearly of the same length, and the legs are simply two straight four-sided pegs rounded on the edges. It is dressed in a hooded frock of seal gut reaching to the knees and leaving only the face and hands uncovered, and has sealskin knee boots on the legs. The face is rudely in relief, with two narrow bits of ivory inlaid for eyes, and a long canine tusk of the same material inserted in each corner of the mouth. Three small round bits of wood are inlaid in the forehead, one in the middle and one over each eye, and one in the right cheek above the corner of the mouth. The gut frock is carelessly made of irregular pieces. It is trimmed round the bottom and the edge of the hood with a strip of dogskin, but is left with a raw

tled out of a flat piece of redwood board into the shape of a man with his legs wide apart and holding up his hands on each side of his head. The arms are very short and broad, with five fingers all nearly of the same length, and the legs are simply two straight four-sided pegs rounded on the edges. It is dressed in a hooded frock of seal gut reaching to the knees and leaving only the face and hands uncovered, and has sealskin knee boots on the legs. The face is rudely in relief, with two narrow bits of ivory inlaid for eyes, and a long canine tusk of the same material inserted in each corner of the mouth. Three small round bits of wood are inlaid in the forehead, one in the middle and one over each eye, and one in the right cheek above the corner of the mouth. The gut frock is carelessly made of irregular pieces. It is trimmed round the bottom and the edge of the hood with a strip of dogskin, but is left with a raw

edge round the wrists. The boots are rather well made models of the regular waterproof boots, with soles of white sealskin and a band round the top 1 inch wide of the same material. A short peg projects from the top of the forehead. A string of stout sinew braid about 2 feet long is passed through a hole in the middle of the body and a knot tied in the end in front. Though the design is elaborate the workmanship is very rude, and the clothes seem to be made of odds and ends. The maker perhaps had in mind a fabulous man with teeth like a walrus, about whom we heard some fragmentary traditions.

Fig. 380 (No. 89826 [1358] from Utkiavwīñ) is a clever, though somewhat roughly made, mechanical doll. It represents a man dressed in deerskins sitting with his legs outstretched and holding in his extended left hand a drum and in his right a stick, as if beating the drum. The arms are of whalebone, and by pressing them he can be made to beat the drum. The doll is made of a single piece of wood—a knot with two branches, which make the legs. (I learned this from Capt. Herendeen, who saw this doll at the village before it was finished.) The height of the sitting figure is 11½ inches.



FIG. 380.—Mechanical doll: drum player.



FIG. 381.—Mechanical toy: kaiak paddler.

A still more ingenious mechanical toy which, however, like the preceding, was made for sale, is shown in Fig. 381 (No. 89855 [1351] from Utkiavwīñ). This is a man sitting in a kaiak in the attitude of paddling

on the left side with a single-bladed paddle. His arms are of whalebone, and by means of strings he can be made to paddle and turn his head from side to side. The kaiak is 29 inches long, very neatly carved from a single block of wood, and solid except at the cockpit. The bottom is flat, to allow it to stand on the floor, but it is otherwise precisely of the model of the kaiaks in the Museum from the Mackenzie and Anderson region. The nation who made it called it a "Kūmā'd'liū" kaiak. It is painted all over with red ocher, except on the bottom. The figure has no legs and fits into the cockpit, which is without any coaming. The head is separate and mounted on a long, slender pivot, which is fitted into a hole in the neck just loosely enough to allow it to turn easily. It is dressed in a hood of seal gut. The face is very natural, though rather rudely carved, and is lightly colored all over with red ocher, with the mouth painted deeply red, and the eyebrows, eyes, nostrils, and beard marked with black lead. The arms are narrow strips of whalebone, the ends of which protrude at the wrists, and are tied to the paddle by the ends of the strings which work it. The body is covered with a gut shirt.

The paddle is of the common shape, and has the blade and the lower end of the shaft painted red. The strings for working this contrivance are of fine sinew braid. One string is tied into a little hole in the edge of the hood, where the left ear would be, the other passes round the



FIG. 382.—Kaiak carved from a block of wood.

edge of the hood, and is tied at the right ear. These strings cross back of the head, and pass through two neat little ivory eyebolts inserted in the deck, 1 inch abaft the cockpit, and 1 inch apart. The strings from the hands are not crossed, but pass through two similar eyebolts, one at each edge of the deck, 2.5 inches from the cockpit. The ends of each set of strings are tied together. When the right pair and left pair of strings are pulled alternately, the man makes a stroke and looks to the right, then "recovers" and looks to the left. Both stroke and "recovery" are aided by the elasticity of the arms. This specimen shows a great deal of mechanical ingenuity, and was the only finished object of the kind seen.

Fig. 382 (No. 89856 [783] from Utkiavwī) is a kaiak intended for a similar toy, which, when brought over for sale, had an unfinished armless doll in the cockpit. This was, unfortunately, lost in unpacking. The kaiak, which is 27.6 inches long, is not new, but has been freshly scraped and painted on deck. It is also a foreign kaiak, being precisely like a model brought by Mr. Nelson from Norton Sound. It is not unlikely that this boat itself came from that region through the "Nunatañ-

miun," unless, possibly, a southern kaiak had passed through the hands of enough people to reach a point where some Point Barrow native might see it. As far as we know no Point Barrow natives visit the regions where this form is used, and the model seems too accurate to have been made from a description.

Juvenile implements.—We sometimes saw the children playing with little models of the implements and utensils used by their parents. Perhaps the commonest thing of this sort is the boy's bow. As soon as a boy is able to walk his father makes him a little bow suited to his strength, with blunt arrows, with which he plays with the other boys, shooting at marks—for instance, the fetal reindeer brought home from the spring hunt—till he is old enough to shoot small birds and lemmings. We also saw children playing with little drums, and one man made his little boy an elaborate *kā'moti* about 4 feet long. In the collection are a number of miniature implements, spears, etc., some of which have been already described, which were perhaps intended as playthings for the children. As, however, they were all newly made, it is possible that they were merely intended to catch the fancy of the strangers.

No. 89451 [1113], from Nuwtik, is a little snow shovel 4.5 inches long, with a blade 2.1 inches wide, rather roughly carved from a piece of walrus ivory.

No. 89695 [1280] from Utkiavwñ, is a similar model of a deer lance, 7 inches long, all in one piece and made of reindeer antler.

No. 89797 [1186] from Utkiavwñ, is a quite well made model of the drum used for accompanying singing and dancing, and is almost large enough to have been used for a plaything. The stick is entirely out of proportion, being merely a roughly whittled bit of lath, 13 inches long.

Games and sports.—The men have very few sports, though I have sometimes known them to amuse themselves by shooting at a mark with their rifles, and I once heard of a number of them wrestling. As far as I could learn, they wrestle "catch-as-catch-can" without any particular system. We never heard of anything like the athletic sports mentioned by Egede¹ and Crantz² or the pugilism described by Schwatka among the people of King William's Land, when two men stand up to each other and exchange buffets till one or the other gives in.³ The women are very fond of playing "cat's cradle" whenever they have leisure, and make a number of complicated figures with the string, many of which represent various animals. One favorite figure is a very clever representation of a reindeer, which is made by moving the fingers to run down hill from one hand to the other.⁴ Another favorite amusement with the women and children is tossing three bullets or small pebbles with the right hand, after the manner of a juggler,

¹ Greenland, p. 162.

² Vol. 1, p. 177.

³ Science, vol. 4, No. 98, p. 545.

⁴ Hall (Arctic Researches, p. 129) says the "cat's cradle" is a favorite amusement in Baffin Land, where they make many figures, including representations of the deer, whale, seal, and walrus.

keeping one ball constantly in the air. Some of the women are very skillful at this, keeping the balls up for a long time. This play is accompanied by a chant sung to a monotonous tune with very little air, but strongly marked time. I never succeeded in catching the words of this chant, which are uttered with considerable rapidity, and do not appear to be ordinary words. It begins "yúe yúe yuká, yúe yúe yuká;" and some of the words are certainly indelicate to judge from the unequivocal gestures by which I once saw them accompanied.

In the winter the young women and girls are often to be seen tossing a snowball with their feet. A girl wets some snow and makes a ball about as big as her two fists, which of course immediately becomes a lump of ice. This she balances on the toe of one foot and with a kick and a jump tosses it over to the other foot which catches it and tosses it back. Some women will keep this up for a number of strokes.

The young people of both sexes also sometimes play football, kicking about an old mitten or boot stuffed with rags or bits of waste skin. I never saw them set up goals and play a regular game as they did in Greenland.¹

The little girls also play with the skipping rope. I once watched three little girls jumping. Two swung the rope and the other stood in the middle and jumped. First they swung the rope under her feet to the right, then back under her feet to the left, and then once or twice wholly round under her feet and over her head, and then began again.² They also play at housekeeping, laying sticks round to represent the sides of the house, or outlining the house by pressing up ridges of snow between their feet. Sometimes they mark out a complicated labyrinth on the snow in this way, and the game appears to be that one shall guard this and try to catch the others if they come in, as in many of the games of civilized children.

I have already spoken of the formal children's dances. They often also dance by themselves, beating on old tin cans for drums. One night I saw a party of children having quite an elaborate performance near our station. The snow at the time was drifted up close under the eaves of the house. On the edge of the roof sat three little boys, each beating vigorously on an empty tomato can and singing at the top of his lungs, while another boy and a little girl were dancing on the snow waving their arms and singing as usual, and at the same time trying to avoid another girl about thirteen years old, who represented a demon. She was stooping forward, and moving slowly round in time with the music, turning from side to side and rolling her eyes fiercely, while she licked the blade of an open clasp knife, drawing it slowly across her lips. They seemed intensely in earnest, and were enjoying themselves hugely. After dancing a while at the station they went over to the village, and as they told me the next day spent the whole night singing in a vacant snow-house.

¹ See Egede, p. 161, and Crantz, vol. 1, p. 177.

² Compare Parry's Second Voyage, p. 541.

They also amuse themselves in the winter by sliding on their knees down the steepest snowdrifts under the cliffs. A good deal of the time, however, they are following their parents or other grown people, catching little fish or fetching twigs for firewood or helping drive the dogs, though as a rule they are not made to do any regular work until they are pretty well grown.

MUSIC.

Musical instruments.—The only musical instrument in use among these people is the universal drum¹ or tambourine (këlyau), consisting of a membrane stretched over a hoop with a handle on one side, and used from Greenland to Siberia. It is always accompanied by the voice singing or chanting. The player holds the handle in his left hand with the membrane away from him, and strikes alternately on each side of the rim with a short heavy piece of ivory, or a long slender wand, rotating the drum slightly at the same time to meet the stroke. This produces a loud, resonant, and somewhat musical note. There appears, however, to be no system of tuning these drums, the pitch of the note depending entirely on accident.

We collected four of these drums, of which every household possesses at least one. They are all of essentially the same construction, but vary in size. No. 56741 [79], Fig. 383, has been selected as the type. The frame is a flat strip of willow 67 inches long, 1 inch wide, and 0.3 inch thick, bent till the two ends meet, thus making a hoop 22.2 inches long and 19 inches wide. The ends are fastened together by a strap of walrus ivory on the inside of the hoop, secured to the wood by neat stitches of black whalebone. The handle is of walrus ivory 5.2 inches long. The larger end is rather rudely carved into a human face. Back of this head and 1 inch from the large end of the handle is a square transverse notch, deep and sufficiently wide to fit over both rim and strap at the joint. It is held on by a lashing of sinew braid passing through holes in rim and strap, one on each side of the handle, and a large transverse hole in the latter, below and a little in front of the notch. The membrane, which appears to be a sheet of the peritoneum of a seal, is stretched over the other side of the hoop, which is beveled on the outside edge, and its edge is brought down to a deep

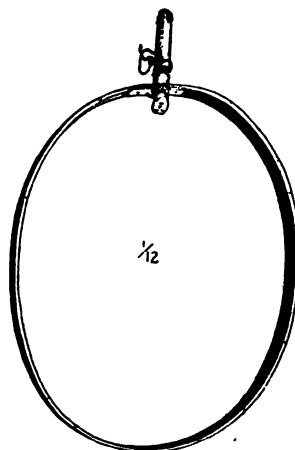


FIG. 383.—Drum.

¹ Nordenskiöld calls this "the drum, or more correctly, tambourine, so common among most of the Polar peoples, European, Asiatic, and American; among the Lapps, the Samoyeds, the Tunguses, and the Eskimo." (Vega, vol. 2, p. 128).

groove 0.2 inch from the edge of the hoop and 0.3 inch wide, running round the hoop, where it is secured by three or four turns of sinew braid. The end of this string is crossed back and forth four or five times round the handle, where it is fitted to the hoop and then wrapped around it and finished off with a knot.

No. 56742 [514], from Utkiavwīn, is a similar drum, but somewhat larger, the hoop being 24.6 inches long and 22 inches wide. It is of the same materials, except that the strap at the joint is of reindeer antler. Opposite the joint the hoop appears to have shown signs of weakness, as it has been strengthened with two straps of walrus ivory, one on the inside and one on the outside of the hoop, fastened together



FIG. 384.—Handle of drum secured to rim.

by stitches of sinew which pass through the wood and through both straps. The inside strap is 4.7 inches long, the outer 3.5 inches long, and only half the width of the rim, and is let into the latter. This strap appears to have been put on first, as at each end there is a stitch which only runs through the

wood. The handle is fastened on as before, but has two transverse holes instead of one, and has four deep rounded notches for the fingers. (See Fig. 384.) The joint is tightened by driving a thin sliver of wood in at the bottom of the notch.

No. 56743 [31], from Utkiavwīn, closely resembles the type, but has a notch for the thumb as well as for the forefinger on the handle. The hoop is 23.5 inches long and 21 wide. No. 56740 [80] from the same village is rather smaller than the ordinary drums, having a hoop 16.2 inches long and 14.7 wide. The handle is of antler, but has the usual face on the large end.

We also brought home eight handles for these drums, which exhibit but slight variations. The commonest material for the handle is walrus ivory. Only two out of the twelve are of antler. They are usually about 5 inches long (the longest is 5.4 inches and the shortest 4.6). Handles with grooves for the fingers and sometimes for the thumb seem to be quite as common as the plain handles. Fig. 385*a* represents an ivory handle from Nuwūk (No. 89267 [898]), which has a groove for each finger and a shallow one on the right side for the thumb. It is 5 inches long.

With one exception all these handles have the large end more or less neatly carved into a human face, with the mouth open as if singing,

probably from an idea similar to that which makes the decorative artists of civilized countries ornament the pipes of a great organ with singing faces. This face is usually in the position shown in the specimens figured, but No. 89266 [784] (Fig. 385*b*), a handle of antler from Utkiavwñ, has the axis of the face parallel to that of the handle. Nos. 89269 [975] and 56515 [76], both from Utkiavwñ, are peculiar in their ornamentation. They are both of walrus ivory. The former has a well-carved face at the large end with small blue beads inlaid for eyes. In addition to this the small end has been rather freshly carved into a rather rude seal's head, and an ornamental pattern has been incised round the middle. This specimen exhibits the grooves for the fingers very well. The latter is a plain handle, but has a little sharp tusk

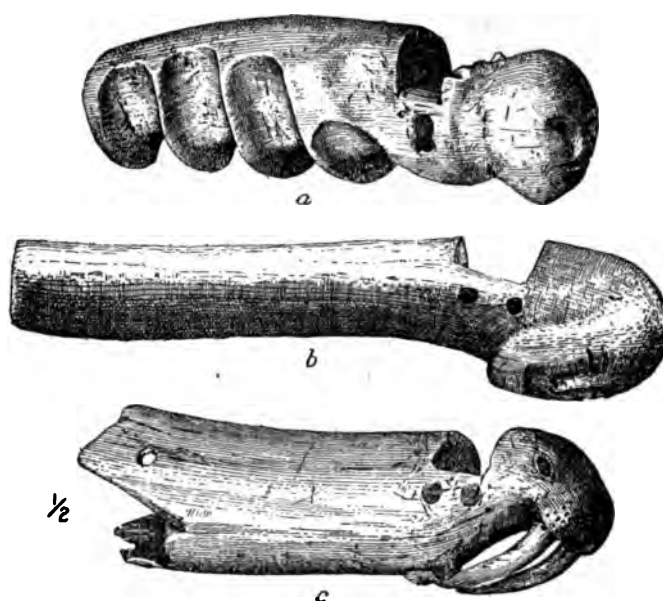


FIG. 385.—Drum handles.

inserted at each corner of the mouth. The only handle without a human face on the large end (No. 56514 [65] Fig. 385*c*, from Utkiavwñ) is peculiar in many respects. It is the butt end of a small walrus tusk, with a large pulp cavity, the edges of which are much notched and irregularly broken. The notch for fitting it to the handle is at the smaller end, which is neatly carved into a very good figure of a walrus head, with the tusks bent back to the under side of the handle. The head has oval bits of wood inlaid for eyes. None of the drums or handles in the collection are newly made.

The stick employed for beating these drums is commonly a slender elastic wand about 2½ feet long, but they also sometimes use a short

thick stick of ivory resembling that used by the eastern Eskimo.¹ We brought home two of these sticks, both of which belong with the drum No. 56743 [31]. Fig. 386a (No. 56540 [31]) is a roughly cylindrical rod of ivory with a hole for a lanyard. The larger end is ornamented by rudely incised and darkened lines which represent the eyes and outline of the mouth of a "bow-head" whale. Fig. 386b (No. 56540 [31a]) is a plain round stick of ivory 9-4 inches long. It is rather roughly made and somewhat warped. The use of the long stick is perhaps derived from Siberia, where the short thick stick does not appear to be used.²

Holes in the membrane of the drum are sometimes mended with pieces of the crop of the ptarmigan. At any rate, this is what I was told by a native, who begged from me the crops of two of these birds that I was skinning, saying that he wanted them to mend his drum. These drums are always beaten as an accompaniment to invocations of spirits or incantations. This practice is so common that some authors are in the habit of always speaking of them as "shaman drums". As I have



FIG. 386.—Ivory drumsticks.

already stated, their most common use is purely as a musical instrument, and they are used not only by the so-called "shamans" but by everybody.

Character and frequency of music.—Their music consists of monotonous chants, usually with very little perceptible air, and pitched generally in a minor key. I could not perceive that they had any idea of "tune," in the musical sense, but when several sang together each pitched the tune to suit himself. They, however, keep excellent time. The ordinary songs are in "common" or $\frac{1}{4}$ time.³ The words are often extemporaneous, and at tolerably regular intervals comes the refrain, "A yáña yáña, a yáña ya," which takes the place of the "ámna aja" of the eastern Eskimo. Sometimes, when they are humming or singing to themselves, the words are nothing but this refrain. Their voices, as a general thing, are musical.

Like all Eskimo, they are very fond of music, and are constantly

¹See, for example, Bossell's *Naturalist*, vol. 18, pt. 9, p. 881. (The people of Smith Sound use the femur of a walrus or seal. Cf. Capt. Lyon's picture, Parry's 2d Voyage, pl. opposite p. 530, and Gilder, Schwatka's Search, p. 43, where the people of the west shore of Hudson Bay are described as using a "wooden drumstick shaped like a potato masher.")

²See Hooper, *Tents*, etc., p. 51, and Nordenskiöld, *Vega*, vol. 2, pp. 23 and 128; figure on p. 24.

³Compare Crantz, vol. 1, p. 170.

singing and humming to themselves, sometimes, according to Capt. Herendeen, waking up in the night to sing. Besides their regular festivals they often amuse themselves in their houses by singing to the drum. They are fond of civilized music, and, having usually very quick and rather acute ears, readily catch the tunes, which they sing with curiously mutilated words. We found "Shoo Fly" and "Little Brown Jug" great favorites at the time of our arrival, and one old woman from Nuwük, told us with great glee, how Magwa (Maguire) used to sing "Tolderolderol." Our two violins, the doctor's and the cook's, were a constant source of delight to them.

Capt. Parry¹ gives an excellent account of the music of the people of Fury and Hecla Straits.²

I regret extremely that I was not enough of a musician to write down on the spot the different tunes sung by these people. The ordinary monotonous chant is so devoid of air that I can not possibly recollect it, and the same is true of the chant which accompanies the game of pebble-tossing. I was able, however, to catch by ear the song sung by the children when they dance to the aurora. I never had the whole of this song, which we were told had a large number of stanzas. The first three are as follows:

1. Kióya ke, kióya ke,
A, yáñu, yáñu, ya,
Hwi, hwi, hwi, hwi!
2. Túdlímaná, túdlímaná,
A yáñu, yáñu, ya,
Hwi, hwi, hwi, hwi!
3. Kálutaná, kalutaná,
A yáñu, yáñu, ya,
Hwi, hwi, hwi, hwi!

We did not succeed in learning the meaning of these words, except, of course, that the first word, kióya, is aurora. When there is a bright aurora, the children often keep on dancing and singing this song till late into the night. A tune was introduced in the spring of 1883 by a party of men from Kílauwitáwñ, who came up to take part in the whale-fishing at Utkiavwñ. It became at once exceedingly popular, and everybody was singing or humming it. It is peculiar in being in waltz or $\frac{3}{4}$ time, and has considerably more air than the ordinary tunes. I heard no words sung to it except: "O hai hai yáña, O hai yáña, O haija he, haija he." Mr. Dall informs me that he recognizes this tune as one sung by the Indians on the Yukon.

ART.

The artistic sense appears to be much more highly developed among the western Eskimo than among those of the east. Among the latter,

¹ 2d Voyage, p. 541.

² See also the passage from Crantz, quoted above; Dall, Alaska, p. 16; and Nordenskiöld, Vega, vol. 2, pp. 23 and 130.

decoration appears to be applied almost solely to the clothing, while tools and utensils are usually left plain, and if ornamented are only adorned with carving or incised lines.¹ West of the Mackenzie River, and especially south of Bering Strait, Eskimo decorative art reaches its highest development, as shown by the collections in the National Museum. Not only is everything finished with the most extreme care, but all wooden objects are gaily painted with various pigments, and all articles of bone and ivory are covered with ornamental carvings and incised lines forming conventional patterns.

There are in the collections also many objects that appear to have been made simply for the pleasure of exercising the ingenuity in representing natural or fanciful objects, and are thus purely works of art. Want of space forbids any further discussion of these interesting objects. There is in the Museum sufficient material for a large monograph on Eskimo art. As would naturally be expected, art at Point Barrow occupies a somewhat intermediate position between the highly developed art of the southwest and the simple art of the east. I have given sufficient figures in my description of their clothing and various implements to illustrate the condition of purely decorative art. A few words may be added by way of résumé. It will be noticed that whenever the bone or ivory parts of weapons are decorated the ornamentation is usually in the form of incised lines colored with red ocher or soot. These lines rarely represent any natural objects, but generally form rather elegant conventional patterns, most commonly double or single borders, often joined by oblique cross lines or fringed with short, pointed parallel lines.

A common ornament is the incised "circle and dot," so often referred to in the foregoing descriptions. This is a circle about one-quarter inch in diameter, described as accurately as if done with compasses, with a deeply incised dot exactly in the center. This ornament is much more common south of Bering Strait, where, as Mr. L. M. Turner informs me, it is a conventionalized representation of a flower. Some of the older implements in our collection, ornamented with this figure, may have been obtained by trade from the southern natives, but the Point Barrow people certainly know how to make it, as there are a number of newly made articles in the collection thus ornamented. Unfortunately, we saw none of these objects in the process of manufacture, as they were made by the natives during odd moments of leisure, and at the time I did not realize the importance of finding out the process. No tool by which these figures could be made so accurately was ever offered for sale.

Neither Mr. Turner nor Mr. Dall, both of whom, as is well known, spent long periods among the natives of the Yukon region, ever observed the process of making this ornament. The latter, however, suggests that it is perhaps done with an improvised centerbit, made by sticking

¹See the various accounts of the eastern Eskimo already referred to.

two iron points close together in the end of a handle. While weapons are decorated only with conventional patterns, other implements of bone or ivory, especially those pertaining to the chase, like the seal drags, etc., already mentioned, are frequently carved into the shape of animals, as well as being ornamented with conventional patterns. Carvings of animals' heads usually have the mouth, nostrils, etc., indicated by blackened incisions, and often have small, colored beads, bits of wood, or ivory inlaid for the eyes. When beads are used, the perforation of the bead is generally made to represent the pupil of the eye. Beads were also used for ornamenting dishes and other wooden objects.

The harpoon blade boxes of wood carved into the shape of the animal to be pursued have been already described. Other wooden objects, like the shafts of lances, and arrows, paddles, boxes, dishes, the woodwork of snowshoes, sledges, umiaks, etc., are frequently painted either all over, or in stripes or bands. The pigment generally used is red ocher, sometimes set off with stripes of black lead. The only case in which a different pigment is used is that of some arrows from Sidaru, which, in addition to the usual black or red rings, have a rather dingy green ring round the shaft. This green looks as if it might have been derived from the "green fungus or *peziza*," mentioned by Dall as in use among the ancient Aleuts.¹ The red ocher is applied smoothly in a rather thin coat which looks as if it were always put on in the manner observed by Capt. Herendeen, who saw a man painting a new sled at Utkiavwîñ. He licked the freshly scraped wood with his tongue, so as to moisten it with saliva and then rubbed it with a lump of red ocher. The custom of painting wooden objects with red ocher seemed to be rather more common among the "Nunatañmiun," from whom perhaps the Point Barrow people borrowed the fashion, which is not mentioned among the eastern Eskimo. Nordenskiöld states that red is the favorite color among the natives of Pitlekaj.²

The painting of the arrow shafts in many cases curiously resembles the marks used by modern archers to distinguish the ownership of their shafts, and may have formerly served the same purpose. We made no inquiries about the matter on the spot, and there is no certain evidence in the series of arrows collected that these are or are not marks of ownership. Some arrows, apparently the property of the same man, have different marks, while arrows from different villages are similarly marked. On examining our series of fifty arrows from the three villages (fourteen from Nuwûk, twenty from Utkiavwîñ, and sixteen from Sidaru) it will be seen that the commonest style of painting is to have the shaft painted red from the beginning or middle of the feathering to about one-fifth of its length from the head. Twenty arrows are marked in this way—eleven from Nuwûk, belonging to at least two distinct sets, and nine from Utkiavwîñ, belonging to three sets. Nine have

¹Contributions to N. A. Ethn., vol. 1, p. 86.

²Vega, vol. 2, p. 135.

about 8 inches of the middle of the shaft painted red, with a black ring at the middle of the feathering. Seven of these are from Sidaru, one from Nuwuk, and one from Utkiavwii. Five from Sidaru have a red ring round the middle, and a green one about the middle of the feathering, and four of the same set have also a red ring in front of the green one. Three from Utkiavwii, belonging to different sets, have the shaft painted red from the middle to the beginning of the feathering, and three red rings 2 inches from the nock. Seven belonging to these sets from the two northern villages are unpainted.

A set of two small arrows which belong with the boy's bow No. 89904 [786] are peculiar in their marking. About 5½ inches of the middle of the shaft is painted red, there is a black ring round the middle, and a black spiral running the whole length of the feathering.

The only decorative work in metal is to be seen in the pipes and their accompanying picks and fire steel which have already been described.

In addition to these illustrations of decorative art, we brought home a series of seventy-nine objects which may be considered as purely works of art without reference to decoration. Some of the older objects in this series perhaps also served the purpose of amulets or charms,¹ but a number of the new ones were made simply as works of fancy for sale to us. These objects are all carvings of various materials, sometimes very rude and sometimes very neatly finished, but in most cases even when rudely made highly characteristic of the object represented.² Walrus ivory, usually from the tusks, but sometimes from the teeth, is the commonest material for these carvings. Thirty-six of the series are made of this material, which is very well suited for the purpose, being worked with tolerable ease, and capable of receiving a high finish. Soapstone, from the ease with which it can be cut, is also rather a favorite material. Seventeen of these carvings are made of soapstone, in many cases evidently pieces of an old lamp or kettle. Other mineral substances appear to be rarely used. Three images, all made for sale and by the same hand, are of soft white gypsum and one tiny image of a bear is rudely flaked out of gray flint. (There are in the collection a number of rude images of whales, made by flaking from flint, jasper, and glass, but as these were ascertained without doubt to be amulets, they will be described under that head.) Eleven are made of wood, nine of bone, one of antler, and one of the tooth of the polar bear. Twenty-three of these carvings represent human beings, sometimes intentionally grotesque and caricatured; twenty-one, bowhead whales; fourteen, polar bears; five, seals; three, walruses; one, a beluga; one, a fish; and seven, fanciful monsters. Four are ornamented objects made for sale; not, strictly speaking, images.

Six of the representations of the human face or figure are of wood,

¹ Compare Nordenskiöld, Vega, vol. 2, p. 126 and Rink, Tales, etc., p. 52.

² Compare Bessels, Naturalist, vol. 18, No. 9, p. 880, where he speaks of finding among the people of Smith Sound ivory carvings representing animals and human figures "exceedingly characteristic." (See also Fig. 21 of the same paper.)

and with one exception were all freshly made for sale. Fig. 387 represents the only antique specimen of this kind (No. 56496 [655]). This was found among the débris in one of the old ruined houses in Utkiavwñ by Lieut. Ray, and is very old, blackened, and dirty. The carving was evidently done with a blunt instrument, probably a stone tool. This specimen, which was perhaps the head of a doll, is 7.1 inches in total length, with a head 3.4 inches long. We saw no similar object of modern construction.

Figs. 388*a* and 388*b* (Nos. 89726 [1192] and 89727 [1193], from Utkiavwñ) are a pair of rather roughly whittled human figures, a man and woman, respectively, both without clothes (except that the woman has a black-lead mark round the calf of each leg to indicate the tops of



FIG. 387.—Ancient carving, human head.



FIG. 388.—Wooden figures.

the boots). They were made for sale, and are perhaps unfinished dolls. The man (No. 89726 [1192]) is 11 inches long and tolerably well proportioned, except about the feet, which are very clumsily made. The eyes and mouth are incised and the hair colored with black-lead. The woman (No. 89727 [1193]) is a very similar figure, but only 9.2 inches long. She has prominent breasts, and her legs are shorter in proportion than the man's.

No. 89725 [1185], from Utkiavwñ, is a clumsy image of a man, rudely whittled out of a flat, hard-wood stick, 7½ inches long. The body and legs are long, the latter somewhat straddling, with clumsy feet. The outstretched arms are very short and stumpy. It has been painted all

one with the end of red-ocher, and the legs and feet have a coat of black lead over them. The hair also is marked out with black lead, and a small square white bead is fastened with a peg in the middle of the breast. This image was made for the market.

No. 388 (No. 8972), from Etaherwith, is of a pair of very crude images, also made solely for the market. Each is 3 inches long, and is merely



FIG. 388.—Carving, face of Eskimo man.

an oblong piece of board, flat and rough on the back, roughly beveled from the middle to each side in front. One end is surmounted by a rather rudely carved human head, with the features in relief and the eyes and mouth incised. The eyebrows are marked out with black lead, and there is a longitudinal line of black lead down the middle of the front.

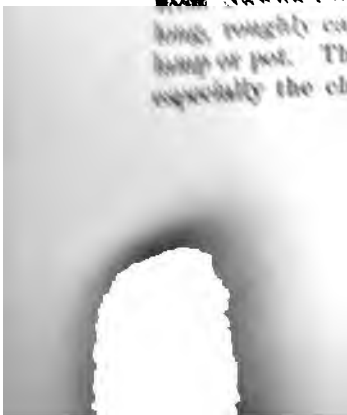
FIG. 389 (No. 89724 [1125] from Newtk) is

the face of a male Eskimo, 3.2 inches long, carved out of a flat piece of some weathered wood weathered to a dark, reddish brown. The eyebrows are represented by two small, red glass beads with white centers, fastened on in the proper position with wooden pegs. There is a deep groove around the edge of the face into which is fastened a strip of yellowish wolf-skin with long fur to represent the trimming around the hood of the jacket. This specimen was made for sale, and the carving is well executed. It is a characteristic Eskimo face, and would pass for a portrait of Apaidyao, a well known young Eskimo, who was employed by Linnaeus, Kay as a guide and hunter.



FIG. 390.—Grotesque soapstone image, "walrus man."

We collected only two soap-stone carvings representing men, both of which were newly made. One of these, Fig. 390 (No. 89569 [1095] from Newtk), is a grotesque image 2.9 inches long, roughly carved from a flat piece of an old lamp or pot. This is almost exactly the form in which the Eskimo, especially the children, usually draw a man. The writer's portrait



has been drawn in very much the same shape. The features are very rudely indicated, and a long projecting tusk of bone is inserted at each corner of the mouth and glued in with refuse oil. This figure is probably meant to represent the "man with tusks," before referred to, who figures in several of the legendary fragments which we obtained.

No. 89568 [1108], from Utkiavwñ, probably represents the same being. It is a mask of soapstone, a piece of an old lamp, 2·8 inches long, with very characteristic features in low relief, and a pair of sharp, projecting, decurved tusks, about 1 inch long, which appear to be made of the vibrissæ of the walrus. The back of the mask is roughly hollowed out. No. 89575 [1014], from Nuwük, is a clumsy and carelessly made image of a man, 3·4 inches long, whittled out of a flat, rough piece of soft, white gypsum. The arms are short and clumsy and the legs straddling, and there is a large elliptical hole through the middle of the body. The features are indicated only by digging little cavities for the eyes, nostrils, and mouth. This and two other images of the same material, a bear equally rude, and a very well carved and characteristic beluga, were made by the ingenious young native, Yöksa, previously mentioned.

The best bone figure of a man is shown in Fig. 391 (No. 89353 [1025], from Nuwük), also newly made. This is an image, 5 inches long, of the giant "Kikámigo," previously mentioned, and is a very excellent piece of workmanship. The material is rather vascular compact bone. On the head is a conical dancing cap, 1·4 inches high, made of deerskin, with the flesh side out, and colored with red ocher, with a tuft of wolf hairs, 3 inches long, protruding from the apex. Around the middle of the cap is a narrow strip of the same material fringed on the lower edge with fifteen flat, narrow pendants of ivory, made to represent mountain-sheep teeth. To the back of this strip is fastened a half-downy feather nearly 4 inches long. A slender wooden stick is stuck into the strip behind, so that the tip reaches just above the apex of the cap. To a notch in the end of this is tied a bit of dressed deerskin, 1½ inches long, cut into three strips.

Fig. 392 (No. 89348 [1127], from Utkiavwñ) is an image neatly carved from whale's bone, which may have been meant for an amulet, or possibly the handle of a drill cord, as it is not new, and has two oblique holes in the middle of the back, which meet so as to form a longitudinal channel for a string. The eyes, mouth, and labret holes are incised and filled with black dirt. The total length is 3·3 inches.



FIG. 391.—Bone image of dancer.

Fig. 393 (No. 89344 [1272], from Utkiavwîñ) is a very grotesque image of a naked man, rudely carved from compact, rather porous bone, impregnated with oil, but scraped smooth. It is 5 inches long. The mouth and eyes are incised and blackened, and the nostrils simply bored out.



FIG. 392.—Bone image of man.

The ivory carvings representing human figures are all of rather rude workmanship. No. 89352 [1100], Fig. 394, from Nuwük, is a tolerably good figure, 3.3 inches long, of a sitting man holding up his hands before his face. This specimen is old and is made of walrus ivory yellow from age and oil. No. 89351 [1085] from Nuwük, is a similar image, 3.8 inches long, newly made, with the arms at the sides, roughly carved from coarse walrus ivory. The eyes and mouth are incised and filled with dark colored dirt. Fig. 395 (No. 89349 [980], from Nuwük) is an old image made of yellow walrus ivory and closely resembling the bone image (No. 89348 [1127]) already figured, but with the hands by the sides. It is 2.7 inches long and has a string 4 inches long tied into the channel in the back.



FIG. 393.—Grotesque bone image.

Nos. 89346 and 89347 [990], from Nuwük, are a pair of little men, standing erect, about 2 inches high, rather roughly carved, of slightly yellow walrus ivory. Both have large, clumsy feet and legs, and the eyes, nostrils, and mouth incised and filled in as usual with dark colored dirt. The arms are in high relief. No. 89346 [990*b*] has his hands clasped in front of him, while No. 89347 [990*a*] has them clasped behind his back. The legs of the latter are excavated on the inside as if to fit it upon the end of some object. It is more probable, however, that this image was carved from the foreshaft of a seal-dart, and that the excavation is merely the slot in the end of the latter. These two images are evidently modern, but do not appear freshly made. No. 89345 [1273] from Utkiavwîñ is a very rude image, 2.6 inches long, having a very small head and no arms. It is somewhat discolored walrus ivory and quite dirty, and though evidently modern, from the appearance of the ivory, does not appear to



FIG. 394.—Ivory image, sitting man.



FIG. 395.—Human figure carved from walrus ivory.

Fig. 396 (No. 89348 [1127], from Utkiavwîñ) is a very grotesque image of a naked man, rudely carved from compact, rather porous bone, impregnated with oil, but scraped smooth. It is 5 inches long. The mouth and eyes are incised and blackened, and the nostrils simply bored out.

be freshly made. This figure is even ruder in design than those from Siberia figured by Nordenskiöld.¹

The best of our human figures from Point Barrow show much greater art, both in workmanship and design, than those just mentioned, but can not compare with the elegant figures in the museum from the more southern parts of Alaska. The four remaining ivory carvings represent the human face alone. No. 89342 [989], Fig. 396, from Nuwük, is a thick piece of walrus ivory 3.3 inches long and 1.6 wide, carved into three human



FIG. 396.—Ivory carving, three human heads.

faces, a man in the middle and a woman on each side, joined together at the side of the head. Though the workmanship is rough, the faces are characteristic. The man has labrets and a curved line of tattooing at each corner of the mouth, indicating the successful whaleman, and the women, the usual tattooing on the chin. The eyes, nostrils, mouths, labrets, and tattooing are incised and blackened as usual. This specimen, though apparently modern, does not seem fresh enough to have been made for sale. The seller called it "a man and his two wives" without giving them any names. It may be intended as a portrait of some celebrated whaleman.

Fig. 397 is one of a pair of very rude faces (No. 56523 [52] from Ut-kia-vwñ), 1½ inches long, which were made for sale. It is simply a walrus-tooth cut off square on the ends and on one side rudely carved into



FIG. 397.—Human head carved from a walrus tooth.

a face, with the eyes and mouth incised and filled with dark colored dirt. Fig. 398 (No. 89343 [1124] from Nuwük) is a flat piece of ivory (a bit of an old snow shovel edge), 4 inches long and 1.2 inches wide, roughly carved and covered with incised figures. The upper edge is carved into five heads: First, a rude bear's head, with the eyes and nostrils incised and blackened as usual; then four human heads, with a face on each side. The front faces have the noses and brows in low relief and the eyes, nostrils, and mouths incised and blackened; the back ones are flat, with the last three features indicated as before. At the end is a rude figure of a bear, heading toward the right, with the ears in relief, the eyes and mouth roughly incised and blackened, and the legs indicated by roughly incised and blackened lines on the obverse face. Both faces are covered with rudely incised and blackened lines.

On the obverse there is a single vertical line between each pair of heads. Below the bear's head is a bear heading toward the right;

¹Vega, vol. 2, p. 127.

under the first human head, an umiak with four men; under the second, a "killer" (*Orea*) heading toward the right; under the third, two of the usual conventionalized whales' tails suspended from a cross-line; and under the last, a "killer" with very large "flukes" heading toward the left.

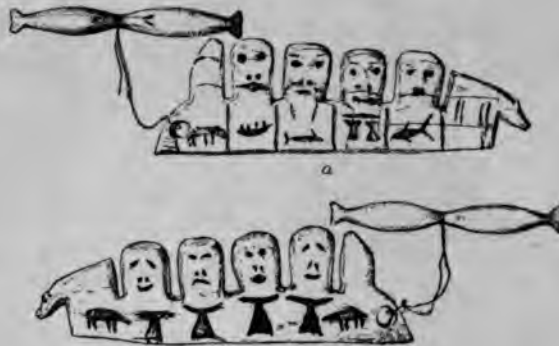


FIG. 398.—Elaborate ivory carving.

On the reverse there are, below the bear, a bear heading toward the right, below each of the human heads a whale's tail with the flukes up, and under the bear's head a bear heading toward the right. This end is perforated with a large round hole, into which is knotted a bit of deer sinew about 3 inches long, the other end of which is tied round the junction of two little bowhead whales, each about 1 inch long and carved out of a single piece of ivory, head to head. They are rather rudely carved and have the spiracles incised and blackened. This object appears freshly made, but perhaps commemorates the exploits of some four hunters. It was purchased along with other objects and its history was not learned at the time.

Perhaps the best image of a polar bear is No. 89566 [1252], Fig. 399, from Utkiavwñ, which is quite characteristic. It represents the bear standing and was carved out of soft, gray soapstone with a knife, and finished off smoothly with a file. It is 4 inches long. No. 89571 [116*b*], from Nuwñk, is a very rude flat soapstone bear, 1.9 inches long, in profile, showing only one fore and one hind leg. It was made for sale, but No. 89576 [966], from the same village, which is almost exactly like this, though smaller, is old. No. 89574 [1027], from Nuwñk, is the gypsum carving of a bear, above referred to, which is very like

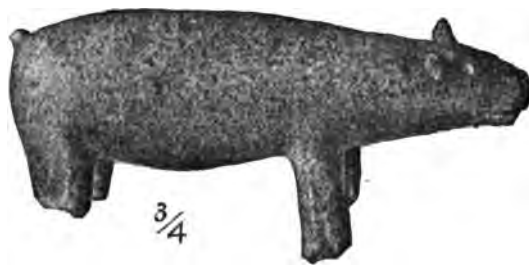


FIG. 399.—Bear carved of soapstone.

Figure 399: Bear carved of soapstone. The image shows a small, dark, textured carving of a bear in profile, facing right. The bear is standing on four legs, with only one foreleg and one hindleg clearly visible. A small fraction '3/4' is written below the bear.

the preceding two specimens. It is 2.5 inches long and has a large tail and large clumsy legs.

No. 89578 [1051], Fig. 400, from Utkiavwñ, is a thin profile figure of a polar bear, made by flaking from dark gray flint. It is 1.4 inches long, and the tail is disproportionately long. The specimen does not appear to be new, and was perhaps intended for an amulet, like the flint whales already mentioned.

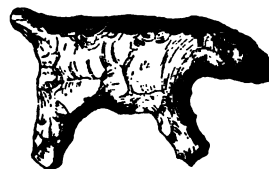


FIG. 400.—Bear flaker from flint.

The only bone figure of a bear in the collection, No. 89335 [1275], Fig. 401*a*, from Utkiavwñ, is very crude. It has a very long, slim body and neck, and short, slender legs. The mouth, eyes, and nostrils are incised and are blackened as usual. The carving is rudely done, but the specimen, which was made for sale, has been scraped smooth. It is 5.5 inches long, and made of whale's bone, soaked in oil to make it appear old.

Fig. 401*b* (No. 89471 [997], from Utkiavwñ) is the end of some old implement, 6 inches long, one end of which is carved into a rather rude

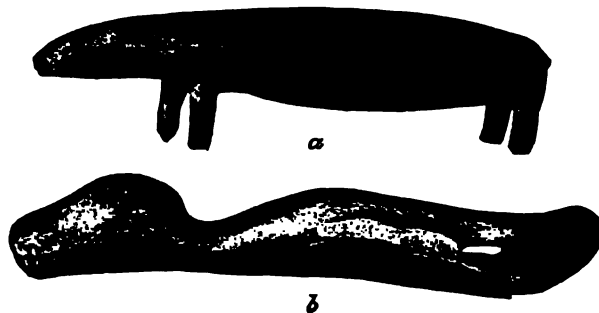


FIG. 401 — Bone figures: (a) bear; (b) bear's head.

bear's head, with the ears, nostrils, outline of the mouth, and the vibrissae incised and blackened. Sky-blue glass beads are inlaid for the eyes and bits of tooth for the canine tusks. On the throat is a conventional figure with two "circles and dots," all incised and blackened. The carving is freshly done, but soiled, to make it look old.

The three newly made ivory bears are all represented standing and are quite characteristic. All have the eyes, nostrils, and mouth incised and blackened. Fig. 402*a* (No. 89337 [1274], from Utkiavwñ) is the best in execution. It is made of white ivory and is 3.3 inches long. No. 56524, [92], from Nuwük, is a small bear, 1.7 inches long, not quite so well carved, and disproportionally long-legged. The left hind leg has been broken off close to the body and doweled on with a wooden peg. Another little bear from Nuwük (No. 89841 [992]) is still more rudely carved, but closely resembles the preceding.

A larger carving, rather roughly executed (No. 89338 [1098], from Nuwūk), represents a standing bear 3·2 inches long, holding a whale crosswise in his mouth. The whale is a separate piece, held in by a wooden peg driven through the bear's lower jaw. This specimen is newly made from rather coarse walrus ivory.

Fig. 402*b* (No. 89340 [953], from Utkiavwīñ) is a very ancient ivory image of a bear, 3·4 inches long, which was evidently intended for an amulet, as there is a stout lug on the belly, into which are bored two oblique holes, so as to make a longitudinal channel for a string. Into this is knotted a stout cord of loosely twisted sinew. The execution of the image is particularly good, but the design is very rude. The specimen is so ancient that the ivory of which it is made has become almost black.

No. 56528*a* [56*a*] from Utkiavwīñ is a walrus tooth, 1·6 inches long, carved into the shape of a bear's head. Both design and execution are very rude. Light blue glass



FIG. 402.—Ivory figures of bears.

beads are inlaid for the eyes, and the nostrils and outline of the mouth are incised and filled in with black dirt. It was made for sale. A still more rude carving, also made for sale, is No. 56528, from Utkiavwīñ, which is an old and weathered canine tooth of the polar bear, with the point freshly whittled so as to look something like a bear's head. Two sky-blue glass beads are inlaid to represent the eyes and one for the nose, and the mouth is incised and blackened.

The walrus does not appear to be a favorite subject for representation. The part of the collection already described shows that it occurs very seldom as a decoration, and we obtained only three images of this animal, one in soapstone and two in ivory, all small and very rude, both in design and execution. They are all newly made. The best image is shown in Fig. 403*a* (No. 89333 [1384] from Utkiavwīñ). This is 2·3 inches long and made of coarse walrus ivory. The head is rather good, but the body simply tapers to a broken point. A bit of wood is inlaid for the left eye, but the right is merely represented by a hole.

Fig. 403*b* (No. 89334 [1067], from Utkiavwīñ) is exceedingly rude. The eyes, nostrils, and mouth are incised and blackened as usual, and the vibrissae ("whiskers") are represented by rather large round pits on the snout, also filled in with black dirt. It is 2·9 inches long, and appears

to have been dipped in the oil-bucket to make it look old. Both the images bear a strong resemblance to the rude carvings of walruses from Siberia figured by Nordenskiöld.¹ No. 89570 [1271] from Nu-wük is of soapstone, 2 inches long, with tusks rudely carved from walrus ivory. The head is but roughly indicated, while the body is shaped like a slug, and is bifid at the pointed end to represent the hind flippers. The eyes and nostrils are roughly incised.

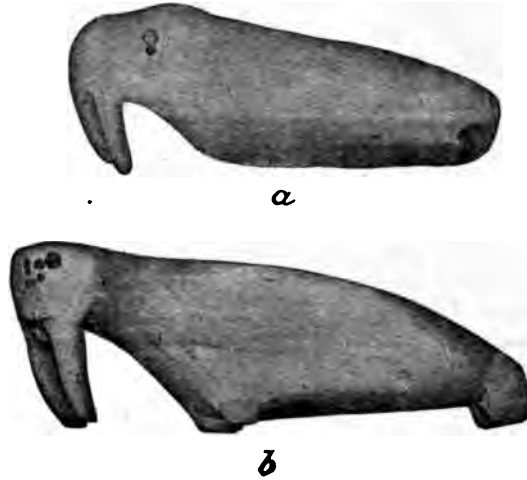


FIG. 403.—Rude ivory figures of walrus.

The seal, on the other hand, is a favorite object for artistic representation. It is seen often, as already described, as a decoration on various implements, especially the drag lines, generally in a very characteristic shape, and the five seal images in the collection are excellent in design and execution. Almost all are decidedly superior to those from

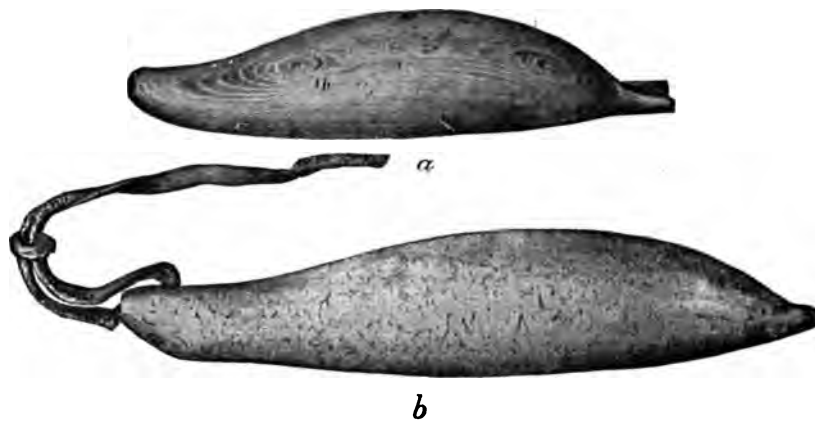


FIG. 404.—Images of seal—wood and bone.

Pitlekaj, figured by Nordenskiöld.¹ All are newly made except No. 89737 [857*a*]. Fig. 404*a*, from Utkiavwñ, which is 4.2 inches long, and made of spruce, very old, weathered, and discolored with dirt and grease. It is nicely carved and scraped smooth, and is very good in its general proportions, though the details are not represented as in the other images.

The best figure (No. 89330 [999] figured in the Point Barrow Rept. Ethnol., Pl. v, Fig. 6, from Utkiavwñ) is carved from walrus ivory and is 4.3 inches long. It represents a male rough seal, and is exceedingly accurate and highly finished. The lower jaw is perforated and a bit of sinew thread tied in to represent the drag line. Small red glass beads with white centers are inlaid for the eyes. The other three are all of bone and represent dead male seals stretched on their backs with the drag line in their jaw as they are dragged home.

No. 56579 [75], Fig. 404*b*, from Utkiavwñ, is 5.7 inches long, and very smoothly carved from walrus jaw bone, with round bits of wood inlaid for the eyes. The proportions are excellent, but the details are not strongly brought out. This specimen is a little older than the rest, and may have been an amulet for good luck in seal catching. The other two are of compact white bone, perhaps that of the reindeer.

No. 89331 [1143], from Utkiavwñ, is 3.4 inches long, and has the breast and back flattened and the flippers in high relief. The anus, genital opening, and eyes are incised, the latter two filled in, as usual, with black dirt. The drag line is of sinew braid and has an ivory cylinder slipped over it.

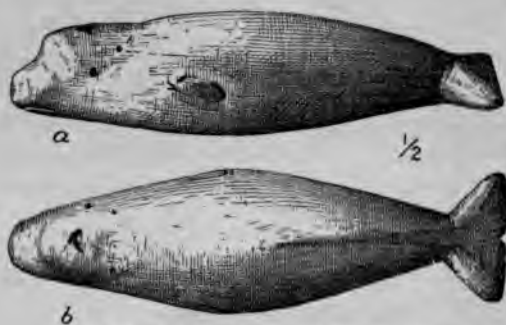


FIG. 405.—White whale carved from gypsum.

No. 89328 [1167], from Utkiavwñ, is the poorest in design. It is 5.6 inches long and has the neck bent up as in dragging. The back of a freshly caught

seal is always somewhat flattened by dragging it over the ice, and this flattening is very much exaggerated in this carving by the natural shape of the bone. The fore flippers are in high relief, with three toes to each flipper, colored round the edge with red ocher. The tips of the hind flippers are joined together, and each has only two toes. The eyes, genital opening, and the spots on the back and belly are indicated by shallow round pits colored with red ocher. The drag line is a double bit of sinew braid, which has on it two ivory cylinders, one ornamented with an incised pattern.

We found but a single figure of the beluga, which is such a favorite subject for Eskimo artists farther south. This is the gypsum carving already mentioned (No. 89573 [1015], Fig. 405, from Nuwük). It is 3.5 inches long and is very characteristic, though rather short in proportion to its girth. It was neatly carved with a knife.

The "bow-head" whale (*Balæna mysticetus*), is a very favorite subject, appearing often as a decoration and represented by 21 carvings. Three of these are of wood, very much resembling in design and execution the harpoon boxes already described. They are all very old, and

perhaps were charms to be carried in the boat to secure good luck in whaling. No. 89736 [857*b*], Fig. 406, from Utkiavwñ, is perhaps the best proportioned of these figures, though the only details represented are the flukes (which are broken), and the incised spiracles. It is 5.4



FIG. 406.—Wooden carving—whale.

inches long and made of spruce or hemlock, stained almost black by dirt, grease, and weathering. A long string of sinew braid is tied round the "small."

No. 89735 [1036] from Utkiavwñ, is also a rather well proportioned figure, rude in execution, with no details carved out except

the flukes, one of which is broken. An angular bit of iron pyrites is inlaid to represent the left eye, and a similar piece appears to have been lost from the right eye. The anus is represented by a light blue glass bead inlaid in the belly. It is 8.8 inches long and made of soft wood, probably cottonwood, weathered and stained to a dark brown. It is very old and much chipped and cracked. Two small oblique holes in the middle of the back make a transverse channel for a string. This specimen was said by the man who sold it to have been dug up among the ruins of one of the old houses in the village.

No. 89734 [987] from Nuwük, is 12 inches long, very broad in proportion to its length, and rather rude in design, with a flat belly, though



FIG. 407.—Whale carved from soapstone.

neatly carved and scraped smooth. The spiracles and the outline of the mouth are incised and little angular bits of brown quartz are inlaid for the eyes. Both flukes have been split off and part of the right fluke has been fastened on again with a single wooden treenail. It is of spruce or hemlock and has weathered to a brown color.

Fig. 407 (No. 89561 [1253] from Utkiavwñ) represents the best image of a whale in the collection. It is very well proportioned, though perhaps a little clumsy about the flukes, with the external details correctly represented. It is 4.5 inches long, neatly carved from soapstone, scraped smooth and oiled. It was made for sale. There are five other round soapstone carvings of whales in the collection, but none so good

as this except a little one from Nuwük, (No. 89563 [986]) 2 inches long, which is almost an exact miniature of the preceding. This specimen is not new. Fig. 408 (No. 89557 [1267] from Utkiavwñ) is a rude *flat* representation of a whale seen from above. It is 5.2 inches long and



FIG. 408.—Rude flat image of whale.

roughly whittled out of the bottom of an old stone pot. The flippers are large and clumsy, and the spiracles slightly incised. The specimen appears to be old, as does a similar one from Nuwük (No. 89559 [1188a]).

No. 89558 [1266] from Utkiavwñ, and No. 89572 from Nuwük, both flat images, are carelessly made for sale. The latter is simply a representation in soapstone of the conventional "whale's tail" with the "small" cut off to an angular point. No. 89325 [1160] from Utkiavwñ is a



FIG. 409.—Ivory image of whale.

clumsy, broad whale with a flat belly, 4.1 inches long, freshly carved from whale's bone, and soaked in oil to make it look old. The eyes, spiracles, and outline of the mouth are incised and filled in with dark oil lees.

None of the ivory carvings of whales have any special artistic merit. Fig. 409 (No. 89323 [1024a] from Nuwük) is the best of these. It is a little better in design and execution than the preceding, which it resembles considerably. It is the female of a pair of little whales made of old brown walrus ivory, which is much cracked. The male differs from the female only in the shape of the external sexual organs, the male having a little round pit and the female a long sulcus. This, as well as the eyes, spiracles, and outline of the mouth, is incised and filled in with dark colored dirt. The female is 3.1 inches long, the male (No. 89324 [1024b]) 0.1 inch longer. These specimens appear to be quite ancient.



FIG. 410.—Ivory image of whale.

Fig. 410 (No. 89326 [1086] from Nuwük) is very long and slender—4.3 inches long and only 0.7 inch wide—with the belly perfectly flat,

but otherwise a very good representation, neatly carved. The flukes in particular are especially well done, and the flippers are in high relief. The eyes, the spiracles, and the outline of the mouth are incised and the first blackened. The material is a rather poor quality of walrus ivory, about half "core." The specimen was made for sale. No. 89327 [991] from Nuwük was also made for sale. It is a little whale 1.6 inches long, rudely carved in walrus ivory.

Fig. 411 (No. 56619 [66] from Ut-kiavwü) represents a pair of little whales, each carved from a walrus tooth, which probably served for buttons or toggles of some sort, though I do not recollect ever seeing such objects in use. The belly of each is flat and has in the middle a stout lug perforated with a transverse eye, and they are tied together by a piece of thong about 14 inches long. They are quite well designed and executed, but rather "stumpy" in outline, with the outline of the mouth and the spiracles incised and blackened, and little round bits of tooth inlaid for eyes. In the middle of the back of each was inlaid a small blue glass bead, which still remains in one of them. They are old and dirty and somewhat chipped about the flukes.

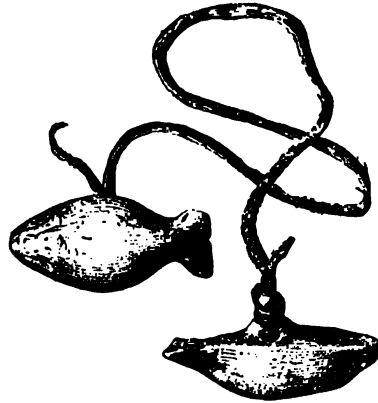


FIG. 411.—Pair of little ivory whales.



FIG. 412.—Soapstone image of imaginary animal.

Fig. 412 (No. 89567 [904] from Nuwük) represents an imaginary quadruped 2.5 inches long, with a short, thick body and legs, no neck, and a human head, with the eyes and mouth incised. It is roughly carved from light gray soapstone, and ground pretty smooth. This figure is not new, and has probably connected

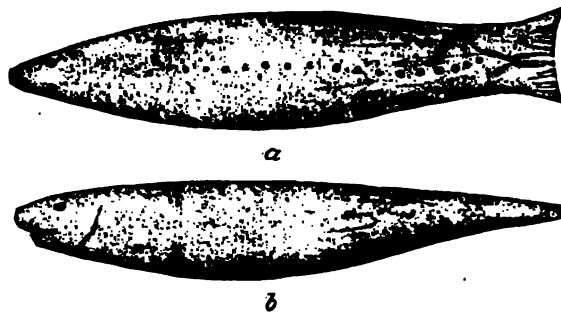


FIG. 413.—Ivory carving, seal with fish's head.

with it some story which we did not succeed in learning. The seller called it an "old man." No. 89332 [994] from Nuwük, is a fanciful monster, 4.2 inches long, carved in ivory. It has a human head with the tusks of a walrus, the body, tail, and flippers of a seal, with human arms. The hands, each of which has four fingers, clasp some round object against the belly. It is not old, but apparently was not made

for the market. It was called a "walrus man;" but we did not learn whether it was simply a fancy figure or whether there was any story connected with it.

Fig. 413 (No. 89329 [1101] from Nuwük) is another monster, 3.9 inches long, carved in ivory. It has a fish's head with large canine teeth,



FIG. 414.—Ivory carving, ten-legged bear.

and a seal's body, tail, and hind flippers. The eyes, nostrils, gill slits, the outlines of the tail, and the toes, of which there are six on each flipper, are incised and blackened. A row of

nineteen small round pits, filled with dark colored dirt runs nearly straight from the nape to the tail.

Fig. 414 (No. 89339 [1099] from Nuwük) is a newly made ivory figure, which is interesting from its resemblance to one of the fabulous animals which figure in the Greenland legends. It is 4 inches long and represents a long-necked bear with ten legs, an animal which the maker gave us to understand had once been seen at Point Barrow. The resemblance of this animal to the "kiliopak" or "kilifvak" of the Greenland stories, which is described as "an animal with six or even ten feet"¹ is quite striking.

Fig. 415 (No. 89723 [1084] from Nuwük) is another representation of the giant who holds a whale in each hand. He was called in this instance "Kaióasu," and not "Kikámi-go." This image is carved from very old pale brown walrus ivory, and is 2.3 inches high. A transverse incised



FIG. 415.—Ivory carving, giant holding whales.

line across each cheek from the wing of the nose, indicates the whale-man's tattoo mark of the Eastern fashion. The image is ancient, but is mounted in a socket in the middle of a newly made wooden stand, which has a broad border of red ocher and a broad streak of the same paint along each diameter.

Fig. 416 (No. 89336 [1369]) is a curious piece of carving, which Nika-wdalu said he found in one of the ruined houses on the river Kulugrua.

¹ Rink, Tales, etc., p. 48. See also same work, *passim*, among the stories.

The carving is well executed and really seems to be old, although it has evidently been retouched in a good many places. It is made from an irregularly flattened bit of reindeer antler, 3.6 inches long, blackened by the weather on the flat surfaces, and represents an animal with four legs, which appear to be dog's legs, and at each end what appears to be a dog's head. One of these is smaller than the other and both have the ears in relief, and the eyes, nostrils, and outlines of the mouth incised.



FIG. 416.—Double-headed animal, carved from antler.

Fig. 417 (No. 56520 [85] from Nuwük) is a fanciful object made solely for the market. It consists of the rudely carved head of some carnivorous animal, made of ivory, and 2.6 inches long, fitted to the broad end of a flat-pointed wooden handle, painted red. The head was called a "dog", but it looks more like a bear. Small bits of wood are inlaid for the eyes, and the outline of the mouth is deeply incised and colored with red ocher, having bits of white ivory inlaid to represent the canine teeth. The ears, nostrils, vibrissæ, and hairs on the muzzle are indicated by blackened incisions. There is an ornamented collar round

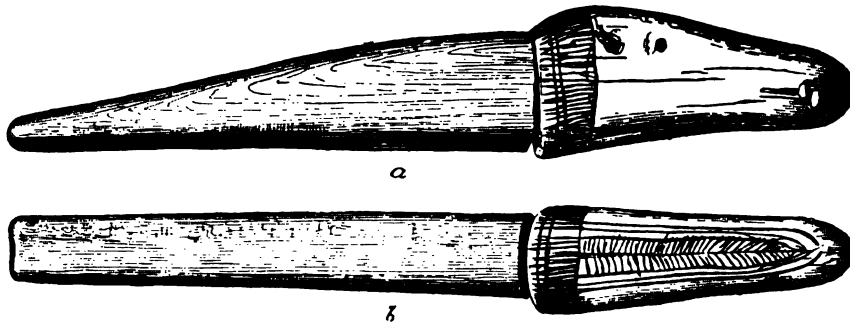


FIG. 417.—Ivory carving, dog.

the neck, to which is joined a conventional pattern of triangular form on the throat, and a somewhat similar pattern on the top of the head between the ears.

One of the natives at Utkiavwîn, in May, 1882, conceived the fancy of smoothing off the tip of a walrus tusk into the shape of a pyramid, surmounted by a little conical cap and ornamenting it with incised figures, which he colored with red ocher. It appears to have been purely an individual fancy, as it has no utility, nor are such objects made by the Eskimo elsewhere, as far as I know. Having succeeded in finding a sale for this object, either he or one of his friends, I do not

now recollect which, made another, which was brought over for sale about ten days later. We saw no others afterwards.



FIG. 418.—Engraved ivory: (a) piece engraved with figures; (b) development of pattern.

Fig. 418a (pattern developed in Fig. 418b, No. 56530 [220]) represents the first of these. It is made of solid white walrus ivory. The work-

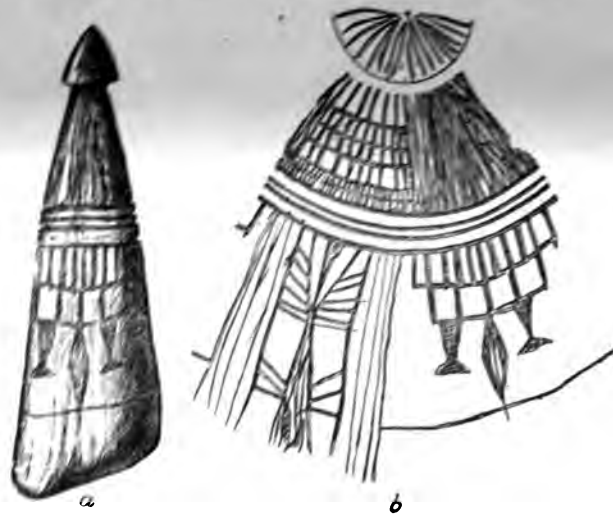


FIG. 419. Engraved ivory: (a) piece with engraving; (b) development of pattern.

manship is quite rude, and the cap has been broken off and neatly fastened on with a wooden dowel. The other, Fig. 419a, 419b (No. 56529 [254]) is 3.7 inches long.

Fig. 420 (No. 89741 [1012] from Nuwük) is an ivory cross 15.5 inches long. The cross is ornamented by incised rings and dots colored with red ocher. The shaft of the cross is surmounted by a female human head neatly carved from soapstone, fastened on by a lashing of sinew braid, which passes through a transverse hole in the head and round the crosspiece. No. 89742 [1091], also from Nuwük, closely resembles the preceding, but is slightly shorter and has a four-sided shaft. The head, moreover, which is made of bone, represents a man, as is shown by the little pits, which indicate the labrets. The cheeks and crown of the head are colored slightly red with red ocher.

The ingenious Yöksa, so often mentioned, made the first image and brought it down for sale. All he could or would tell us about it was that it was "tunä'ktûp kuni'a," "A kuni'a (jargon for woman) of soapstone." The successful sale of this first cross encouraged him to make the second, but we saw no others before or after. Other natives who saw these objects only laughed. The whole may be simply a fanciful doll, perhaps meant for a caricature, the shaft representing the body, and the crosspiece the outstretched arms. The object is very suggestive of a crucifix, and there is a bare possibility that the maker may have seen something of the sort in the possession of some of the eastern natives who have been visited by a missionary of the Roman Catholic Church (Father Petitot).

Under the head of works of art may properly be included No. 89823 [1130], from Utkiavwîñ. This is the skeleton of the jaws of a polar bear, cut off just back of the nose, neatly sewed up in a piece of sealskin with the hair out, so as to leave uncovered only the tips of the jawbones and the canine teeth. This specimen was put up by the same quick-witted young native after his removal from Nuwük to Utkiavwîñ, evidently in imitation of the work of preparing specimens of natural history, which he had seen done at the station. For the same reason he dried and carefully preserved in a little box whittled out of a block of wood and tied up with sinew a little fresh-water sculpin (*Cottus quadricornis*), which he had caught at Kulugrua (No. 89536 [1145]).

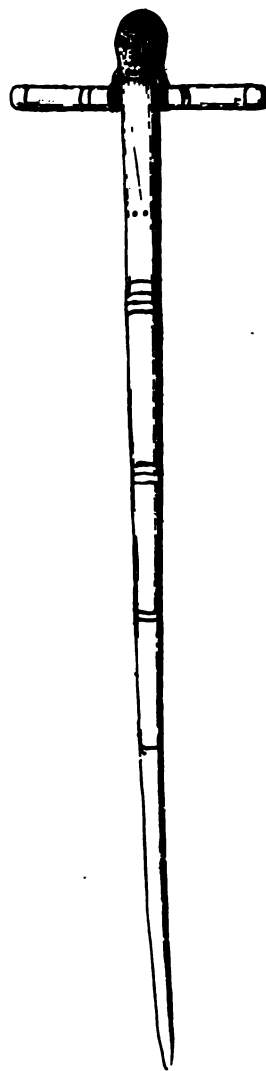


FIG. 420.—Ivory doll.

I regret much that we did not save and bring home any of the pencil drawings made by these people. The children especially were anxious to get lead pencils, and made themselves rather a nuisance by covering the painted walls of the observatory with scrawls of ships and various other objects, perhaps rather more accurately done than they would have been by white children of the same age. The style of the figures on the hunting scores already described, however, is very like that of the pencil drawings.¹

DOMESTIC LIFE.

Marriage.—As far as we could learn, the marriage relation was entered upon generally from reasons of interest or convenience, with very little regard for affection, as we understand it, though there often appeared to be a warm attachment between married people. A man desires to obtain a wife who will perform her household duties well and faithfully, and will be at the same time an agreeable companion, while he often plans to marry into a rich or influential family. The woman, on the other hand, appears to desire a husband who is industrious and a good hunter. There were, nevertheless, some indications that real love matches sometimes took place. Marriages are usually arranged by the parents of the contracting parties, sometimes when the principals are mere children. We knew of one case when a young man of about twenty-two offered himself as the prospective husband of a girl of eight or ten, when she should reach a marriageable age. This practice of child betrothal seems to be practically universal among the Eskimo everywhere.²

Dr. Simpson, in describing the marriage customs at Point Barrow, says:

The usual case is, that as soon as the young man desires a partner and is able to support one, his mother selects a girl according to her judgment or fancy, and invites her to the hut, where she first takes the part of a "kivgak" or servant, having all the cooking and other kitchen duties to perform during the day, and returns to her home at night. If her conduct proves satisfactory, she is further invited to become a member of the family.³

We only knew this to be done on one occasion; and on the contrary knew of several cases where the bridegroom became a member of the wife's family.

One youth, who had had his lips pierced for the labrets just previously to our arrival, was, we soon learned, betrothed to a young girl at Nuwük. This girl frequently came down from Nuwük and visited her lover's family, staying several days at a time, but we could not

¹Compare these with Nordenskiöld's figures of "Chukch" drawings, Vega, vol. 2, pp. 132, 133. The latter are completely Eskimo in character.

²Compare Crantz, vol. 1, p. 159 (Greenland); Kumlien, Contributions, p. 164 (Cumberland Gulf); Hall, Arctic Researches, p. 567 (Baffin Land); Parry, 2nd Voyage, p. 528 (Fury and Hecla Straits); Schwatka, Science, vol. 4, No. 98, p. 544 (King William's Land); Gilder, Schwatka's Search, p. 250 (Hudson's Bay); Franklin, First Exp., vol. 2, p. 41 (Chesterfield Inlet); Hooper, Tents, etc., p. 209 (Plover Bay); Nordenskiöld, Vega, vol. 2, p. 26 (Pittekaj).

³Op. cit., p. 252.

discover that she was treated as a servant. She went with them to the spring deer hunt, but we were distinctly given to understand that the young couple would not be married till after the return from this hunt, and that no intercourse would take place between them before that time. When the season came for catching reindeer fawns, the couple started off together, with sled and dogs and camp equipage in pursuit of them, and always afterwards were considered as man and wife.

Most of the marriages took place before we heard of them, so that we had no opportunity for learning what ceremony, if any, occurred at the time. Some of the party, however, who went over to make a visit at Utkiavwîñ one evening, found the house full of people, who were singing and dancing, and were told that this was to celebrate the marriage of the daughter of the house. Marriage ceremonies appear to be rare among the Eskimo. A pretended abduction, with the consent of the parents, is spoken of by Bessels at Smith Sound¹ and Egede in Greenland (p. 142), and Kumlien was informed that certain ceremonies were sometimes practiced at Cumberland Gulf.² Elsewhere I have not been able to find any reference to the subject. A man usually selects a wife of about his own age, but reasons of interest sometimes lead to a great disparity of age between the two. I do not recollect any case where an old man had a wife very much younger than himself, but we knew of several men who had married widows or divorced women old enough to be their mothers,³ and in one remarkable case the bride was a girl of sixteen or seventeen, and the husband a lad apparently not over thirteen, who could barely have reached the age of puberty.

This couple were married late in the winter of 1882-'83, and immediately started off to the rivers, deer hunting, where the young husband was very successful. This union, however, appeared to have been dissolved in the summer, as I believe the girl was living with another and older man when we left the station. In this case, the husband came to live with the wife's family.

As is the case with most Eskimo, most of the men content themselves with one wife, though a few of the wealthy men have two each. I do not recollect over half a dozen men in the two villages who had more than one wife each, and one of these dismissed his younger wife during our stay. We never heard of a case of more than two wives. As well as we could judge, the marriage bond was regarded simply as a contract entered into by the agreement of the contracting parties and, without any formal ceremony of divorce, easily dissolved in the same way, on account of incompatibility of temper, or even on account of temporary disagreements.

We knew of one or two cases where wives left their husbands on

¹ *Naturalist*, vol. 18, pt. 9, p. 877.

² *Contributions*, p. 16.

³ Compare Holm's observations in East Greenland—"idet et ganske ungt Menneske kan være gift med en Kone, som kunde være hans Moder." *Geografisk Tidsskrift*, vol. 8, p. 91.

account of ill treatment. One of these cases resulted in a permanent separation, each of the couple finally marrying again, though the husband for a long time tried his best to get his wife to come back to him. In another case, where the wife after receiving a beating ran away to Nuwük, and, as we were told, married another man, her first husband followed her in a day or two and either by violence or persuasion made her come back with him. They afterwards appeared to live together on perfectly good terms.

On the other hand, we know of several cases where men discarded wives who were unsatisfactory or made themselves disagreeable. For instance, the younger Tuñazu, when we first made his acquaintance, was married to a widow very much his senior, who seemed to have a disagreeable and querulous temper, so that we were not surprised to hear in the spring of 1882 that they were separated and Tuñazu married to a young girl. His second matrimonial venture was no more successful than his first, for his young wife proved to be a great talker. As he told us: "She talked all the time, so that he could not eat and could not sleep." So he discarded her, and when we left the station he had been for some time married to another old widow.

In the case above mentioned, where the man with two wives discarded the younger of them, the reason he assigned was that she was lazy, would not make her own clothes, and was disobedient to the older wife, to whom he was much attached. As he said, Kakaguna (the older wife) told her, "Give me a drink of water," and she said, "No!" so Kakaguna said, "Go!" and she went. He did not show any particular concern about it.

Dr. Simpson says, "A great many changes take place before a permanent choice is made;" and again, "A union once apparently settled between parties grown up is rarely dissolved."¹ And this agrees with our experience. The same appears to have been the case in Greenland. Crantz² says, "Such quarrels and separations only happen between people in their younger years, who have married without due forethought. The older they grow, the more they love one another."

Easy and unceremonious divorce appears to be the usual custom among Eskimo generally, and the divorced parties are always free to marry again.³ The only writer who mentions any ceremony of divorce is Bessels, who witnessed such among the so-called "Arctic Highlanders" of Smith Sound (*Naturalist*, vol. 18, pt. 9, p. 877). Dr. Simp-

¹Op. cit., p. 253.

²Vol. 1, p. 160.

³"They often repudiate and put away their wives, if either they do not suit their humors, or else if they are barren, * * * and marry others." Egede, *Greenland*, p. 143. Compare also Crantz, vol. 1, p. 160; Parry, *Second Voyage*, p. 528 (*Fury and Hecla Straits*); Kumlien, *Contributions*, p. 17 (*Cumberland Gulf*); and Hooper, *Tents, etc.*, p. 100—"repudiation is perfectly recognized, and in instances of misconduct and sometimes of dislike, put in force without scruple or censure. * * * The rejected wife * * * does not generally wait long for another husband;" (*Plover Bay*.) Compare also Holm, *Geografisk Tidsskrift*, vol. 8, pp. 91-92, where he gives an account of marriage and divorce in east Greenland, remarkably like what we observed at Point Barrow.

son, in the paragraph referred to above, says that "A man of mature age chooses a wife for himself and fetches her home, frequently, to all appearance, much against her will." The only case of the kind which came to our notice was in 1883, when one of the Kflauwitawifmeun attempted by blows to coerce Adwú'ua, an Utkiavwī girl, to live with him, but was unsuccessful.

A curious custom, not peculiar to these people, is the habit of exchanging wives temporarily. For instance, one man of our acquaintance planned to go to the rivers deer hunting in the summer of 1882, and borrowed his cousin's wife for the expedition, as she was a good shot and a good hand at deer hunting, while his own wife went with his cousin on the trading expedition to the eastward. On their return the wives went back to their respective husbands.

The couples sometimes find themselves better pleased with their new mates than with the former association, in which case the exchange is made permanent. This happened once in Utkiavwī to our certain knowledge. This custom has been observed at Fury and Hecla Straits,¹ Cumberland Gulf,² and in the region around Repulse Bay, where it seems to be carried to an extreme.

According to Gilder³ it is a usual thing among friends in that region to exchange wives for a week or two about every two months. Among the Greenlanders the only custom of the kind mentioned is the temporary exchange of wives at certain festivals described by Egede.⁴

Holm also describes "the game of putting out the lamps," or "changing wives," as a common winter sport in East Greenland. He also, however, speaks of the temporary exchange of wives among these people much as described elsewhere.⁵

I am informed by some of the whalers who winter in the neighborhood of Repulse Bay, that at certain times there is a general exchange of wives throughout the village, each woman passing from man to man till she has been through the hands of all, and finally returns to her husband. All these cases seem to me to indicate that the Eskimo have not wholly emerged from the state called communal marriage, in which each woman is considered as the wife of every man in the community.

Standing and treatment of women.—The women appear to stand on a footing of perfect equality with the men both in the family and in the community. The wife is the constant and trusted companion of the man in everything except the hunt, and her opinion is sought in every bargain or other important undertaking.⁶

¹ Parry, 2d Voyage, p. 528.

² Kumlien, Contributions, p. 16.

³ Schwatka's Search, p. 197.

⁴ Greenland, p. 139.

⁵ Geogr. Tids., vol. 8, p. 92.

⁶ Compare Parry, 2d Voyage, pp. 520-528, Nordenskiöld (Vega, vol. 1, p. 449): The women are "treated as the equals of the men, and the wife was always consulted by the husband when a more important bargain than usual was to be made." (Pitlikaj.) This statement is applicable, word for word, to the women of Point Barrow.

Dr. Simpson's description¹ of the standing of the women at Point Barrow in his time is so true at the present day that I may be pardoned for quoting the whole of it:

A man seems to have unlimited authority in his own hut, but, as with few exceptions his rule is mild, the domestic and social position of the women is one of comfort and enjoyment. As there is no affected dignity or importance in the men, they do not make mere slaves and drudges of the women; on the contrary, they endure their full share of fatigue and hardship in the coldest season of the year, only calling in the assistance of the women if too wearied themselves to bring in the fruits of their own industry and patience; and at other seasons the women appear to think it a privation not to share the labors of the men. A woman's ordinary occupations are sewing, the preparation of skins for making and mending, cooking, and the general care of the supplies of provisions. Occasionally in the winter she is sent out on the ice for a seal which her husband has taken, to which she is guided by his footmarks; and in spring and summer she takes her place in the boat if required.

The statement in the first sentence that the husband's rule is mild is hardly consistent with that on the following page that "obedience seems to be the great virtue required, and is enforced by blows when necessary, until the man's authority is established." According to our experience the first statement is nearer the truth. We heard of few cases of wife-beating, and those chiefly among the younger men. Two brothers, who habitually ill-treated their wives, were looked upon with disfavor, by some of our friends at least. We heard of one case where a stalwart wife turned the tables on her husband who attempted to abuse her, giving him a thorough beating and then leaving his house.

Wife-beating was not uncommon among the Greenlanders.² We did not learn whether a woman brought anything like a dowry, but Simpson³ says: "The woman's property, consisting of her beads and other ornaments, her needlecase, knife, etc., are considered her own; and if a separation takes place the clothes and presents are returned and she merely takes away with her whatever she brought." According to Crantz⁴ a widow in Greenland had no share of her husband's property, but owns only what she brought with her, and I am inclined to believe that this is the case at Point Barrow.

One widow of my acquaintance, who appeared to have no relatives in the village, was reduced almost to beggary, though her husband had been quite well-to-do. All his property and even his boy were taken from her by some of the other natives. Widows who have well-to-do relatives, especially grown-up sons, are well taken care of and often marry again. According to Captain Parry,⁵ unprotected widows were robbed at Iglulik.

Children.—From the small number of births which occurred during our stay at Point Barrow, we were able to ascertain little in regard to this subject. When a woman is about to be confined, she is isolated in

¹ Op. cit., p. 252.

² See Egede, p. 144. "for according to them it signifies nothing that a man beats his wife."

³ Op. cit., p. 253.

⁴ Vol. 1. p. 165.

⁵ Second Voyage, p. 522.

a little snow hut in winter or a little tent in summer, in which she remains for some time—just how long we were unable to learn. Captain Herendeen saw a pregnant woman in Utkiavwñ engaged, on March 31, in building a little snow house, which she told him was meant for her confinement, but she had evidently somehow miscalculated her time, as her child was not born till much later, when the people had moved into the tents. She and her child lived in a little tent on the beach close to her husband's tent, evidently in a sitting position, as the tent was not large enough for her to lie down in. Her husband was desirous of going off on the summer deer hunt, but, under the circumstances, custom forbade his leaving the neighborhood of the village till the ice at sea broke up. The same custom of isolating the women during childbirth has been observed by Kumlien and Boas at Cumberland Gulf¹, and in Greenland the mother was not allowed to eat or drink in the open air.² Lisiansky describes a similar practice in Kadiak in 1805,³ and Klutschak also notes it among the Aivillirniut.⁴

The custom of shutting up the mother and child in a snow house in winter must be very dangerous to the infant, and, in fact, the only child that was born in winter during our stay lived but a short time. Capt. Herendeen visited this family at Nuwük shortly after the death of the child, and saw the snow house in which the woman had been confined. He was about to take a drink of water from a dipper which he saw in the iglu, but was prevented by the other people, who told him that this belonged to the mother and that it was "bad" for anyone else to use it. In Greenland the mother had a separate water pail.⁵ For a time, our visitors from Utkiavwñ were very much afraid to drink out of the tin pannikin in our washroom, for fear it had been used by Niäk-sära, a woman who had recently suffered a miscarriage. One man told us that a sore on his face was caused by his having inadvertently done so. This same woman was forbidden to go out among the broken ice of the land floe, during the spring succeeding her miscarriage, though she might go out on the smooth shore ice. Her husband also was forbidden to work with a hammer or adz or to go seal-catching for some time after the mishap.

Children are nursed until they are 3 or 4 years old, according to what appears to be the universal habit among Eskimo, and which is probably due, as generally supposed, to the fact that the animal food on which the parents subsist is not fit for the nourishment of young children. The child is carried naked on the mother's back under her clothes, and held up by the girdle, tied higher than usual. When she wishes to nurse it, she loosens her girdle and slips it round to the breast

¹ Contributions, p. 28, and "Central Eskimo," p. 610.

² Egdele, p. 192; Crantz, vol. 1, p. 215, and Rink, Tales, etc., p. 54.

³ Voyage, p. 200.

⁴ "Als Eskimo, etc.," p. 199.

⁵ Egdele, p. 192; Crantz, vol. 1, p. 215. "no one else must drink out of their cup;" and Rink, Tales and Traditions, p. 54.

without bringing it out into the air. Children are carried in this way until they are able to walk and often later.

A large child sits astride of his mother's back, with one leg under each of her arms, and has a little suit of clothes in which he is dressed when the mother wishes to set him down. When the child is awake, this hood is thrown back and the child raised quite high so that he looks over his mother's shoulder, who then covers her head with a cloth or something of the sort. The woman appears to be very little inconvenienced by her burden, and goes about her work as usual, and the child does not seem to be disturbed by her movements. The little girls often act as nurses and carry the infants around on their backs, in the same way. It is no unusual sight to see a little girl of ten or twelve carrying a well grown, heavy child in this way.

This custom or a very similar one seems to prevail among the Eskimo generally. In Greenland, the nurse wears a garment especially designed for carrying the child, an *amaut*, i. e., a garment that is so wide in the back as to hold a child, which generally tumbles in it quite naked and is accommodated with no other swaddling clothes or cradle.¹ In East Greenland, according to Capt. Holm, "*Saa længe Børnene ere smaa, bæres de i det fri paa Moderens Ryg.*"²

Petitot's description of the method of carrying the children in the Mackenzie district is so naïve that it deserves to be quoted entire.³

Les mères qui allaitent portent une jaquette ample et serrée autour des reins par une ceinture. Elles y enferment leur chère progéniture qu'elles peuvent, par ce moyen, allaiter sans l'exposer à un froid qui lui serait mortel. Ces jeunes enfants sont sans aucun vêtement jusqu'à l'âge d'environ deux ans. Quant aux incongruités que ces petites créatures peuvent se permettre sur le dos de leur mère, qui leur sert de calorifère, l'amour maternel, le même chez tous les peuples, les endure patiemment et avec indifférence.

At Fury and Hecla Straits, according to Parry⁴, the children are carried in the hood, which is made specially large on purpose, but sometimes also on the back, as at Point Barrow. The enormous hoods of the Eskimo women in Labrador also served to hold the child. The same custom prevails at Cumberland Gulf.⁵ In some localities, for instance the north shore of Hudson's Straits, where the woman wear very long and loose boots, the children are said to be carried in these.⁶ Franklin⁷ refers to the same custom "east of the Mackenzie River." The Siberian children, however, are dressed in regular swaddling clothes of deerskin, with a sort of diaper of dried moss.⁸

We never heard of a single case of infanticide, and, indeed, children

¹Crantz, vol. 1, p. 138. See also Egede, p. 131, and the picture in Rink's *Tales, etc.*, opposite p. 8.

²Geografisk Tidsskrift, vol. 8, p. 91.

³Monographie, etc., p. xv.

⁴Second Voyage, p. 495.

⁵Kumlien, Contributions, p. 24.

⁶See Ellis, Voyage, etc., p. 136, and plate opposite p. 132.

⁷Second Ex., p. 226.

⁸Nordenskiöld, Vega, vol. 2, p. 101.

were so scarce and seemed so highly prized that we never even thought of inquiring if infanticide was ever practiced. Nevertheless, Simpson speaks of the occurrence of a case during the Plover's visit; "but a child, they say, is destroyed only when afflicted with disease of a fatal tendency, or, in scarce seasons, when one or both parents die."¹ Infanticide, according to Bessels, is frequently practiced among the Eskimo of Smith Sound, without regard of sex,² and Schwatka speaks of female infanticide to a limited extent among the people of King William's Land.³

The affection of parents for their children is extreme, and the children seem to be thoroughly worthy of it. They show hardly a trace of the fretfulness and petulance so common among civilized children, and though indulged to an extreme extent are remarkably obedient. Corporal punishment appears to be absolutely unknown and the children are rarely chidden or punished in any way. Indeed, they seldom deserve it, for, in spite of the freedom which they are allowed, they do not often get into any mischief, especially of a malicious sort, but attend quietly to their own affairs and their own amusements.

The older children take very good care of the smaller ones. It is an amusing sight to see a little boy of six or seven patronizing and protecting a little toddler of two or three. Children rarely cry except from actual pain or terror, and even then little ones are remarkably patient and plucky. The young children appear to receive little or no instruction except what they pick up in their play or from watching their elders.

Boys of six or seven begin to shoot small birds and animals and to hunt for birds' eggs, and when they reach the age of twelve or fourteen are usually intrusted with a gun and seal spear and accompany their fathers to the hunt. Some of them soon learn to be very skillful hunters. We know one boy not over thirteen years old who, during the winter of 1881-'82, had his seal nets set like the men and used to visit them regularly, even in the roughest weather. Lads of fourteen or fifteen are sometimes regular members of the whaling crews. In the meantime the little girls are learning to sew, in imitation of their mothers, and by the time they are twelve years old they take their share of the cooking and other housework and assist in making the clothes for the family. They still, however, have plenty of leisure to play with the other children until they are old enough to be married.

Affection for their children seems a universal trait among the Eskimo and there is scarcely an author who does not speak in terms of commendation of the behavior and disposition of the Eskimo children. Some of these passages are so applicable to the people of Point Barrow that I can not forbear quoting them. Egede says:⁴

They have a very tender Love for their Children, and the Mother always carries the infant Child about with her upon her back. * * * They suck them till they are

¹ Op. cit., p. 250.

² Science, vol. 4, p. 544.

³ Naturalist, vol. 18, pt. 9, p. 874.

⁴ Greenland, p. 146.

three or four years old or more, because, in their tender Infancy, they cannot digest the strong Victuals that the rest must live upon. The Education of their Children is what they seem little concerned about, for they never make use of whipping or hard words to correct them when they do anything amiss, but leave them to their own Discretion. Notwithstanding which, when they are grown, they never seem inclined to Vice or Roguery, which is to be admired. It is true, they show no great Respect to their Parents in any outward Forms, but always are very willing to do what they order them, though sometimes they will bid their Parents do it themselves.

According to Capt. Holm,¹ in East Greenland, "De opvoxe i den mest ubundne Frihed. Forældrene nære en ubeskrivelig Kjærlighed til dem og straffe dem derfor aldrig, selv om de ere nok saa gjenstridige. Man maa imidlertid beundre, hvor velopdragne de smaa alligevel ere."

Parry speaks still more strongly:²

The affection of parents for their children was frequently displayed by these people, not only in the mere passive indulgence and abstinence from corporal punishment for which Esquimaux have been before remarked, but by a thousand playful endearments also, such as parents and nurses practice in our own country. Nothing, indeed can well exceed the kindness with which they treat their children. * * * It must be confessed, indeed, that the gentleness and docility of the children are such as to occasion their parents little trouble and to render severity towards them quite unnecessary. Even from their earliest infancy, they possess that quiet disposition, gentleness of demeanor, and uncommon evenness of temper, for which in more mature age they are for the most part distinguished. Disobedience is scarcely ever known; a word or even a look from a parent is enough; and I never saw a single instance of that frowardness and disposition to mischief which, in our youth, so often requires the whole attention of a parent to watch over and to correct. They never cry from trifling accidents, and sometimes not even from very severe hurts, at which an English child would sob for an hour. It is, indeed, astonishing to see the indifference with which, even as tender infants, they bear the numerous blows they accidentally receive when carried at their mothers' backs.

I should be willing to allow this passage to stand as a description of the Point Barrow children. It is interesting to compare with these passages Nordenskiöld's account³ of the children at Pitlekaj, who, if not as he and other writers believe, of pure Chukch blood, are at any rate of mixed Chukch and Eskimo descent:

The children are neither chastised nor scolded. They are, however, the best behaved I have ever seen. Their behavior in the tent is equal to that of the best brought up European children in the parlor. They are not perhaps so wild as ours, but are addicted to games which closely resemble those common among us in the country. Playthings are also in use. * * * If the parents get any delicacy they always give each of their children a bit, and there is never any quarrel as to the size of each child's portion. If a piece of sugar is given to one of the children in a crowd it goes from mouth to mouth round the whole company. In the same way the child offers its father and mother a taste of the bit of sugar or piece of bread it has got. Even in childhood the Chukchs are exceedingly patient. A girl who fell down from the ship's stairs head foremost and thus got so violent a blow that she was almost deprived of hearing scarcely uttered a cry. A boy three or four years of age, much rolled up in furs, who fell down into a ditch cut in the ice on the ship's deck, and in consequence of his inconvenient dress could not get up, lay quietly still until he was observed and helped up by one of the crew.

¹ *Geografisk Tidsskrift*, vol 8, p. 91.

² *Second Voyage*, p. 529.

³ *Vega*, vol. 2, p. 140.

The only extraordinary thing about the Chukch children is their large number, mentioned by the same author.¹ This looks as if the infusion of new blood had increased the fertility of the race. All authors who have described Eskimo of unmixed descent agree in regard to the generally small number of their offspring. Other accounts of Eskimo children are to be found in the writings of Bessels,² Crantz,³ Schwatka,⁴ Gilder,⁵ J. Simpson,⁶ and Hooper.⁷

The custom of adoption is as universal at Point Barrow as it appears to be among the Eskimo generally, and the adopted children are treated by the parents precisely as if they were their own flesh and blood. Orphans are readily provided for, as there are always plenty of families ready and willing to take them, and women who have several children frequently give away one or more of them. Families that have nothing but boys often adopt a girl, and, of course, vice versa, and we know of one case where a woman who had lost a young infant had another given her by one of her friends.

This very general custom of giving away children, as well as the habit already mentioned of temporarily exchanging wives, rendered it quite difficult to ascertain the parentage of any person, especially as it seems to be the custom with them to speak of first cousins as "mflu ataúzk" ("one breast," that is, brothers and sisters). While a boy is desired in the family, since he will be the support of his father when the latter grows too old to hunt, a girl is almost as highly prized, for not only will she help her mother with the cares of housekeeping when she grows up, but she is likely to obtain a good husband who may be induced to become a member of his father-in-law's family.⁸

RIGHTS AND WRONGS.

I have already spoken of the feelings of these people in regard to offenses against property and crimes of violence. As to the relations between the sexes there seems to be the most complete absence of what we consider moral feelings. Promiscuous sexual intercourse between married or unmarried people, or even among children, appears to be looked upon simply as a matter for amusement. As far as we could learn unchastity in a girl was considered nothing against her, and in fact one girl who was a most abandoned and shameless prostitute among the sailors, and who, we were told, had had improper relations with some of her own race, had no difficulty in obtaining an excellent husband.

Remarks of the most indecent character are freely bandied back and forth between the sexes in public, and are received with shouts of laughter by the bystanders. Nevertheless, some of the women, espe-

¹ Vega, vol. 1, p. 449.

² Naturalist, vol. 18, pt. 9, p. 874.

³ History of Greenland, vol. 1, p. 162.

⁷ Tents, etc., pp. 24, 201.

⁴ Science, vol. 4, No. 98, p. 544.

⁵ Schwatka's Search, p. 287.

⁶ Op. cit., p. 250.

⁸ Accounts of this custom of adoption are to be found in Crantz, vol. 1, p. 165; Parry, Second Voyage, p. 531; Kumlien, Contributions, p. 17; Gilder, Schwatka's Search, p. 247, and the passage concerning children quoted above, from Dr. Simpson.

cially those of the wealthier class, preserve a very tolerable degree of conjugal fidelity and certainly do not prostitute themselves to the sailors. I believe that prostitution for gain is unknown among themselves, but it is carried to a most shameless extent with the sailors of the whaling fleet by many of the women, and is even considered a laudable thing by the husbands and fathers, who are perfectly willing to receive the price of their wives' or daughters' frailty, especially if it takes the form of liquor. Dr. Simpson¹ says: "It is said by themselves that the women are very continent before marriage, as well as faithful afterward to their husbands; and this seems to a certain extent true." But he goes on to add: "In their conduct toward strangers the elderly women frequently exhibit a shameless want of modesty, and the men an equally shameless indifference, except for the reward of their partner's frailty." It seems to me that he must have been deceived by the natives concerning the first statement, since the immorality of these people among themselves, as we witnessed it, seems too purely animal and natural to be of recent growth or the result of foreign influence. Moreover, a similar state of affairs has been observed among Eskimo elsewhere, notably at Iglulik at the time of Parry's visit.²

SOCIAL LIFE AND CUSTOMS.

Personal habits, cleanliness, etc.—Though the idea of cleanliness among these people differs considerably from our ideas, they are as a rule far from being as filthy as they appear at first sight. Considering the difficulty of obtaining water, even for purposes of drinking, in the winter season, the iglu, unless dirty work, like the dressing of skins, etc., is going on, is kept remarkably clean. The floor and walls are scrupulously scraped and all dirt is immediately wiped up. They are particularly careful not to bring in any snow or dirt on their feet, and the snow and hoar frost is carefully brushed off from the outer garment, which is often removed before entering the room and left in the passage. They are also careful not to spit on the floor or in the passage, but use for this purpose the large urine tub. This is practically the only offensive object in the house, as it is freely used by both sexes in the presence of the rest. This is done, however, with less exposure and immodesty than one would suppose.³

¹Op. cit., p. 252.

²Second Voyage, p. 529.

³Compare Nordenskiöld's account of the comparative cleanliness of the Chukch dwellings at Pite-kaj: "On the other hand it may be stated that in order not to make a stay in the confined tent chamber too uncomfortable certain rules are strictly observed. Thus, for instance, it is not permitted in the interior of the tent to spit on the floor, but this must be done into a vessel which, in case of necessity, is used as a night utensil. In every outer tent there lies a specially curved reindeer horn, with which snow is removed from the clothes; the outer *peak* is usually put off before one goes into the inner tent, and the shoes are carefully freed from snow. The carpet of walrus skins which covers the floor of the inner tent is accordingly dry and clean. Even the outer tent is swept clean and free from loose snow, and the snow is daily shoveled away from the tent doors with a spade of whalebone. Every article, both in the outer and inner tent, is laid in its proper place, and so on." (Vega, vol. 2, p. 104.)

The contents of this vessel, being mixed with feces, is not fit for tanning skins, etc., and is consequently thrown out doors. The men use a small tub (kuovwñ) as a urinal, and the contents of this is carefully saved. Though the interior of the house is thus kept clean, as much can not be said for its surroundings. All manner of rubbish and filth is simply thrown out upon the ground, without regard to decency or comfort, and this becomes exceedingly offensive when the snow melts in summer. The only scavengers are the dogs, who greedily devour old pieces of skin, refuse meat, and even feces. In regard to personal cleanliness, there is considerable difference between individuals. Some people, especially the poorer women and children, are not only careless about their clothes, going about dressed in ragged, greasy, filthy garments, but seldom wash even their faces and hands, much less their whole persons. One of these women, indeed, was described by her grown-up daughter as "That woman with the black on her nose."

On the other hand most of the wealthier people appear to take pride in being neatly clad, and, except when actually engaged in some dirty work, always have their faces and hands, at least, scrupulously clean and their hair neatly combed. Even the whole person is sometimes washed in spite of the scarcity of water. Many are glad to get soap (iekäkun) and use it freely. Lieut. Ray says that his two guides, Mûñialu and Apaidyào, at the end of a day's march would never sit down to supper without washing their faces and hands with soap and water, and combing their hair, and I recollect that once, when I went over to the village to get a young man to start with Lieut. Ray on a boat journey, he would not start until he had hunted up a piece of soap and washed his face and hands. These people, of course, practice the usual Eskimo habit of washing themselves with freshly passed urine. This custom arises not only from the scarcity of water and the difficulty of heating it, but from the fact that the ammonia of the urine is an excellent substitute for soap in removing the grease with which the skin necessarily becomes soiled.¹ This fact is well known to our whalers, who are in the habit of saving their urine to wash the oily clothes with. The same habit is practiced by the "Chukches" of eastern Siberia.² All, however, get more or less shabby and dirty in the summer, when they are living in tents and boats. All are more or less infested with lice, and they are in the habit of searching each others' heads for these, which they eat, after the fashion of so many other savages. They have also another filthy habit—that of eating the mucus from the nostrils. A similar practice was noticed in Greenland by Egede,³ who goes on quaintly to say: "Thus they make good the old proverb, 'What drips from the nose falls into the mouth, that nothing may be lost.'"

¹ Compare Dall, Alaska, p. 20.

² See Nordenskiöld, Vega, vol. 2, p. 104.

³ Greenland, p. 127.

Salutation.—We had no opportunity of witnessing any meeting between these people and strange Eskimo, so that it is impossible to tell whether they practice any particular form of salutation on such occasions. We saw nothing of the kind among themselves. White men are saluted with shouts of “Nakurúk!” (good), and some Eskimo have learned to shake hands. They no longer practice the common Eskimo salutation of rubbing noses, but say that they once did. Sergt. Middleton Smith, of our party, informs me that he once saw a couple of natives in Capt. Herendeen’s trading store give an exhibition of the way this salutation was formerly practiced.

This custom was perhaps falling into disuse as early as 1837, since Thomas Simpson,¹ in describing his reception at Point Barrow, says: “We were not, however, either upon this or any other occasion, favored with the kooniks or nose-rubbing salutations that have so annoyed other travelers.” Mr. Elson, however, expressly states that the people, probably Utkiavwīmiun, whom he met at Refuge Inlet eleven years before, rubbed noses and cheeks with him² and Maguire³ narrates how the head of the party of visitors from Point Hope saluted him. He says: “He fixed his forehead against mine and used it as a fulcrum to rub noses several times.”

Healing.—As is the case with Eskimo generally, these people rely for curing disease chiefly upon the efforts of certain persons who have the power of exorcising the supernatural beings by whom the disease is caused. A large number of men and, I believe, some women were supposed to have this power and exercise it in cases of sickness, in some instances, at least, upon the payment of a fee. These people correspond closely to the *angekut* of the Greenlanders and Eastern Eskimo, and the so-called “shamans” of southern Alaska, but, as far as we could see, do not possess the power and influence usually elsewhere ascribed to this class.

It was exceedingly difficult to obtain any definite information concerning these people, and we only discovered casually that such and such a person was a “doctor” by hearing that he had been employed in a certain case of sickness, or to perform some ceremony of incantation. We did not even succeed in learning the name of this class of people, who, in talking with us, would call themselves “túktě,” as they did our surgeon. On one occasion some of the party happened to visit the house of a sick man where one of these “doctors” was at work. He sat facing the entrance of the house, beating his drum at intervals, and making a babbling noise with his lips, followed by long speeches addressed to something down the trapdoor, bidding it “go!” We were given to understand that these speeches were addressed to a *tunã* or supernatural being.⁴ Their only idea of direct treatment of disease is

¹ Narrative, p. 155.

² Beechey’s Voyage p. 312.

³ N. W. Passage, p. 385.

⁴ Dr. Simpson says (op. cit., p. 275): “Diseases are also considered to be *turn’gaks*.”

apparently to apply a counterirritant by scarification of the surface of the part affected.

We know of one case where a sufferer from some liver complaint had inflicted on himself, or had had inflicted upon him, quite a considerable cut on the right side with a view of relieving the pain. We also know of several cases where the patients had themselves cut on the scalp or back to relieve headache or rheumatism, and one case where the latter disorder, I believe, had been treated by a severe cut on the side of the knee. A similar practice has been observed at Plover Bay, Siberia, by Hooper,¹ who also mentions the use of a kind of seton for the relief of headache.

They also practice a sort of rough-and-ready surgery, as in the case of the man already mentioned, whose feet had both been amputated. One of the men who lost the tip of his forefinger by the explosion of a cartridge was left with a stump of bone protruding at the end of the finger. Our surgeon attempted to treat this, but after two unsuccessful trials to etherize the patient he was obliged to give it up. When, however, the young man's father-in-law, who was a noted "doctor," came home he said at once that the stump must come off, and the patient had to submit to the operation without ether. The "doctor" tried to borrow Dr. Oldmixon's bone forceps, and when these were refused him cut the bone off, I believe, with a chisel. They appear to have no cure for blindness. We heard nothing of the curious process of "couching" described by Egede in Greenland, p. 121. We had no opportunity of observing their methods of treating wounds or other external injuries. Sufferers were very glad to be treated by our surgeon, and eagerly accepted his medicines, though he had considerable difficulty in making them obey his directions about taking care of themselves.

After they had been in the habit of receiving the surgeon's medicine for some time, one of the Utkiavwñ natives gave Capt. Herendeen what he said was their own medicine. It is a tiny bit of turf which they called nuna kñmölq, and which, therefore, probably came from the highland of the upper Meade River, which region bears the name of Kñmölq. We were able to get very little information about this substance, but my impression is that it was said to be administered internally, and I believe was specially recommended for bleeding at the lungs. Possibly this is the same as "the black moss that grows on the mountain," which, according to Crantz² was eaten by the Greenlanders to stop blood-spitting.

CUSTOMS CONCERNING THE DEAD.

Abstentions.—From the fact that we did not hear of any of the deaths until after their occurrence, we were able to learn very few of their

¹ Tents, etc., p. 185.
² Vol. 1, p. 235

customs concerning the dead. The few observations we were able to make agree in the main with those made elsewhere. For instance, we learned with tolerable certainty that the relatives of the dead, at least, must abstain from working on wood with an ax or hammer for a certain period—I believe, four or five days. According to Dall,¹ in the region about Norton Sound the men can not cut wood with an ax for five days after a death has occurred. In Greenland the household of the deceased were obliged to abstain for a while from certain kinds of food and work.²

A woman from Utkiavwīā, who came over to the station one day in the autumn of 1881, declined to sew on clothing, even at our house, because, as she told Lieut. Ray, there was a dead man in the village who had not yet been carried out to the cemetery and “he would see her.” After consulting with her husband, however, she concluded she could protect herself from him by tracing a circle about her on the floor with a snow-knife. In this circle she did the sewing required, and was careful to keep all her work inside of it.

One of the natives informed me that when a man died his labrets were taken out and thrown away. I remember, however, seeing a young man wearing a plug labret of syenite, which he said had belonged to an old man who died early in the winter of 1881-'82. It was perhaps removed before he actually died.

Manner of disposing of the dead.—The corpse is wrapped up in a piece of sailcloth (deerskin was formerly used), laid upon a flat sled, and dragged out by a small party of people—perhaps the immediate relatives of the deceased, though we never happened to see one of these funeral processions except from a distance—to the cemetery, the place where “they sleep on the ground.” This place at Utkiavwīā is a rising ground about a mile and a half east of the village, near the head of the southwest branch of the Isūtka lagoon. At Nuwūk the main cemetery is at “Nexenrá,” between the village and Pernyū. The bodies are laid out upon the ground without any regular arrangement apparently, though it is difficult to be sure of this, as most of the remains have been broken up and scattered by dogs and foxes. With a freshly wrapped body it is almost impossible to tell which is the head and which the feet. We unfortunately never noticed whether the heads were laid toward any particular point of the compass, as has been observed in other localities. Dr. Simpson says that the head is laid to the east at Point Barrow.

Various implements belonging to the deceased are broken and laid beside the corpse, and the sled is sometimes broken and laid over it. Sometimes, however, the latter is withdrawn a short distance from the cemetery and left on the tundra for one moon, after which it is brought back to the village. Most people do not seem to be troubled at having the

¹ Alaska, p. 146.

² Egede, Greenland, p. 156.

bodies of their relatives disturbed by the dogs or other animals,¹ but we know of one case where the parents of two children who died very nearly at the same time, finding that the dogs were getting at the bodies, raised them on stages of driftwood about 4 or 5 feet high. Similar stages were observed by Hooper at Plover Bay;² but this method of disposing of the dead appears to have gone out of use at the present day, since Dall³ describes the ordinary Siberian method of laying out the dead in ovals of stone as in use at Plover Bay at the time of his visit.

The cemetery at Utkiavwīn is not confined to the spot I have mentioned, though most of the bodies are exposed there. A few bodies are also exposed on the other side of the lagoon, and one body, that of a man, was laid out at the edge of the higher tundra, about a mile due east from the station. The body was covered with canvas, staked down all round with broken paddles, and over it was laid a flat sledge with one runner broken.⁴ At one end of the body lay a wooden dish, and under the edge of the canvas were broken seal-darts and other spears. The body lay in an east and west line, but we could not tell which end was the head. All sorts of objects were scattered round the cemetery—tools, dishes, and even a few guns—though we saw none that appeared to have been serviceable when exposed, except one Snider rifle. If, as is the case among Eskimo in a good many other places, all the personal property of the deceased is supposed to become unclean and must be exposed with him, it is probable that his friends manage to remove the more valuable articles before he is actually dead.⁵

The method of disposing of the dead varies slightly among the Eskimo in different localities, but the weapons or other implements belonging to the deceased are always laid beside the corpse. The custom at Smith Sound, as described by Bessels,⁶ is remarkably like that at Point Barrow. The corpse was wrapped in furs, placed on a sledge, and dragged out and buried in the snow with the face to the west. The sledge was laid over the body and the weapons of the deceased were deposited beside it. Unlike the Point Barrow natives, however, they usually cover the body with stones. In the same passage Dr. Bessels describes a peculiar symbol of mourning, not employed, so far as I can learn, elsewhere. The male mourners plugged up the right nostril with hay and the females the left, and these plugs were worn for several days.

¹ Compare Lyon, *Journal*, p. 269.

² *Tents, etc.*, p. 88.

³ *Alaska*, p. 382.

⁴ Compare Samoyed grave described and figured by Nordenskiöld (*Vega*, vol. 1, p. 98), where a broken sledge was laid upside down by the grave.

⁵ Compare Holm, *Geografisk Tidsskrift*, vol. 8, p. 98: "kun Kostbarheder, saasom Knive eller lignende Jærnsager beholde den aflødes efterladte."—East Greenland.

⁶ *Naturalist*, vol. 18, pt. 9, p. 877.

The custom of covering the body with stones appears to be universally prevalent east of the Mackenzie region.¹

The bodies seen by Dr. Richardson in the delta of the Mackenzie were wrapped in skins and loosely covered with driftwood,² and a similar arrangement was noticed at Kotzebue Sound by Beechey, who figures³ a sort of little wigwam of driftwood built over the dead man. At Port Clarence Nordenskiöld⁴ saw two corpses "laid on the ground, fully clothed, without protection of any coffin, but surrounded by a close fence consisting of a number of tent-poles driven crosswise into the ground. Alongside one of the corpses lay a *kayak* with oars, a loaded double-barreled gun with locks at half-cock and caps on, various other weapons, clothes, tinder-box, snowshoes, drinking-vessels, two masks, * * * and strangely shaped animal figures." On the Siberian coast the dead are sometimes burned.⁵

Nordenskiöld believes that the coast Chukches have perhaps begun to abandon the custom of burning the dead, but I am rather inclined to think that is a custom of the "deermen," which the people of the coast of pure or mixed Eskimo blood never fully adopted. Dall, indeed, was explicitly informed that the custom was only used with the bodies of "good" men, and at the time of Nordenskiöld's visit he found it "at least certain that the people of Pitlekaj exclusively bury their dead by laying them out on the tundra." The body is surrounded by an oval of stones, but apparently not covered with them as in the east.⁶ The Krause brothers observed by the bodies, besides "die erwähnten Geräthschaften" [Lanzen, Bogen und Pfeile für die Männer, Koch- und Hausgeräthe für die Weiber], "unter einen kleinen Steinhäufen ein Hunde-, Renthier-, Bären- oder Walross-Schädel." This custom shows a little Children die and are buried, they put the Head of a Dog near the curious resemblance to that described by Egede⁷ in Greenland: "When Grave, fancying that Children, having no Understanding, they can not

¹ See the passage quoted from Bessels, for Smith Sound; Egede, Greenland, p. 148; Crantz's History of Greenland, vol. 1, p. 237; East Greenland, Holm, Geografisk Tidsskrift, vol. 8, p. 98, and Scoresby, Voyage to Northern Whalefishery, p. 213 (where he speaks of finding on the east coast of Greenland graves dug and covered with slabs of stone. Digging graves is very unusual among the Eskimo, as the nature of the ground on which they live usually forbids it. Parry mentions something similar at Iglulik: "The body was laid in a regular, but shallow grave, * * * covered with flat pieces of limestone" (Second Voyage, p. 551); Lyon, Journal, p. 268 (Iglulik); Kumlien, Contribution, p. 44 (Cumberland Gulf); Hall, Arctic Researches, p. 124 (Baffin Land); Rae Narrative, pp. 22 and 187 (northwest shore of Hudson Bay), and Ellis, Voyage to Hudson's Bay, p. 148 (Marble Island). I myself have noticed the same custom at the old Eskimo cemetery near the Hudson Bay post of Rigolette, Hamilton Inlet, on the Labrador coast. Chappel, however, saw a body "closely wrapt in skins and laid in a sort of a gully," Hudson's Bay, p. 113 (north shore Hudson Strait), and Davis's account of what he saw in Greenland is as follows: "We found on shore three dead people, and two of them had their staves lying by them and their olde skins wrapped about them." Hakluyt, Voyages, 1589, p. 788.

² Franklin, Second Expedition, p. 192.

³ Voyage, pl. opposite p. 332.

⁴ Vega, vol. 2, p. 238, and figure of grave on p. 239.

⁵ See Nordenskiöld, Vega, vol. 2, p. 88, and Dall, Alaska, p. 382.

⁶ See Nordenskiöld, Vega, vol. 2, pp. 88-9 (Pitlekaj), and 225 (St. Lawrence Bay); Krause Bros., Geographische Blätter, vol. 5, p. 18 (St. Lawrence Bay, East Cape, Indian Point, and Plover Bay) and Dall, Alaska, p. 382.

⁷ Greenland, p. 151. See also Crantz, vol. 1, p. 237.

by themselves find the Way, but the Dog must guide them to the Land of the Souls." The body is usually laid out at full length upon the ground. Among the ancient Greenlanders,¹ however, and in the Yukon region the body was doubled up. In the latter region the body was laid on its side in a box of planks four feet long and raised on four supports² or wrapped up in mats and covered with rocks or driftwood.³ The custom of inclosing the dead in a short coffin, to judge from the figures given by the latter writer in Pl. VI. of his report, appears also to prevail at the mouth of the Kuskokwim. In the island of Kadiak, according to Dall and Lisiansky,⁴ the dead were buried.

GOVERNMENT.

In the family.—I can hardly do better than quote Dr. Simpson's words, already referred to (op. cit. page 252), on this subject: "A man seems to have unlimited authority in his own hut." Nevertheless, his rule seems to be founded on respect and mutual agreement, rather than on despotic authority. The wife appears to be consulted, as already stated, on all important occasions, and, to quote Dr. Simpson again (ibid.): "Seniority gives precedence when there are several women in one hut, and the sway of the elder in the direction of everything connected with her duties seems never disputed." When more than one family inhabit the same house the head of each family appears to have authority over his own relatives, while the relations between the two are governed solely by mutual agreement.

In the village.—These people have no established form of government nor any chiefs in the ordinary sense of the word, but appear to be ruled by a strong public opinion, combined with a certain amount of respect for the opinions of the elder people, both men and women, and by a large number of traditional observances like those concerning the whale fishery, the deceased, etc., already described. In the ordinary relations of life a person, as a rule, avoids doing anything to his neighbor which he would not wish to have done to himself, and affairs which concern the community as a whole, as for instance their relations with us at the station, are settled by a general and apparently informal discussion, when the opinion of the majority carries the day. The majority appears to have no means, short of individual violence, of enforcing obedience to its decisions, but, as far as we could see, the matter is left to the good sense of the parties concerned. Respect for the opinions of elders is so great that the people may be said to be practically under what is called "simple elder rule."⁵ Public opinion has

¹ Egede, Greenland, p. 149, and Crantz, vol. 1, p. 237.

² Dall, Alaska, pp. 19, 145, and 227.

³ Petroff, Report, p. 127.

⁴ Alaska, p. 403, and Voyage, p. 200.

⁵ Compare, among other instances, Capt. Holm's observations in East Greenland: "Som Overhoved i Huset [which is the village] fungerer den ældste Mand, naar han er en god Fanger, etc." (Geogr. Tids., vol. 8, p. 90.)

formulated certain rules in regard to some kinds of property and the division of game, which are remarkably like those noticed among Eskimo elsewhere, and which may be supposed to have grown up among the ancestors of the Eskimo, before their separation.

For instance, in Greenland,¹ "Anyone picking up pieces of driftwood or goods lost at sea or on land was considered the rightful owner of them; and to make good his possession he had only to carry them up above high-water mark and put stones upon them, no matter where his homestead might be." Now, at Point Barrow we often saw the natives dragging driftwood up to the high-water mark, and the owner seemed perfectly able to prove his claim. Lieut. Ray informs me that he has seen men mark such sticks of timber by cutting them with their adzes and that sticks so marked were respected by the other natives. On one occasion, when he was about to have a large piece of drift-timber dragged up to the station, a woman came up and proved that the timber belonged to her by pointing out the freshly cut mark. I have myself seen a native claim a barrel which had been washed ashore, by setting it up on end.

As far as we could learn, the smaller animals, as for instance, birds, the smaller seals, reindeer, etc., are the property of the hunter, instead of being divided as in some other localities, for example at Smith Sound.² The larger seals and walrus appeared to be divided among the boat's crew, the owner of the boat apparently keeping the tusks of the walrus and perhaps the skin. A bear, however, both flesh and skin, is equally divided among all who in any way had a hand in the killing. We learned this with certainty from having to purchase the skin of a bear killed at the village, where a number of men had been engaged in the hunt. When a whale is taken, as I have already said, the whalebone is equally divided among the crews of all the boats in sight at the time of killing. All comers, however, have a right to all the flesh, blubber, and blackskin that they can cut off.³

Dr. Rink, in describing the social order of the ancient Greenlanders,⁴ says: "Looking at what has been said regarding the rights of property and the division of the people into certain communities, in connection with the division of property into the classes just given, we are led to the conclusion that the right of any individual to hold more than a certain amount of property was, if not regulated by law, at least jealously watched by the rest of the community, and that virtually

¹ Rink, *Tales and Traditions*, p. 28. Compare also Crantz, vol. 1, p. 181.

² Bessels, *Naturalist*, vol. 23, pt. p. 873.

³ Compare Rink, *Tales, etc.*, p. 29: "But if an animal of the largest size, more especially a whale, was captured, it was considered common property, and as indiscriminately belonging to every one who might come and assist in flensing it, whatever place he belonged to and whether he had any share in capturing the animal or not." (Greenland). Gilder (Schwatka's Search, p. 190) says that on the northwest shore of Hudson Bay all who arrive while a walrus is being cut up are entitled to a share of it, though the man who struck it has the first choice of pieces. At East Cape, Siberia, the Krause Brothers learned: "Wird nämlich ein Walfisch gefangen, so hat jeder Ortsbewohner das Recht, so viel Fleisch zu nehmen, als er abzuschneiden vermag." (*Geographische Blätter*, vol. 5, pt. 2, p. 120).

⁴ *Tales, etc.*, p. 29.

the surplus of any individual or community, fixed by the arbitrary rate which tradition or custom had assigned, was made over to those who had less." At Point Barrow, however, the idea of individual ownership appears to be much more strongly developed. As far as we could learn, there is no limit to the amount of property which an individual, at least the head of a family, may accumulate. Even though the whale-bone be, as already described, divided among all the boats' crews "in at the death," no objection is made to one man buying it all up, if he has the means, for his own private use.

This has given rise to a regular wealthy and aristocratic class, who, however, are not yet sufficiently differentiated from the poorer people to refuse to associate on any terms but those of social equality. The men of this class are the umialiks, a word which appears in many corrupted forms on the coast of Western America and is often supposed to mean "chief." Dr. Simpson¹ says: "The chief men are called O-mé-lik (wealthy)," but "wealthy" is an explanation of the position of these men, and not a translation of the title, which, as we obtained it, is precisely the same as the Greenland word for *owner of a boat*, umialik (from umia(k), and the termination lik or li-ñ. This is one of the few cases in which the final *k* is sounded at Point Barrow as in Greenland).

Dr. Rink has already observed² that the word used by Simpson "no doubt must be the same as the Greenlandish umialik, signifying owner of a boat," and as I heard the title more than once carefully pronounced at Point Barrow it was the identical word. The umialiks, as Simpson says,³ "have acquired their position by being more thrifty and intelligent, better traders, and usually better hunters, as well as physically stronger and more daring."⁴ They have acquired a certain amount of influence and respect from these reasons, as well as from their wealth, which enables them to purchase the services of others to man their boats, but appear to have absolutely no authority outside of their own families.⁵ Petroff⁶ considers them as a sort of "middlemen or spokesmen," who make themselves "prominent by superintending all intercourse and traffic with visitors."

This sort of prominence, however, appears to have been conferred upon them by the traders, who, ignorant of the very democratic state of Eskimo society, naturally look for "chiefs" to deal with. They pick out the best looking and best dressed man in the village and endeavor to win his favor by giving him presents, receiving him into the cabin, and conducting all their dealings with the natives through him. The chief,

¹Op. cit., p. 272.

²Tales, etc., p. 25.

³Op. cit.

⁴Compare what the Krause Brothers say of the "chiefs" on the Siberian coast (Geographische Blätter, vol. 5, pt. 1, p. 29): "Die Autorität, welche die obenerwähnten Männer augenscheinlich ausüben, ist wohl auf Rechnung ihres grösseren Besitzes zu setzen. Der "Chief" ist jedes Mal der reichste Mann, ein 'big man.'"

⁵See, also, Dr. Simpson, op. cit., p. 273.

⁶Report, etc., p. 125.

thus selected, is generally shrewd enough to make the most of the greatness thrust upon him, and no doubt often pretends to more influence and power than he actually possesses.¹

As to the story of the whalers, that the "chieftainship" is the reward of the best fighter, who holds it like a "challenge cup," subject to being called out at any time to defend his rank in a duel, as far as concerns Point Barrow, this is a sheer fable, perhaps invented by the Eskimo to impose upon the strangers, but more likely the result of misunderstanding and a vivid imagination on the part of the whites. Among umialiks, one or two appear to have more wealth and influence than the rest. Teuñaura in Utkiavwīñ and the late Katiga at Nuwūk were said, according to Captain Herendeen, to be "great umialiks" and Teuñaura was always spoken of as the foremost man in Utkiavwīñ. We knew of one party coming up from Sidaru with presents for Teuñaura, and were informed that the other Eskimo never sold to him, but only gave him presents. It was also said that Katiga's infant son would one day be a "great umialik."

All these men are or have been captains of whaling umiaks, and the title umialiks appears to be applied to them in this capacity, since many of the poorer men, who, as far as we could learn, were not considered umialiks, own umiaks which they do not fit out for whaling, but use only to transport their families from place to place in the summer.

RELIGION.

General ideas.—It was exceedingly difficult to get any idea of the religious belief of the people, partly from our inability to make ourselves understood in regard to abstract ideas and partly from ignorance on our part of the proper method of conducting such inquiries. For instance, in trying to get at their ideas of a future life, we could only ask "Where does a man go when he dies?" to which we, of course, received the obvious answer, "To the cemetery!" Moreover, such a multitude of other and easier lines of investigation presented themselves for our attention that we were naturally inclined to neglect the difficult field of religion, and besides under the circumstances of our intercourse it was almost impossible to get the attention of the natives when their minds were not full of other subjects.

Nevertheless, many of the fragments of superstition and tradition that we were able to collect agree remarkably with what has been observed among the Eskimo elsewhere, so that it is highly probable that their religion is of the same general character as that of the Greenlanders, namely, a belief in a multitude of supernatural beings, who are to be exorcised or propitiated by various observances, especially by the performances of certain specially gifted people, who are something of the nature of wizards. So much has been written by many authors

¹ Compare the case of the alleged "chiefs" of the Chukches, in Nordenskiöld's *Vega*, vol. 1, pp. 440 and 495.

about these wizards or "doctors," the *angekut* of the eastern Eskimo, the so-called "shamans" of Alaska and Siberia, that I need make no special reference to their writings except where they happen to throw light on our own observations. Dr. Simpson succeeded in obtaining more information concerning the religious belief of these people than our party was able to do, and his observations,¹ to which ours are in some degree supplementary, tend to corroborate the conclusion at which I have arrived.

Our information in regard to the special class of wizards was rather vague. We learned that many men in the village, distinguishable from the rest by no visible characteristics, were able to heal the sick, procure good weather, favorable winds, plenty of game, and do other things by "talking" and beating the drum. We did not learn the number of these men in either village, but we heard of very many different men doing one or the other of these things, while others of our acquaintance never attempted them. Neither did we learn that any one of these men was considered superior to the rest, as appears to be the case in some regions, nor how a man could attain this power. Some of these men, who appeared to give particular attention to curing the sick, called themselves "tú'ktě" ("doctor"), but, probably for want of properly directed inquiries, we did not learn the Eskimo name of these people. We were definitely informed, however, that their "talk," when treating disease or trying to obtain fair weather, etc., was addressed to "tu'ña," or a supernatural being. This name, of course, differs only in dialectic form from that applied in other places to the universal familiar spirits of Eskimo superstition.

We at first supposed that "tu'ña" meant some particular individual demon, but Dr. Simpson is probably right in saying that the Point Barrow natives, like the rest of the Eskimo, recognize a host of tu'ñain, since "tu'ña" was described to us under a variety of forms. Most of the natives whom we asked if they had seen tu'ña, said that they had not, but that other men, mentioning certain "doctors," had seen him. One man, however, said that he had seen tu'ña in the *kúdyígf*, when the people "talked" sitting in the dark, with their heads bowed and faces covered, and tu'ña came with a noise like a great bird.² He had raised his head and saw tu'ña, like a man with bloodless cheeks.³ Tu'ña again was called "a bad man, dead" (appar-

¹ Op. cit., p. 273 et seq.

² Compare Graah's account of the ceremony of summoning a *tornak* in East Greenland (Narrative, p. 123). "Come he did, however, at last, and his approach was announced by a strange rushing sound, very like the sound of a large bird flying beneath the roof." (The italics are my own.) The *angekut* evidently have some juggling contrivance, carefully concealed from laymen, perhaps of the nature of a "whizzing-stick."

³ Compare Rink's description of the ceremony of summoning a *tornak* to ask his advice, in Greenland (Tales, etc., p. 60). This was performed before a company in a darkened house. The *angekok* lay on the floor, beside a suspended skin and drum, with his hands tied behind his back and his head between his legs. A song was sung by the audience, and the *angekok* invoked his *tornak*, beating on the skin and the drum. The spirit announced his arrival by a peculiar sound and the appearance of a light or fire.

ently a ghost), sometimes as large as a man and sometimes dwarfish, sometimes a fleshless skeleton, while one man, to describe him, made the same grimace that a white man would use to indicate a hobgoblin, with staring eyes, gaping mouth, and hands outstretched like claws. Apparently "tueña" in conversation with us was used to designate all the various supernatural objects of their belief, ghosts as well as familiar spirits. For instance, in Greenland, according to Rink,¹ a ghost "manifests himself by whistling or singing in the ears." Now, Lieut. Ray was walking rapidly one day in the winter with an Eskimo and his wife, and the woman suddenly stopped and said she "heard tueña"—that he made a noise like *singing in the ears*.

The people generally have a great dread of "tueña," who they say would kill them, and are very averse to going out alone in the dark. One of each party that came over from the village in the evening usually carried a drawn knife, preferably one of the large double-edged knives, supposed to be Siberian and already described, in his hand as defense against tueña, and a drawn knife was sometimes even carried in the daylight "nanmunlu tueñamunlu," "for bear and demon." Notwithstanding their apparently genuine dread of "tueña," they are by no means averse to talking or even joking about him.

The knife also serves as a protection against the aurora, which most of them agree is bad, and when bright likely to kill a person by striking him in the back of the neck. However, brandishing the knife at it will keep it off. Besides, as a woman told me one night, you can drive off a "bad" aurora by throwing at it dog's excrement and urine.²

Lieut. Ray saw in one of the houses in Utkaiwiñ, a contrivance for frightening away a "tueña" from the entrance to a house should he try to get in. The man had hung in the trapdoor the handle of a seal-drag by means of a thong spiked to the wall with a large knife, and told Lieut. Ray that if "tueña" tried to get into the house he would undoubtedly catch hold of the handle to help himself up, which would pull down the knife upon his head and frighten him off. We never had an opportunity of witnessing the ceremony of summoning "tueña," nor did we ever hear of the ceremony taking place during our stay at the station, but we were fortunate enough to observe several other performances, though they do not appear to be frequent. The ceremony of healing the sick and the ceremonies connected with the whale-fishery have already been described.

On the 21st of February, 1883, Lieut. Ray and Capt. Herendeen happened to be at the village on time to see the tueña, who had been causing the bad weather, expelled from the village. Some of the natives said the next day that they had *killed* the tueña, but they said at the same time he had gone "a long way off." When Lieut. Ray reached

¹ Tales, etc., p. 14.

² Compare Rink (Tales, etc. p. 56): "Several fetid and stinking matters, such as old urine, are excellent means for keeping away all kinds of evil-intentioned spirits and ghosts."

the village, women were standing at the doors of the houses armed with snow-knives and clubs with which they made passes over the entrance when the people inside called out. He entered one house and found a woman vigorously driving the *tuēña* out of every corner with a knife. They then repaired to the *kúdyigi*, where there were ten or twelve people, each of whom, to quote from Lieut. Ray's note book, "made a charge against the evil spirit, telling what injuries they had received from it." Then they went into the open air, where a fire had been built in front of the entrance, and formed a half circle around the fire. Each then went up and made a speech, bending over the fire (according to Simpson, who describes a similar ceremony at Nuwtík on p. 274 of his paper, coaxing the *tuēña* to come under the fire to warm himself). Then they brought out a large tub full of urine, to which, Simpson says, each man present had contributed, and held it ready near the fire, while two men stood with their rifles in readiness, and a boy stood near the fire with a large stone in his hands, bracing himself firmly with his feet spread apart for a vigorous throw. Then they chanted as follows (the words of this chant were obtained afterward by the writer):

Ták ták ták tohá!
 Njju'a há!
 He! he! he!
 Haiyahe!
 Yaiyahe!
 Hwi!

And instantly the contents of the tub were dashed on the fire, the stone thrown into the embers, and both men discharged their rifles, one into the embers, and one into the cloud of steam as it rose. Then all brushed their clothes violently and shouted, and the *tuēña* was killed. By a fortunate coincidence, the next day was the finest we had had for a long time.

Sacrifices are also occasionally made to these supernatural beings as in Greenland "gifts were offered to the inue of certain rocks, capes and ice firths, principally when traveling and passing those places."¹

Capt. Herendeen, in the fall of 1882, went to the rivers in company with one of the "doctors." When they arrived at the river Kuaru, where the latter intended to stay for the fishing, he got out his drum and "talked" for a long time, and breaking off very small pieces of tobacco threw them into the air, crying out, "*Tuēña, tuēña, I give you tobacco! give me plenty of fish.*" When they passed the dead men at the cemetery, he gave them tobacco in the same way, asking them also for fish.² We noticed but few other superstitious observances which have not been already described. As in Greenland and elsewhere, superstition requires certain persons to abstain from certain kinds of food. For instance, *Mūñialu*, and apparently many others, were not permitted

¹ Rink. *Tales, etc.*, p. 56.

² "When an Innuít passes the place where a relative has died, he pauses and deposits a piece of meat near by." Baffin Land, Hall, *Arctic Researches*, p. 574.

to eat the burbot, another man was denied ptarmigan, and a woman¹ at Nuwük was not allowed to eat "earth food," that is, anything which grew upon the ground. Lieut. Ray also mentions a man who was forbidden bear's flesh.²

We observed some traces of the superstition concerning the heads of seals and other marine animals taken in the chase, which has been noticed elsewhere. Crantz says:³ "The heads of seals must not be fractured, nor must they be thrown into the sea, but be piled in a heap before the door,⁴ that the souls of the seals may not be enraged and scare their brethren from the coast." And Capt. Parry found that at Winter Island they carefully preserved the heads of all the animals killed during the winter, except two or three of the walrus which he obtained with great difficulty. The natives told him that they were to be thrown into the sea in the summer, but at Iglulik they readily sold them before the summer arrived.⁵

I tried very hard to get a full series of skulls from the seals taken at Utkiavwîñ in the winter of 1882-'83, but though I frequently asked the natives to bring them over for sale, they never did so, till at last one young woman promised to bring me all I wanted at the price of half a pound of gunpowder a skull. Nevertheless, she brought over only two or three at that price. We did not observe what was done with the skulls, but frequently observed quantities of the smaller bones of the seals carefully tucked away in the crevices of the ice at some distance from the shore. We had comparatively little difficulty in obtaining skulls of the walrus, but I observed that the bottom of Tûseráru, the little pond at the edge of the village, was covered with old walrus skulls, as if they had been deposited there for years. The superstition appears to be in full force among the Chukches, who live near the place where the *Vega* wintered. Nordenskjöld was unable to purchase a pair of fresh walrus heads at the first village he visited, though the tusks were offered for sale the next day⁶ and at Pitlekaj.⁷ "Some prejudice * * * prevented the Chukches from parting with the heads of the seal, though * * * we offered a high price for them. 'Irgatti' (to-morrow) was the usual answer. But the promise was never kept."

Amulets.—Like the Greenlanders⁸ and other Eskimos, they place great reliance on amulets or talismans, which are carried on the person, in the boat, or even inserted in weapons, each apparently with some

¹ Report Point Barrow Expedition, p. 46.

² Compare Rink, *Tales, etc.*, p. 64; Crantz, vol. 1, p. 215, and Parry, 2d voyage, p. 548: "Seal's flesh is forbidden, for instance, in one disease, that of the walrus in the other; the heart is denied to some, and the liver to others."

³ Vol. 1, p. 216.

⁴ Beechey saw the skulls of seals and other animals kept in piles round the houses at Hotham Inlet (Voyage, p. 259).

⁵ Second Voyage, p. 510.

⁶ *Vega*, vol. 1, p. 435.

⁷ *Vega*, vol. 2, p. 137.

⁸ John Davis describes the Greenlanders in 1586 as follows: "They are idolaters, and have images great store, which they wore about them, and in their boats, which we suppose they worship." (Hakluyt, *Voyages, etc.*, 1589, p. 782.)

specific purpose, which indeed we learned in the case of some of those in the collection. Like the amulets of the Greenlanders, they appear to be¹ "certain animals or things which had belonged to or been in contact with certain persons (e. g., the people of ancient times, or fortunate hunters) or supernatural beings," and "objects which merely by their appearance recalled the effect expected from the amulet, such as figures of various objects." To the latter class belong the rudely flaked flint images of whales, already mentioned, and probably many of the other small images of men and animals already described, especially those fitted with holes for strings to hang them up by.

The flint whale is a very common amulet, intended, as we understood, to give good luck in whaling, and is worn habitually by many of the men and boys under the clothes, suspended around the neck by a string. The captain and harpooner of a whaling crew also wear them as pendants on the fillets already described, and on the breast of the jacket. We obtained five of these objects, all of very nearly the same shape, but of different materials and varying somewhat in size. Fig. 421 represents one of these (No. 56703 [208] from Utkiavwīñ) made of a piece of hard colorless glass, probably a fragment of a ship's "deadlight." It is rather roughly flaked into a figure of a "bowhead" whale, 3·4 inches long, as seen from above and very much flattened with exaggerated flukes. The flippers were rudely indicated in the outline, but the left one is broken off.



FIG. 421.—Whale flaked from glass.

No. 89613 [771] from Utkiavwīñ is a very similar image, 2·4 inches long, which perhaps is of the same material, though it may be made of rock crystal. No. 56707 [159] from Utkiavwīñ is a very small whale (1·4 inches long), chipped in large flakes out of a water-worn pebble of smoky quartz, while No. 89577 [939] Fig. 422, from the same village, which is a trifle larger (2 inches long), is made of dark crimson jasper. The large black flint whale, No. 56683 [61],



FIG. 422.—Whale flaked from red jasper.

also from Utkiavwīñ, which is 3·9 inches long, is the rudest of all the figures of the whales. It is precisely the shape of the blade of a skin scraper, except for the roughly indicated flukes.

Fig. 423 (No. 89524 [1299] from Utkiavwīñ) is a rude wooden image of the same animal, 3½ inches long, very broad and flat-bellied. It is

¹ Rink, Tales, etc., p. 52.

three joints of the foot of a reindeer fawn, with the skin and hoof and about $1\frac{1}{2}$ inches of tendon attached behind, through a hole in the end of which is knotted about 3 inches of seal thong. No. 89525 [1314] from the same village, is a precisely similar charm. No. 89699 [779] from Utkavwīñ, is the subfossil incisor tooth of some ruminant with a hole drilled through the root for a string to hang it up by. It was said to be the tooth of the "ug'ru'nû," a large animal, long extinct. As the natives said, "Here on the land are none, only the bones remain." No. 89743 [1110], from Utkiavwīñ, is a molar tooth of the same animal, probably, weathered and old, with a hole freshly drilled through one root and a long piece of sinew braid with the ends knotted together looped into it. There are also in the collection two very old teeth which probably were inclosed in little sacks of skin and worn as amulets.

No. 89698 [1580], from Utkiavwīñ, is the tusk of a very young walrus, only $2\frac{1}{2}$ inches long, and No. 89452 [1148] from Utkiavwīñ, is the canine tooth of a polar bear. No. 56547 [656], from the same village, is a similar tooth.¹

The only amulet attached to a weapon, which we collected, is the tern's bill, already alluded to, placed under the whalebone lashing on the seal-spear, No. 89910 [1694]. Perhaps the idea of this charm is that the spear should plunge down upon the seal with as sure an aim as the tern does upon its prey.²

A number of amulets of this class are always carried in the whaling-umiak. I have already mentioned the wolf-skulls, stuffed ravens and eagles, fox-tails³ and bunches of feathers used for this purpose. Most of these charms are parts of some rapacious animal or bird, but parts of other animals seem to have some virtue on these occasions.

For instance, I noticed the axis vertebra of a seal in one whaling-umiak, and we collected a rudely stuffed skin of a godwit (*Limosa lapponica baueri*), which, we were informed, was "for whales." This specimen (No. 89526 [1328], Fig. 424, from Utkiavwīñ) is soiled and ragged, and has a stick thrust through the neck to hold it out. The neck is wrapped around with a narrow strip of whalebone and some coarse thread, part of which serves to lash on a slip of wood, apparently to splice the stick inside. A bit of white man's string is passed around the body and tied in a loop to hang it up by. This charm is perhaps to keep the boat from capsizing, since Crantz says that the Greenlanders "like to fasten to their kajak a model of it * * * or only a dead

¹Compare Kumlien, Contributions, p. 45. "Another charm of great value to the mother who has a young babe is the canine tooth of the polar bear. This is used as a kind of clasp to a seal-skin string, which passes round the body and keeps the breasts up. Her milk supply cannot fall while she wears this. (Cumberland Gulf.)

²Compare the story in Rink's Tales and Traditions (p. 445), where the kaiak, which had a piece of sheldrake fastened into the bow for an amulet, went faster than the sheldrake flies.

³Compare Crantz, vol. 1, p. 216. "The boat [for whaling] must have a fox's head in front, and the harpoon be furnished with an eagle's beak." The latter statement is interesting in connection with the tern's bill on the seal harpoon, from Point Barrow, already referred to.

sparrow or snipe, or a bit of wood, stone, some feathers or hair, that they may not overset" (vol. 1, p. 216), and perhaps the bone of a marine animal, like the seal, is to protect the crew from drowning should the boat upset, after all.

No. 89529 [1150] from Utkiavwīn is a bunch of feathers to be carried in the boat. It consists of nine wing feathers of the golden eagle, four tied in a bunch with a bit of sinew round the quills, four tied up with one end of the short bit of seal thong which serves to tie the whole bundle together, one of which has all the light-colored parts of the feather stained with red ocher, and a single feather shaft carefully wrapped up in a piece of entrail and wound spirally with a piece of sinew braid.

No. 89527-8 [1327] from Utkiavwīn is the charm which will secure good success in deerhunting if it is hung up outside of the snow house in which the family is encamped. It consists of two roughly stuffed skins of the black bellied plover (*Charadrius squatarola*), each with a



FIG. 424.—Amulet of whaling; stuffed godwit.

stick run through the body so that one end supports the neck and the other the tail, and the necks wound with sinew. One has no head. A string of sinew braid is tied around the body of each, so as to leave a free end at the back, to which is fastened a little cross piece of bone, by which it may be secured to a becket. Like the rest of the amulets in the collection this has evidently seen service, being very old, worn, and faded.

The other class of amulets, namely objects which have belonged to or been in contact with certain persons or supernatural beings, or I may add apparently certain localities, is represented by a number of specimens. To the custom of using such things as amulets, we undoubtedly owe the preservation of most of the ancient weapons and other implements, especially those made of wood, bone, or other perishable substances, like the ancient harpoon heads already described, one of which, No. 89544 [1419], is still attached to the belt on which it was worn.



FIG. 425.—Amulet consisting of ancient jade adz.

Fig. 425, No. 56668 [308], from Utkiavwīn is one of the ancient black

jade adzes 5.1 inches, slung with thong and whalebone, making a becket by which it can be hung up. We did not learn the history of this amulet, which at the time of collecting it was supposed to be a net sinker. There would, however, be no reason for using so valuable an object for such a purpose, when a common beach pebble would do just as well, unless it was intended as a charm to insure success in fishing. It may even have been carried as a charm on the person, since we afterwards saw a still more bulky object used for such a purpose.

Such an object seems rather heavy to be carried on the person, but a well known man in Utkiavwñ always carried with him when he went sealing a large pear-shaped stone, which must have weighed upwards of two pounds, suspended somewhere about his person. It is not unlikely that this stone acquired its virtue as an amulet from having been a sinker used by some lucky fisherman in former time or in a distant country. Mr. H. W. Henshaw has already referred to the resemblance of this amulet to the plummet-like "medicine stones" of some of our Indians.¹



FIG. 426.—Little box containing amulet for whaling.

Fig. 426, (No. 89534 [1306] from Utkiavwñ) is an amulet for success in whaling. It consists of three little irregular water-worn fragments of amber carefully wrapped in a bit of parchment and inclosed in a little wooden box $1\frac{1}{2}$ inches long, made of two semicylindrical bits of cottonwood, with the flat faces hollowed out and put together and fastened up by three turns of sinew braid round the middle, tied in a loose knot. The box is old and brown from age and handling. We heard of other pieces of amber and earth ("nuna") worn as amulets, wrapped up in bits of leather and hung on the belt.

No. 89533 [1247], from Utkiavwñ, is simply a nearly square pebble, 1.4 inches long, of dark red jasper, slung in a bit of sinew braid so that it can be hung on the belt. Fig. 427 (No. 89525 [1308] from Utkiavwñ) is some small object, placed in the center of the grain side of a square bit of white sealskin, the edges of which are folded up around it and tied tightly round with deer sinew, so as to make a little round knob. I collected this amulet, and was particularly informed how it was to be used. If it be fastened on the right shoulder it will insure success in taking ducks with the "bolas." Fig. 428 (No. 89535 [1244] from Utkiavwñ) is an amulet whose history we did not learn. It is a little ob-



FIG. 427.—A mulet for catching fowl with bolas.

long box 3.3 inches long, carved from a block of cottonwood, with a flat cover tied on with nine turns of sinew braid, and contains twenty-one dried humble-bees, which it was said came from the river Kulu-

¹ American Journal of Archæology, vol. 1.

grua. The natives have a great dread, apparently superstitious, of these bees and the large gadflies (*Cestens tarandi*), one of which I have seen scatter half a dozen people.



FIG. 428.—Box of dried bees—amulet.

A man one day caught one of these, and whittled out a little box of wood, in which he shut the insect up and tied it up with a shred of sinew, telling Capt. Herendeen that it was "tueñamun," for "tueña."

A small lump of indurated gravel (No. 56725) [273] was one day brought over from

Utkiavwīñ, with the story that it was a "medicine" for driving away the ice. The man who uses this charm stands on the high bank at the village, and breaking off grains of the gravel throws them seaward. This will cause the ice to move off from the shore.

The essential identity of the amulets of the Point Barrow natives with those used by the Eskimo elsewhere is shown by the following passages from other writers. Egede says:¹

A Superstition very common among them is to load themselves with Amulets or Pomanders, dangling about their Necks and Arms, which consist in some Pieces of old Wood, Stones or Bones, Bills and Claws of Birds, or Anything else which their Fancy suggests to them.

Crantz says:²

They are so different in the amulets or charms they hang on people, that one laughs at another's. These powerful preventives consist in a bit of old wood hung around their necks, or a stone, or a bone, or a beak or claw of a bird, or else a leather strap tied round their forehead, breast, or arm.

Parry speaks³ of what he supposes were amulets at Iglulik, consisting of teeth of the fox, wolf, and musk-ox, bones of the "kablēarioo" (supposed to be the wolverine), and foxes' noses. Kumlien says⁴ that at Cumberland Gulf, "among the many superstitious notions, the wearing of charms about the person is one of the most curious. These are called *angoouk* or *amusit*, and may be nothing but pieces of bone or wood, birds' bills or claws, or an animal's teeth or skin." A little girl "had a small envelope of sealskin that was worn on the back of her inside jacket" containing two small stones.

Such little pockets of skin sewed to the inner jacket are very common at Point Barrow, but we did not succeed in any case in learning their contents. At Kotzebue Sound, Beechey saw ravens' skins on which the natives set a high value, while the beaks and claws of these birds were attached to their belts and headbands.⁵ Petitot describes⁶ the amulets used in the Mackenzie district, in the passage already quoted, as "*défroques empaillées de corbeau, de faucon ou d'hermine.*" It is

¹Greenland, p. 194.

²History of Greenland, vol. 1, p. 216.

³Second voyage, p. 497.

⁴Contributions, p. 45.

⁵Voyage, p. 333.

⁶Monographie, etc., p. xv.

not likely that the use of these is confined to the women, as his words, "Elles y portent," would seem to imply. Among the sedentary Chukches of Siberia amulets were seen consisting of wooden forks and wood or ivory carvings.¹ A wolf's skull, hung up by a thong; the skin, together with the whole cartilaginous portion of a wolf's nose, and a flat stone, are also mentioned.² Capt. Holm also found wonderfully similar customs among the East Greenlanders. He says,³ "bære alle Folk Amuletter af de mest forskjelligartede Ting" to guard against sickness and to insure long life, and also for specific purposes. The men wear them slung round the neck or tied round the upper arm, the women in their knot of hair or "i Snippen foran paa Pelsen."

¹Nordenskiöld, Vega, vol. 2, p. 126.

²Vega, vol. 1, p. 503.

³Geografisk Tidsskrift, vol. 8, p. 94.



THE MEDICINE-MEN OF THE APACHE.

BY

JOHN G. BOURKE,

Captain, Third Cavalry, U. S. Army.

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LETTER OF TRANSMITTAL.

WASHINGTON, D. C., *February 27, 1891.*

SIR: Herewith I have the honor to submit a paper upon the paraphernalia of the medicine-men of the Apache and other tribes.

Analogues have been pointed out, wherever possible, especially in the case of the hoddentin and the izzie-kloth, which have never to my knowledge previously received treatment.

Accompanying the paper is a bibliography of the principal works cited.

I have the honor to be, very respectfully, your obedient servant,

JOHN G. BOURKE,

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Hon. J. W. POWELL,

Director Bureau of Ethnology.



THE MEDICINE-MEN OF THE APACHE.

BY JOHN G. BOURKE.

CHAPTER I.

THE MEDICINE-MEN, THEIR MODES OF TREATING DISEASE, THEIR SUPERSTITIONS, PARAPHERNALIA, ETC.

The Caucasian population of the United States has been in intimate contact with the aborigines for a period of not less than two hundred and fifty years. In certain sections, as in Florida and New Mexico, this contact has been for a still greater period; but claiming no earlier date than the settlement of New England, it will be seen that the white race has been slow to learn or the red man has been skillful in withholding knowledge which, if imparted, would have lessened friction and done much to preserve and assimilate a race that, in spite of some serious defects of character, will for all time to come be looked upon as "the noble savage."

Recent deplorable occurrences in the country of the Dakotas have emphasized our ignorance and made clear to the minds of all thinking people that, notwithstanding the acceptance by the native tribes of many of the improvements in living introduced by civilization, the savage has remained a savage, and is still under the control of an influence antagonistic to the rapid absorption of new ideas and the adoption of new customs.

This influence is the "medicine-man."

Who, and what are the medicine-men (or medicine-women), of the American Indians? What powers do they possess in time of peace or war? How is this power obtained, how renewed, how exercised? What is the character of the remedies employed? Are they pharmaceutical, as we employ the term, or are they the superstitious efforts of empirics and charlatans, seeking to deceive and to misguide by pretended consultations with spiritual powers and by reliance upon mysterious and occult influences?

Such a discussion will be attempted in this paper, which will be restricted to a description of the personality of the medicine-men, the regalia worn, and the powers possessed and claimed. To go farther,

and enter into a treatment of the religious ideas, the superstitions, omens, and prayers of these spiritual leaders, would be to open a road without end.

As the subject of the paraphernalia of the medicine-men has never, to my knowledge, been comprehensively treated by any writer, I venture to submit what I have learned during the twenty-two years of my acquaintance with our savage tribes, and the studies and conclusions to which my observations have led. While treating in the main of the medicine-men of the Apache, I do not intend to omit any point of importance noted among other tribes or peoples.

First, in regard to the organization of the medicine-men of the Apache, it should be premised that most of my observations were made while the tribe was still actively engaged in hostilities with the whites, and they cannot be regarded as, and are not claimed to be, conclusive upon all points. The Apache are not so surely divided into medicine lodges or secret societies as is the case with the Ojibwa, as shown by Dr. W. J. Hoffman; the Siouan tribes, as related by Mr. J. Owen Dorsey; the Zuñi, according to Mr. F. H. Cushing; the Tusayan, as shown by myself, and other tribes described by other authorities.

The Navajo, who are the full brothers of the Apache, seem to have well defined divisions among their medicine-men, as demonstrated by Dr. Washington Matthews, U. S. Army; and I myself have seen great medicine lodges, which must have contained at least a dozen Apache medicine-men, engaged in some of their incantations. I have also been taken to several of the sacred caves, in which solemn religious dances and other ceremonies were conducted under the same superintendence, but never have I witnessed among the Apache any rite of religious significance in which more than four or five, or at the most six, of the medicine-men took part.

The difficulty of making an accurate determination was increased by the nomadic character of the Apache, who would always prefer to live in small villages containing only a few brush shelters, and not needing the care of more than one or two of their "doctors." These people show an unusual secretiveness and taciturnity in all that relates to their inner selves, and, living as they do in a region filled with caves and secluded nooks, on cliffs, and in deep cauyons, have not been compelled to celebrate their sacred offices in "estufas," or "plazas," open to the inspection of the profane, as has been the case with so many of the Pueblo tribes.

Diligent and persistent inquiry of medicine-men whose confidence I had succeeded in gaining, convinced me that any young man can become a "doctor" ("diyi" in the Apache language, which is translated "sabio" by the Mexican captives). It is necessary to convince his friends that he "has the gift," as one of my informants expressed it; that is, he must show that he is a dreamer of dreams, given to long fasts and vigils, able to interpret omens in a satisfactory manner, and do other things of that general nature to demonstrate the possession of

an intense spirituality. Then he will begin to withdraw, at least temporarily, from the society of his fellows and devote himself to long absences, especially by night, in the "high places" which were interdicted to the Israelites. Such sacred fanes, perched in dangerous and hidden retreats, can be, or until lately could be, found in many parts in our remote western territory. In my own experiences I have found them not only in the country of the Apache, but two-thirds of the way up the vertical face of the dizzy precipice of Tãaiyalana, close to Zuñi, where there is a shrine much resorted to by the young men who seek to divine the result of a contemplated enterprise by shooting arrows into a long cleft in the smooth surface of the sandstone; I have seen them in the Wolf Mountains, Montana; in the Big Horn range, Wyoming; on the lofty sides of Cloud Peak, and elsewhere. Maj. W. S. Stanton, Corps of Engineers, U. S. Army, ascended the Cloud Peak twice, and, reaching the summit on the second attempt, he found that beyond the position first attained and seeming then to be the limit of possible ascent, some wandering Indian had climbed and made his "medicine."

While it is regarded as a surer mode of learning how to be a medicine-man to seek the tuition of some one who has already gained power and influence as such, and pay him liberally in presents of all kinds for a course of instruction lasting a year or longer, I could learn of nothing to prohibit a man from assuming the rôle of a prophet or healer of the sick, if so disposed, beyond the dread of punishment for failure to cure or alleviate sickness or infirmity. Neither is there such a thing as settled dogma among these medicine-men. Each follows the dictates of his own inclinations, consulting such spirits and powers as are most amenable to his supplications and charms; but no two seem to rely upon identically the same influences. Even in the spirit dance, which is possibly the most solemn function in which the Apache medicine-men can engage, the head-dresses and kilts adhered closely enough to the one pattern, but the symbolism employed by each medicine-man was entirely different from that adopted by his neighbors.

Schultze, Perrin du Lac, Adair, and others allude to "houses of mercy," the "right of asylum" in certain lodges and buildings, or even whole villages, to which if the pursued of the tribe or even an enemy could obtain admission his life was secure. Frank Gruard and others who have lived for years among the Sioux, the Cheyenne, and other tribes of the plains have assured me that the same right of asylum obtains among them for the fugitive who takes shelter in the medicine lodge or the council lodge, and almost parallel notions prevail among the Apache. I have heard that the first American who came into one of their villages, tired and hungry, was not molested in the slightest degree.

It is stated by Kelly¹ that all warriors who go through the sun dance of the Sioux rank thereafter as medicine-men. This statement seems

¹ Narrative of Captivity, Cincinnati, 1871, p. 141.

to me to be overdrawn. Nothing of the kind was learned by me at the sun dance of the Sioux which I noted in 1881, and in any event the remark would scarcely apply to the medicine-men of the Apache, who have nothing clearly identifiable with the sun dance, and who do not cut, gash, or in any manner mutilate themselves, as did the principal participants in the sun dance, or as was done in still earlier ages by the galli (the priests of Cybele) or the priests of Mexico.

Herodotus tells us that the priests of Egypt, or rather the doctors, who were at one time identified with them, were separated into classes; some cured the eyes, some the ears, others the head or the belly. Such a differentiation is to be observed among the Apache, Mohave, and other tribes; there are some doctors who enjoy great fame as the bringers of rain, some who claim special power over snakes, and some who profess to consult the spirits only, and do not treat the sick except when no other practitioner may be available. Among the Mohave, the relatives of a dead man will consult one of these spirit-doctors and get him to interview the ghosts who respond to his call and learn from them whether the patient died from ignorance or neglect on the part of the doctor who had charge of the case. If the spirits assert that he did, then the culprit doctor must either flee for his life or throw the onus of the crime upon some witch. This differentiation is not carried so far that a medicine-man, no matter what his class, would decline a large fee.

The right of sanctuary was conceded to all criminals who sought shelter in the vanquech or temple of Chinigchinich.¹

The castration of the galli, or priests of Cybele, is described by Dupuis.²

Diego Duran asserts that the Mexican priests "se endian por medio los miembros viriles y se hacian mil cosas para volverse impotentes por no ofender á sus Dioses."³

The hierophants at Athens drank of the hemlock to render themselves impotent, that when they came to the pontificate they might cease to be men.⁴

One class of the Peruvian priests, the Huachus, made auguries from grains of corn or the excrement of animals.⁵

Balboa tells us⁵ that the Peruvian priesthood was divided into classes, each with its appropriate functions—the Guacos made the idols for the temples, or rather, they made the idols speak; the others were necromancers and spoke only with the dead; the Huecheoc divined by means of tobacco and coco; the Caviocac became drunk before they attempted to divine, and after them came the Rumatinguis and the Huachus already mentioned.

¹ Padre Boscana, Chinigchinich, in Robinson's California, p. 261.

² Origine de tous les Cultes, vol. 2, pt. 2, pp. 87, 88.

³ Diego Duran, vol. 3, pp. 237, 238.

⁴ Higgins, Anacalypsis, lib. 2, p. 77.

⁵ Balboa, Hist. du Pérou, in Ternaux-Compans, Voy., vol. 15.

The Oregon tribes have spirit doctors and medicine doctors.¹

The Chinese historians relate that the shamans of the Huns possessed the power "to bring down snow, hail, rain, and wind."²

In all nations in the infancy of growth, social or mental, the power to coax from reluctant clouds the fructifying rain has been regarded with highest approval and will always be found confided to the most important hierophants or devolving upon some of the most prominent deities; almighty Jove was a deified rain-maker or cloud-compeller. Rain-makers flourished in Europe down to the time of Charlemagne, who prohibited these "tempestiarii" from plying their trade.

One of the first requests made of Vaca and his comrades by the people living in fixed habitations near the Rio Grande was "to tell the sky to rain," and also to pray for it.³

The prophet Samuel has been alluded to as a rain-maker.⁴

There does not seem to have been any inheritance of priestly functions among the Apache or any setting apart of a particular clan or family for the priestly duties.

Francis Parkman is quoted as describing a certain family among the Miami who were reserved for the sacred ritualistic cannibalism perpetrated by that tribe upon captives taken in war. Such families devoted more or less completely to sacred uses are to be noted among the Hebrews (in the line of Levi) and others: but they do not occur in the tribes of the Southwest.

One of the ceremonies connected with the initiation, as with every exercise of spiritual functions by the medicine-man, is the "ta-a-chi," or sweat-bath, in which, if he be physically able, the patient must participate.

The Apache do not, to my knowledge, indulge in any poisonous intoxicants during their medicine ceremonies; but in this they differ to a perceptible degree from other tribes of America. The "black drink" of the Creeks and the "wisoccan" of the Virginians may be cited as cases in point; and the Walapai of Arizona, the near neighbors of the Apache, make use of the juice, or a decoction of the leaves, roots, and flowers of the *Datura stramonium* to induce frenzy and exhilaration. The laurel grows wild on all the mountain tops of Sonora and Arizona, and the Apache credit it with the power of setting men crazy, but they deny that they have ever made use of it in their medicine or religion. Picart⁵ speaks of the drink (wisoccan) which took away the brains of the young men undergoing initiation as medicine-men among the tribes of Virginia, but he does not say what this "wisoccan" was.

In Guiana,⁶ the candidate for the office of medicine-man must, among

¹ Ross, *Fur Hunters*, quoted by Spencer, *Desc. Soc.*

² Max Müller, *Science of Religion*, p. 88.

³ Davis, *Spanish Conq. of N. M.*, p. 98.

⁴ I Samuel, xii, 17, 18.

⁵ *Cérémonies et Coutumes*, vol. 6, p. 75.

⁶ Everard in Thurn, *Indians of Guiana*. London, 1883, p. 334.

other ordeals, "drink fearfully large drafts of tobacco juice, mixed with water." The medicine-men of Guiana are called peaiman.

I have never seen tobacco juice drank by medicine-men or others, but I remember seeing Shunca-Luta (Sorrel Horse) a medicine-man of the Dakota, chewing and swallowing a piece of tobacco and then going into what seemed to be a trance, all the while emitting deep grunts or groans. When he revived he insisted that those sounds had been made by a spirit which he kept down in his stomach. He also pretended to extract the quid of tobacco from underneath his ribs, and was full of petty tricks of legerdemain and other means of mystifying women and children.

All medicine-men claim the power of swallowing spear heads or arrows and fire, and there are at times many really wonderful things done by them which have the effect of strengthening their hold upon the people.

The medicine-men of the Ojibwa thrust arrows and similar instruments down their throats. They also allow themselves to be shot at with marked bullets.¹

While I was among the Tusayan, in 1881, I learned of a young boy, quite a child, who was looked up to by the other Indians, and on special occasions made his appearance decked out in much native finery of beads and gewgaws, but the exact nature of his duties and supposed responsibilities could not be ascertained.

Diego Duran² thought that the priesthood among the Mexicans was to a great extent hereditary, much like the right of primogeniture among the people of Spain. Speaking of the five assistants who held down the human victim at the moment of sacrifice, he says:

Los nombres de los cinco eran Chachalmeca, que en nuestra Lengua quiere tanto decir como Levita ó ministro de cosa divina ó sagrada. Era esta dignidad entre ellos muy suprema y en mucha tenida, la cual se heredaba de hijos á padres como cosa de mayorazgo, sucediendo los hijos á los Padres en aquella sangrienta Dignidad endemoniada y cruel.

Concerning the medicine-men of Peru, Dorman³ says:

The priestly office among the Peruvians appears to have been hereditary; some attained it by election; a man struck by lightning was considered as chosen by heaven; also those who became suddenly insane. Mr. Southey says that among the Moxos of Brazil, who worshiped the tiger, a man who was rescued from but marked by the claws of the animal, was set apart for the priesthood, and none other.

I shall have occasion to introduce a medicine-woman of the Apache, Tze-go-juni, or "Pretty-mouth," whose claims to preeminence among her people would seem to have had no better foundation than her escape from lightning stroke and from the bites of a mountain lion, which had seized her during the night and had not killed her.

I remember the case of an old Navajo medicine-man who was killed

¹ Tanner's Narrative, p. 390.

² Diego Duran, lib. 3, cap. 3, p. 201.

³ Dorman, Primitive Superstitions, p. 384.

by lightning. The whole tribe participated in the singing, drumming, and dancing incident to so important an event, but no white men were allowed to be present. My information was derived from the dead man's young nephew, while I was among that tribe.

Among the Arawak of South America there are hereditary conjurers who profess to find out the enemy who by the agency of an evil spirit has killed the deceased.¹

Picart says of the medicine-men of the tribes along Rio de la Plata: "Pour être Prêtre ou Médecin parmi eux, il faut avoir jeûné longtems & souvent. Il faut avoir combattu plusieurs fois contre les bêtes Sauvages, principalement contre les Tigres, & tout au moins en avoir été mordu ou égratigné. Après cela on peut obtenir l'Ordre, de Prêtrise; car le Tigre est chez eux un animal presque divin."²

The medicine-men of the Apache are not confined to one gens or clan, as among the Shawnee and Cherokee, according to Brinton,³ neither do they believe, as the Cherokee do, according to the same authority, that the seventh son is a natural-born prophet with the gift of healing by touch, but upon this latter point I must be discreet, as I have never known an Apache seventh son.

The Cherokee still preserve the custom of consecrating a family of their tribe to the priesthood, as the family of Levi was consecrated among the Jews.⁴

The neophytes of the isthmus of Darien were boys from ten to twelve years "selected for the natural inclination or the peculiar aptitude and intelligence which they displayed for the service."⁵

Peter Martyr says of the Chiribehis of South America: "Out of the multitude of children they chuse some of 10 or 12 yeeres old, whom they know by conjecture to be naturally inclined to that service."⁶

The peculiarity of the Moxos was that they thought none designated for the office of medicine-man but such as had escaped from the claws of the South American tiger which, indeed, it is said they worshiped as a god.⁷

Contrary to what Spencer says, the chiefs of the tribes of the Southwest, at least, are not ipso facto medicine-men; but among the Tonto Apache the brother of the head chief, Cha-ut-lip-un, was the great medicine-man, and generally the medicine-men are related closely to the prominent chiefs, which would seem to imply either a formal deputation of priestly functions from the chiefs to relatives, or what may be practically the same thing, the exercise of family influence to bring about a recognition of the necromantic powers of some aspirant; but among

¹ Spencer, Desc. Sociology.

² Picart, Cérémonies et Coutumes Religieuses, Amsterdam, 1735, vol. 6, p. 122.

³ Myths of the New World, p. 281.

⁴ Domenech, Déserts, vol. 2, p. 392.

⁵ Bancroft, Nat. Races, vol. 1, p. 777.

⁶ Hakluyt, Voyages, vol. 5, p. 462.

⁷ Brinton, Myths of the New World, p. 281.

the Apache there is no priest caste; the same man may be priest, warrior, etc.¹

"The juice of the *Datura* seed is employed by the Portuguese women of Goa: they mix it, says Linschott, in the liquor drank by their husbands, who fall, for twenty-four hours at least, into a stupor accompanied by continued laughing; but so deep is the sleep that nothing passing before them affects them; and when they recover their senses, they have no recollection of what has taken place."²

"The Darien Indians used the seeds of the *Datura sanguinea* to bring on in children prophetic delirium, in which they revealed hidden treasure. In Peru the priests who talked with the "huaca" or fetishes used to throw themselves into an ecstatic condition by a narcotic drink called "tonca," made from the same plant."³

The medicine-men of the Walapai, according to Charlie Spencer, who married one of their women and lived among them for years, were in the habit of casting bullets in molds which contained a small piece of paper. They would allow these bullets to be fired at them, and of course the missile would split in two parts and do no injury. Again, they would roll a ball of sinew and attach one end to a small twig, which was inserted between the teeth. They would then swallow the ball of sinew, excepting the end thus attached to the teeth, and after the heat and moisture of the stomach had softened and expanded the sinew they would begin to draw it out yard after yard, saying to the frightened squaws that they had no need of intestines and were going to pull them all out. Others among the Apache have claimed the power to shoot off guns without touching the triggers or going near the weapons; to be able to kill or otherwise harm their enemies at a distance of 100 miles. In nearly every boast made there is some sort of a saving clause, to the effect that no witchcraft must be made or the spell will not work, no women should be near in a delicate state from any cause, etc.

Mickey Free has assured me that he has seen an Apache medicine-man light a pipe without doing anything but hold his hands up toward the sun. This story is credible enough if we could aver that the medicine-man was supplied, as I suspect he was, with a burning glass.

That the medicine-man has the faculty of transforming himself into a coyote and other animals at pleasure and then resuming the human form is as implicitly believed in by the American Indians as it was by our own forefathers in Europe. This former prevalence of lycanthropy all over Europe can be indicated in no more forcible manner than by stating that until the reign of Louis XIV, in France, the fact of being a were-wolf was a crime upon which one could be arraigned before a court; but with the discontinuance of the crime the were-wolves them-

¹ Spencer, Ecclesiastical Institutions, cap. v.

² Salverte, Philosophy of Magic, vol. 2, pp. 6-7.

³ Tylor, Primitive Culture, London, 1871, vol. 2, p. 377.

selves seem to have retired from business.¹ In Abyssinia, at the present day, blacksmiths are considered to be were-wolves, according to Winstanley. The Apache look upon blacksmiths as being allied to the spirits and call them "pesh-chidin"—the witch, spirit, or ghost, of the iron. The priestly powers conceded to the blacksmith of Gretna Green need no allusion here.

According to Sir Walter Scott,² trials for lycanthropy were abolished in France by an edict of Louis XIV.

Parkman³ describes, from the Relations of Père Le Jeune, how the Algonkin medicine-man announced that he was going to kill a rival medicine-man who lived at Gaspé, 100 leagues distant.

The Abipones of Paraguay, according to Father Dobrizhoffer, "credit their medicine-men with power to inflict disease and death, to cure all disorders, to make known distant and future events; to cause rain, hail, and tempest; to call up the shades of the dead and consult them concerning hidden matters; to put on the form of a tiger; to handle every kind of serpent without danger, etc.; which powers they imagine are not obtained by art, but imparted to certain persons by their grandfather, the devil."

The medicine-men of Honduras claimed the power of turning themselves into lions and tigers and of wandering in the mountains.⁴

"Grandes Hechiceros i Bruxos, porque se hacian Perros, Puercos i Ximios."⁵

Gomara also calls attention to the fact that the medicine-men, "hechiceros" and "brujos," as he calls them, of the Nicaraguans, possessed the power of lycanthropy; "segun ellos mismos decian, se hacen perros, puercos y gimias."⁶

Great as are the powers claimed by the medicine-men, it is admitted that baleful influences may be at work to counteract and nullify them. As has already been shown, among these are the efforts of witches, the presence of women who are sometimes supposed to be so "antimedical," if such a term may be applied, that the mere stepping over a warrior's gun will destroy its value.

There may be other medicine-men at work with countercharms, and there may be certain neglects on the part of the person applying for aid which will invalidate all that the medicine-man can do for him. For example, while the "hoop-me-koff" was raging among the Mohave the fathers of families afflicted with it were forbidden to touch coffee or salt, and were directed to bathe themselves in the current of the Colorado. But the whooping cough ran its course in spite of all that the medicine-

¹ St. Patrick, we are told, floated to Ireland on an altar stone. Among other wonderful things, he converted a marauder into a wolf and lighted a fire with icicles.—James A. Froude, *Reminiscences of the High Church Revival*. (Letter V.)

² *Demonology and Witchcraft*, p. 184.

³ *Jesuits in North America*, pp. 34, 35.

⁴ Herrera, dec. 4, lib. 8, cap. 5, 159.

⁵ *Ibid.*, dec. 3, lib. 4, p. 121.

⁶ *Hist. de las Indias*, p. 283.

men could do to check its progress. When the Walapai were about to engage in a great hunt continence was enjoined upon the warriors for a certain period.

Besides all these accidental impairments of the vigor of the medicine-men, there seems to be a gradual decadence of their abilities which can be rejuvenated only by rubbing the back against a sacred stone projecting from the ground in the country of the Walapai, not many miles from the present town of Kingman, on the Atlantic and Pacific Railroad. Another stone of the same kind was formerly used for the same purpose by the medicine-men of the pueblos of Laguna and Acoma, as I have been informed by them. I am unable to state whether or not such recuperative properties were ever ascribed to the medicine stone at the Sioux agency near Standing Rock, S. Dak., or to the great stone around which the medicine-men of Tusayan marched in solemn procession in their snake dance, but I can say that in the face of the latter, each time that I saw it (at different dates between 1874 and 1881), there was a niche which was filled with votive offerings.

Regnard, a traveler in Lapland, makes the statement that when the shamans of that country began to lose their teeth they retired from practice. There is nothing of this kind to be noted among the Apache or other tribes of North America with which I am in any degree familiar. On the contrary, some of the most influential of those whom I have known have been old and decrepit men, with thin, gray hair and teeth gone or loose in their heads. In a description given by Corbusier of a great "medicine" ceremony of the Apache-Yuma at Camp Verde, it is stated that the principal officer was a "toothless, gray-haired man."¹

Among many savage or barbarous peoples of the world albinos have been reserved for the priestly office. There are many well marked examples of albinism among the Pueblos of New Mexico and Arizona, especially among the Zuñi and Tusayan; but in no case did I learn that the individuals thus distinguished were accredited with power not ascribable to them under ordinary circumstances. Among the Cheyenne I saw one family, all of whose members had the crown lock white. They were not medicine-men, neither were any of the members of the single albino family among the Navajo in 1881.

It is a well known fact that among the Romans epilepsy was looked upon as a disease sent direct from the gods, and that it was designated the "sacred disease"—*morbis sacer*. Mahomet is believed to have been an epileptic. The nations of the East regard epileptics and the insane as inspired from on high.

Our native tribes do not exactly believe that the mildly insane are gifted with medical or spiritual powers; but they regard them with a feeling of superstitious awe, akin to reverence. I have personally known several cases of this kind, though not within late years, and am not able to say whether or not the education of the younger generation

¹ American Antiquarian, November, 1886, p. 334.

in our schools has as yet exercised an influence in eradicating this sentiment.

Strange to say, I was unable to find any observance of lucky or unlucky days among the Apache. The Romans in the period of their greatest enlightenment had their days, both "fasti" and "nefasti." Neither was I able to determine the selection of auspicious days for marriage; indeed, it was stated that the medicine-men had nothing to do with marriage. Among the Zapotecs the wedding day was fixed by the priests.¹ In this the Apache again stands above the Roman who would not marry in the month dedicated to the goddess Maia (May), because human sacrifice used to be offered in that month. This superstition survived in Europe until a comparatively recent period. According to Picart the Hebrew rabbis designated the days upon which weddings should take place.

Herbert Spencer² says that the medicine-men of the Arawaks claimed the "jus primæ noctis." There is no such privilege claimed or conceded among the North American tribes, to my knowledge, and the Arawaks would seem to be alone among the natives of the whole continent in this respect.

In the town of Cumaná, in Amaracapanna, apparently close to Cartagena, in the present republic of Colombia, South America, the medicine-men, according to Girolamo Benzoni, exercised the "jus primæ noctis."³

To recover stolen or lost property, especially ponies, is one of the principal tasks imposed upon the medicine-men. They rely greatly upon the aid of pieces of crystal in effecting this. I made a friend of an Apache medicine-man by presenting him with a large crystal of denticulated spar, much larger than the one of whose mystical properties he had just been boasting to me. I can not say how this property of the crystal is manifested. Na-a-cha, the medicine-man alluded to, could give no explanation, except that by looking into it he could see everything he wanted to see.

The name of an American Indian is a sacred thing, not to be divulged by the owner himself without due consideration. One may ask a warrior of any tribe to give his name and the question will be met with either a point-blank refusal or the more diplomatic evasion that he can not understand what is wanted of him. The moment a friend approaches, the warrior first interrogated will whisper what is wanted, and the friend can tell the name, receiving a reciprocation of the courtesy from the other. The giving of names to children is a solemn matter, and one in which the medicine-men should always be consulted. Among the Plains tribes the children were formerly named at the moment of piercing their ears, which should occur at the first sun dance after their birth, or rather as near their first year as possible.

¹ Dorman, *Primitive Superstitions*, p. 380, quoting Herrera, dec. 3, p. 282.

² *Descriptive Sociology*.

³ Admiral Smyth's translation in *Hakluyt Society*, London, 1857, vol. 21, p. 9.

The wailing of the children at the sun dance as their ears were slit will always be to me a most distressing memory.

The warriors of the Plains tribes used to assume agnomens or battle names, and I have known some of them who had enjoyed as many as four or five; but the Apache name once conferred seems to remain through life, except in the case of the medicine-men, who, I have always suspected, change their names upon assuming their profession, much as a professor of learning in China is said to do.

The names of mothers-in-law are never mentioned and it would be highly improper to ask for them by name; neither are the names of the dead, at least not for a long period of time. But it often happens that the child will bear the name of its grandfather or some other relative who was a distinguished warrior.

All charms, idols, talismans, medicine hats, and other sacred regalia should be made, or at least blessed, by the medicine-men. They assume charge of all ceremonial feasts and dances—such as the nubile dance, which occurs when any maiden attains marriageable age, and war dances preceding battle. Nearly all preparations for the warpath are under their control, and when on the trail of the enemy their power is almost supreme. Not a night passes but that the medicine-men get into the "ta-a-chi," or sweat bath, if such a thing be possible, and there remain for some minutes, singing and making "medicine" for the good of the party. After dark they sit around the fire and sing and talk with the spirits and predict the results of the campaign. I have alluded quite fully to these points in a previous work.

When a man is taken sick the medicine-men are in the zenith of their glory. One or two will assume charge of the case, and the clansmen and friends of the patient are called upon to supply the fire and help out in the chorus. On such occasions the Apache use no music except a drum or a rawhide. The drum is nearly always improvised from an iron camp kettle, partially filled with water and covered with a piece of cloth, well soaped and drawn as tight as possible. The drumstick does not terminate in a ball, as with us, but is curved into a circle, and the stroke is not perpendicular to the surface, but is often given from one side to the other. The American Indian's theory of disease is the theory of the Chaldean, the Assyrian, the Hebrew, the Greek, the Roman—all bodily disorders and ailments are attributed to the maleficence of spirits who must be expelled or placated. Where there is only one person sick, the exercises consist of singing and drumming exclusively, but dancing is added in all cases when an epidemic is raging in the tribe. The medicine-men lead off in the singing, to which the assistants reply with a refrain which at times has appeared to me to be antiphonal. Then the chorus is swelled by the voices of the women and larger children and rises and falls with monotonous cadence. Prayers are recited, several of which have been repeated to me and transcribed; but very frequently the words are ejaculatory and confined to such expressions as "ugashe" (go away), and again there is to

be noted the same mumbling of incoherent phrases which has been the stock in trade of medicine-men in all ages and places. This use of gibberish was admitted by the medicine-men, who claimed that the words employed and known only to themselves (each individual seemed to have his own vocabulary) were mysteriously effective in dispelling sickness of any kind. Gibberish was believed to be more potential in magic than was language which the practitioner or his dupes could comprehend. In Saxon Leechdoms, compiled by Cockayne, will be seen a text of gibberish to be recited by those wishing to stanch the flow of blood. (See p. 464.)

In the following citations it will be observed that Adair and Catlin were grievously in error in their respective statements. Adair denies that Indians on the warpath or elsewhere depend upon their "augurs" for instruction and guidance.¹ Gomara is authority for the statement that the natives of Hispaniola never made war without consulting their medicine-men—"no sin respuesta de los idolos ó sin la de los sacerdotes, que adivinan."²

The medicine-men of Chicora (our present South Carolina) sprinkled the warriors with the juice of a certain herb as they were about to engage in battle.³

In Chicora "Mascaban los Sacerdotes una Ierva, i con el zumo de ella rociaban los Soldados, quando querian dar batalla, que era bendecirlos."⁴

"Among the Abipones [of Paraguay] the medicine-man teaches them the place, time, and manner proper for attacking wild beasts or the enemy."⁵

"The North American Indians are nowhere idolaters."⁶

Idols were always carried to war by the natives of Hispaniola: "Atanse á la frente ídolos chiquitos cuando quieren pelear."⁷

"Among the primitive Germans * * * the maintenance of discipline in the field as in the council was left in great measure to the priests; they took the auguries and gave the signal for onset."⁸

"In New Caledonia * * * the priests go to battle, but sit in the distance, *fasting* and praying for victory."⁹

Our hunting songs and war songs may be a survival of the incantations of Celtic or Teutonic medicine-men.

The adoption or retention of obsolete phraseology as a hieratic language which has been noted among many nations of the highest comparative development is a manifestation of the same mental process.

¹ American Indians, p. 26.

² Gomara, Hist. de las Indias, p. 173.

³ "Estos mascan cierta yerba, y con el zumo rociaban los soldados estando para dar batalla." (Gomara, *ibid.*, p. 179.)

⁴ Herrera, dec. 2, lib. 10, p. 260.

⁵ Father Dobrizhoffer, quoted by Spencer, *Eccles. Institutions*, cap. 10, sec. 630.

⁶ Catlin, *N. A. Indians*, London, 1845, vol. 2, p. 232.

⁷ Gomara, *op. cit.*, p. 173.

⁸ Spencer, *Eccles. Institutions*, cap. 10, pp. 780, 781, quoting Stubb's *Constitutional History of England*.

⁹ *Ibid.*, sec. 630, p. 781, quoting Turner (*Geo.*), *Nineteen Years in Polynesia*.

Gibberish was so invariable an accompaniment of the sacred antics of the medicine-men of Mexico that Fray Diego Duran warns his readers that if they see any Indian dancing and singing, "ó diciendo algunas palabras que no son inteligibles, pues es de saber que aquellos representaban Dioses."¹

Henry Youle Hind says:

The Dakotahs have a common and a sacred language. The conjurer, the war prophet, and the dreamer employ a language in which words are borrowed from other Indian tongues and dialects; they make much use of descriptive expressions, and use words apart from the ordinary signification. The Ojibways abbreviate their sentences and employ many elliptical forms of expression, so much so that half-breeds, quite familiar with the colloquial language, fail to comprehend a medicine-man when in the full flow of excited oratory.²

"Blood may be stanch'd by the words* sieycuma, cucuma, ucuma, cuma, uma, ma, a."³ There are numbers of these gibberish formulæ given, but one is sufficient.

"The third part of the magic⁴ of the Chaldeans belonged entirely to that description of charlatanism which consists in the use of gestures, postures, and mysterious speeches, as byplay, and which formed an accompaniment to the proceedings of the thaumaturgist well calculated to mislead."⁵

Sahagun⁶ calls attention to the fact that the Aztec hymns were in language known only to the initiated.

It must be conceded that the monotonous intonation of the medicine-men is not without good results, especially in such ailments as can be benefited by the sleep which such singing induces. On the same principle that petulant babies are lulled to slumber by the crooning of their nurses, the sick will frequently be composed to a sound and beneficial slumber, from which they awake refreshed and ameliorated. I can

¹ Vol. 3, p. 176.

"In every part of the globe fragments of primitive languages are preserved in religious rites." Humboldt, *Researches*, London, 1814, vol. 1, p. 97.

"Et même Jean P. c. Prince de la Mirande, écrit que les mots barbares & non entendus ont plus de puissance en la Magie que ceux qui sont entendus." Picart, vol. 10, p. 45.

The medicine-men of Cumana (now the United States of Colombia, South America) cured their patients "con palabras muy revesadas y que aun el mismo médico no las entiende." Gomara, *Hist. de las Indias*, p. 208.

The Tlascaltecs had "oradores" who employed gibberish—"hablaban Gerigonça." Herrera, dec. 2, lib. 6, p. 163.

In Peru, if the fields were afflicted with drought, the priests, among other things, "chantaient un cantique dont le sens était inconnu du vulgaire." Balboa, *Hist. du Pérou*, p. 128, in Ternaux-Compans, vol. 15.

² Assiniboine and Saskatchewan Exped., London, 1860, vol. 2, p. 155.

³ Cockayne, *Leechdoms*, vol. 1, p. xxx.

⁴ "The belief in the magic power of sacred words, whether religious formulas or the name of gods, was also acknowledged [i. e. in Egypt] and was the source of a frightful amount of superstition. . . . The superstitious repetition of names (many of which perhaps never had any meaning at all) is particularly conspicuous in numerous documents much more recent than the *Book of the Dead*."—Hibbert, *Lectures*, 1879, pp. 192, 193.

⁵ Salverte, *Philosophy of Magic*, vol. 1, p. 134.

⁶ Kingsborough, lib. 2, vol. 7, p. 102.

recall, among many other cases, those of Chaundezi ("Long Ear," or "Mule") and Chemihuevi-Sal, both chiefs of the Apache, who recovered under the treatment of their own medicine-men after our surgeons had abandoned the case. This recovery could be attributed only to the sedative effects of the chanting.

Music of a gentle, monotonous kind has been prescribed in the medical treatment of Romans, Greeks, and even of comparatively modern Europeans. John Mason Goode, in his translation of Lucretius' *De Natura Rerum*, mentions among others Galen, Theophrastus, and Aulus Gellius. An anonymous writer in the *Press of Philadelphia, Pa.*, under date of December 23, 1888, takes the ground that its use should be resumed.

The noise made by medicine-men around the couch of the sick is no better, no worse, than the clangor of bells in Europe. Bells, we are told, were rung on every possible occasion. Brand is full of quaint information on this head. According to him they were rung in Spain when women were in labor,¹ at weddings,² to dispel thunder, drive away bad spirits, and frustrate the deviltry of witches;³ throughout Europe on the arrival of emperors, kings, the higher nobility, bishops, etc.,⁴ to ease pain of the dead,⁵ were solemnly baptized, receiving names,⁶ and became the objects of superstition, various powers being ascribed to them.⁷

Adair, who was gifted with an excellent imagination, alludes to the possession of an "ark" by the medicine-men of the Creeks and other tribes of the Mississippi country, among whom he lived for so many years as a trader. The Apache have no such things; but I did see a sacred bundle or package, which I was allowed to feel, but not to open, and which I learned contained some of the lightning-riven twigs upon which they place such dependence. This was carried by a young medicine-man, scarcely out of his teens, during Gen. Crook's expedition into the Sierra Madre, Mexico, in 1883, in pursuit of the hostile Chiricahua Apache. Maj. Frank North also told me that the Pawnee had a sacred package which contained, among other objects of veneration, the skin of an albino buffalo calf.

There are allusions by several authorities to the necessity of confession by the patient before the efforts of the medicine-men can prove efficacious.⁸

¹ Popular Antiquities, vol. 2, p. 70.

² Ibid., p. 160.

³ Ibid., p. 217.

⁴ Ibid., p. 218.

⁵ Ibid., p. 219.

⁶ Ibid., pp. 214, 215.

⁷ Ibid., p. 216.

⁸ "When the Carriers are severely sick, they often think that they shall not recover, unless they divulge to a priest or magician, every crime which they may have committed, which has hitherto been kept secret."—(Harmon's Journal, p. 300. The Carriers or Ta-kully are Tinneh.

This confession, granting that it really existed, could well be compared to the warpath secret, which imposed upon all the warriors engaged the duty of making a clean breast of all delinquencies and secured them immunity from punishment for the same, even if they had been offenses against some of the other warriors present.

The Sioux and others had a custom of "striking the post" in their dances, especially the sun dance, and there was then an obligation upon the striker to tell the truth. I was told that the medicine-men were wont to strike with a club the stalagmites in the sacred caves of the Apache, but what else they did I was not able to ascertain.

Under the title of "hoddentin" will be found the statement made by one of the Apache as to the means employed to secure the presence of a medicine-man at the bedside of the sick. I give it for what it is worth, merely stating that Kohl, in his *Kitchi-Gami*, if I remember correctly, refers to something of the same kind where the medicine-man is represented as being obliged to respond to every summons made unless he can catch the messenger within a given distance and kick him.

There is very little discrepancy of statement as to what would happen to a medicine-man in case of failure to cure; but many conflicting stories have been in circulation as to the number of patients he would be allowed to kill before incurring risk of punishment. My own conclusions are that there is no truth whatever in the numbers alleged, either three or seven, but that a medicine-man would be in danger, under certain circumstances, if he let only one patient die on his hands. These circumstances would be the verdict of the spirit doctors that he was culpably negligent or ignorant. He could evade death at the hands of the patient's kinsfolk only by flight or by demonstrating that a witch had been at the bottom of the mischief.¹

Medicine-men, called "wizards" by Falkner, sometimes were killed by the Patagonians, when unsuccessful in their treatment, and were also obliged to wear women's clothing. They were selected in youth for supposed qualifications, especially if epileptic.²

In Hispaniola we are told that when a man died his friends resorted to necromancy to learn whether he had died through the neglect of the attending medicine-man to observe the prescribed fasts. If they found the medicine-man guilty, they killed him and broke all his bones. In spite of this the medicine-man often returned to life and had to be killed again, and mutilated by castration and otherwise.³

Herrera repeats the story about a patient who died and whose relatives felt dissatisfied with the medicine-man:

Para saber si la muerte fue por su culpa, tomaban el çumo de cierta Ierva, i cortaban las vñas del muerto, i los cabellos de encima de la frente, i los hacian polvos,

¹ For identical notions among the Arawaks of Guiana, Tupis of Brazil, Creeks, Patagonians, Kafirs, Chiquitos, and others, see the works of Schoolcraft, Herbert Spencer, Schultze, and others.

² Extract from the Jesuit Falkner's account of Patagonia, in *Voyages of the Adventure and Beagle*, London, 1839, vol. 2, p. 163.

³ "Nul de ces médecins ne peut mourir si'ils ne lui enlèvent les testicules." Brasseur de Bourbourg, *Trans. of Fra Roman Pane, Des Antiquités des Indiens*, Paris, 1864, p. 451.

i mezclados con el çumo, se lo daban à beber al muerto por la boca, i las narices, i luego le preguntaban muchas veces, si el Medico guardò dieta, hasta que hablando el demonio, respondia tan claro, como si fuera vivo, i decia, que el Medico no hiço dieta, i luego le bolvia à la sepultura.

Then the relatives attacked the medicine-man: "I le daban tantos palos, que le quebraban los braços, i las piernas, i à otros sacaban los ojos, i los cortaban sus miembros genitales."¹

Alexander the Great expressed his sorrow at the death of his friend Hephæstion by crucifying the poor physicians who had attended the deceased.²

The medicine-men of the Natchez were put to death when they failed to cure.³

The Apache attach as much importance to the necessity of "laying the manes" of their dead as the Romans did. They have not localized the site of the future world as the Mohave have, but believe that the dead remain for a few days or nights in the neighborhood of the place where they departed from this life, and that they try to communicate with their living friends through the voice of the owl. If a relative hears this sound by night, or, as often happens, he imagines that he has seen the ghost itself, he hurries to the nearest medicine-man, relates his story, and carries out to the smallest detail the prescription of feast, singing, dancing, and other means of keeping the spirit in good humor on the journey which it will now undertake to the "house of spirits," the "chidin-bi-kungua." Nearly all medicine-men claim the power of going there at will, and not a few who are not medicine-men claim the same faculty.

The medicine-men of the Apache are paid by each patient or by his friends at the time they are consulted. There is no such thing as a maintenance fund, no system of tithes, nor any other burden for their support, although I can recall having seen while among the Zuñi one of the medicine-men who was making cane holders for the tobacco to be smoked at a coming festival, and whose fields were attended and his herds guarded by the other members of the tribe.

Among the Eskimo "the priest receives fees beforehand."⁴

"Tous ces sorciers ne refusaient leurs secours à personne, pourvu qu'on les payait."⁵

"Among other customs was that of those who came to be cured, giving their bow and arrows, shoes, and beads to the Indians who accompanied Vaca and his companions."⁶ (But we must remember that Vaca and his comrades traveled across the continent as medicine-men.)

"Las sementeras que hacen los Assenais son tambien de comunidad

¹ Hist. Gen., dec. 1. lib. 3, p. 69.

² Madden, Shrines and Sepulchres, vol. 1, p. 14.

³ Gayarre, Louisiana; its Colonial History, p. 355.

⁴ Spencer, Desc. Sociology.

⁵ Balboa, Hist. du Pérou, Ternaux-Compans, vol. 15.

⁶ Davis, Conq. of New Mexico, p. 86.

y comienzan la primera en la casa de su Chemisi que es su sacerdote principal y el que cuida de la Casa del Fuego."¹ The Asinai extended as far east as the present city of Natchitoches (Nacogdoches).

Spencer quotes Bernan and Hilhouse to the effect that the poor among the Arawaks of South America (Guiana) have no names because they can not pay the medicine-men.²

As a general rule, the medicine-men do not attend to their own families, neither do they assist in cases of childbirth unless specially needed. To both these rules there are exceptions innumerable. While I was at San Carlos Agency, Surgeon Davis was sent for to help in a case of uterine inertia, and I myself have been asked in the pueblo of Nambé, New Mexico, to give advice in a case of puerperal fever.

The medicine-men are accused of administering poisons to their enemies. Among the Navajo I was told that they would put finely pounded glass in food.

MEDICINE-WOMEN.

There are medicine-women as well as medicine-men among the Apache, with two of whom I was personally acquainted. One named "Captain Jack" was well advanced in years and physically quite feeble, but bright in intellect and said to be well versed in the lore of



Fig. 429.—Medicine arrow used by Apache and Pueblo women.

her people. She was fond of instructing her grandchildren, whom she supported, in the prayers and invocations to the gods worshiped by her fathers, and I have several times listened carefully and unobserved to these recitations and determined that the prayers were the same as those which had already been given to myself as those of the tribe. The other was named Tze-go-juni, a Chiricahua, and a woman with a most romantic history. She had passed five years in captivity among the Mexicans in Sonora and had learned to speak Spanish with facility. A mountain lion had severely mangled her in the shoulder and knee, and once she had been struck by lightning; so that whether by reason of superior attainments or by an appeal to the superstitious reverence of her comrades, she wielded considerable influence. These medicine-women devote their attention principally to obstetrics, and have many peculiar stories to relate concerning pre-natal influences and matters of that sort. Tze-go-juni wore at her neck the stone amulet, shaped like a spear, which is figured in the illustrations of this paper. The material was the silex from the top of a mountain, taken from a ledge at the foot of a tree which had been struck by lightning. The fact that siliceous rock will emit sparks when struck by another hard body appeals to the reasoning powers of the savage as a proof that the fire must have been originally deposited therein by the bolt of light-

¹ *Cronica Serafica y Apostolica*, Espinosa, Mexico, 1746, p. 421.

² *Desc. Sociology*.

ning. A tiny piece of this arrow or lance was broken off and ground into the finest powder, and then administered in water to women during time of gestation. I have found the same kind of arrows in use among the women of Laguna and other pueblos. This matter will receive more extended treatment in my coming monograph on "Stone Worship."

Mendieta is authority for the statement that the Mexicans had both medicine-men and medicine-women. The former attended to the sick men and the latter to the sick women. "Á las mujeres siempre las curaban otras mujeres, y á los hombres otros hombres."¹ Some of the medicine-women seem to have made an illicit use of the knowledge they had acquired, in which case both the medicine-woman and the woman concerned were put to death. "La mujer preñada que tomaba con que abortar y echar la criatura, ella y la física que le habia dado con que la lanzase, ambas morian."²

Gomara asserts that they were to be found among the Indians of Chicora (South Carolina).³ He calls them "viejas" (old women).

"Los Medicos eran Mugerres viejas, i no havia otras."⁴ In Nicaragua, "Las Viejas curaban los Enfermos."⁵

There were medicine-women in Goazacoalco: "Tienen Medicos para curar las enfermedades, i los mas eran Mugerres, grandes Herbolarias, que hacian todas las curas con Iervas."⁶

Bernal Diaz, in 1568, speaks of having, on a certain occasion, at the summit of a high mountain, found "an Indian woman, very fat, and having with her a dog of that species, which they breed in order to eat, and which do not bark. This Indian was a witch: she was in the act of sacrificing the dog, which is a signal of hostility."⁷

"The office of medicine-man though generally usurped by males does not appertain to them exclusively, and at the time of our visit the one most extensively known was a black (or meztizo) woman, who had acquired the most unbounded influence by shrewdness, joined to a hideous personal appearance, and a certain mystery with which she was invested."⁸ Creeks have medicine-women as well as medicine-men. The Eskimo have medicine-men and medicine-women.⁹ The medicine-men and women of the Dakota "can cause ghosts to appear on occasion."¹⁰

Speaking of the Chippewa, Spencer says: "Women may practice soothsaying, but the higher religious functions are performed only by men."¹¹

¹ Mendieta, *Hist. Eclesiástica Indiana*, p. 136.

² *Ibid.*, p. 136.

³ *Hist. de las Indias*, p. 179.

⁴ Herrera, *dec. 2*, lib. 10, p. 280.

⁵ *Ibid.*, *dec. 3*, lib. 4, p. 121.

⁶ *Ibid.*, *dec. 4*, lib. 9, cap. 7, p. 188.

⁷ Keating's translation, p. 352, quoted by Samuel Farman Jarvis, *Religion of the Indian Tribes*, in *Coll. New York Historical Soc.*, vol. 3, 1819, p. 202.

⁸ Smith, *Araucanians*, pp. 238, 239.

⁹ Richardson, *Arctic Searching Expedition*, vol. 1, p. 366.

¹⁰ Schultze, *Fetichism*, New York, 1885, p. 49.

¹¹ Spencer, *Desc. Sociology*.

The medicine-men of the Apache do not assume to live upon food different from that used by the laity. There are such things as sacred feasts among the tribes of North America—as, for example, the feast of stewed puppy at the sun dance of the Sioux—but in these all people share.

In the mortuary ceremonies of the medicine-men there is a difference of degree, but not of kind. The Mohave, however, believe that the medicine-men go to a heaven of their own. They also believe vaguely in four different lives after this one.

Cabeza de Vaca says that the Floridians buried their ordinary dead, but burned their medicine-men, whose incinerated bones they preserved and drank in water.¹ “After they [the medicine-men and women of the Dakota] have four times run their career in human shape they are annihilated.”² Schultze says that the medicine-men of the Sioux and the medicine-women also, after death “may be transformed into wild beasts.”³

Surgeon Smart shows that among other offices entrusted to the medicine-men of the Apache was the reception of distinguished strangers.³ Long asserts that the medicine-men of the Otoe, Omaha, and others along the Missouri pretended to be able to converse with the fetus in utero and predict the sex.⁴ Nothing of that kind has ever come under my notice. Adair says that the medicine-men of the Cherokee would not allow snakes to be killed.⁵ The Apache will not let snakes be killed within the limits of the camp by one of their own people, but they will not only allow a stranger to kill them, but request him to do so. They made this request of me on three occasions.

Several of the most influential medicine-men whom I have known were blind, among others old Na-ta-do-tash, whose medicine hat figures in these pages. Whether this blindness was the result of old age or due to the frenzy of dancing until exhausted in all seasons I am unable to conjecture. Schultze says of the shamans of Siberia: “This artificial frenzy has such a serious effect upon the body, and more particularly the eyes, that many of the shamans become blind; a circumstance which enhances the esteem in which they are held.”⁶ Some of the medicine-men of Peru went blind from overexertion in their dances, although Gomara assigns as a reason that it was from fear of the demon with whom they talked. “Y aun algunos se quiebran los ojos para semejante hablar [i. e., talk with the devil]; y creo que lo hacian de miedo, porque todos ellos se atapan los ojos cuando hablan con el.”⁷

Dunbar tells us that the medicine-men of the Pawnee swallowed arrows and knives, and had also the trick of apparently killing a man

¹ Ternaux-Compans, vol. 7, p. 110.

² Schultze, *Fetichism*, New York, 1885, p. 49.

³ Smithsonian Report for 1867.

⁴ Long's Expedition, Philadelphia, 1823, p. 238.

⁵ Hist. of the American Indians, p. 238.

⁶ Schultze, *Fetichism*, New York, 1885, p. 52.

⁷ Hist. de las Indias, p. 232.

and bringing him back to life. The same power was claimed by the medicine-men of the Zuñi, and the story told me by old Pedro Pino of the young men whom they used to kill and restore to life, will be found in "The Snake Dance of the Moquis."

REMEDIES AND MODES OF TREATMENT.

The materia medica of the Apache is at best limited and comprehends scarcely anything more than roots, leaves, and other vegetable matter. In gathering these remedies they resort to no superstitious ceremonies that I have been able to detect, although I have not often seen them collecting. They prefer incantation to pharmacy at all times, although the squaws of the Walapai living near old Camp Beale Springs in 1873, were extremely fond of castor oil, for which they would beg each day.

The main reliance for nearly all disorders is the sweat bath, which is generally conducive of sound repose. All Indians know the benefit to be derived from relieving an overloaded stomach, and resort to the titillation of the fauces with a feather to induce nausea. I have seen the Zuñi take great drafts of lukewarm water and then practice the above as a remedy in dyspepsia.

When a pain has become localized and deep seated, the medicine-men resort to suction of the part affected, and raise blisters in that way. I was once asked by the Walapai chief, Sequanya, to look at his back and sides. He was covered with cicatrices due to such treatment, the medicine-men thinking thus to alleviate the progressive paralysis from which he had been long a sufferer, and from which he shortly afterwards died. After a long march, I have seen Indians of different bands expose the small of the back uncovered to the fierce heat of a pile of embers to produce a rubefacient effect and stimulate what is known as a weak back. They drink freely of hot teas or infusions of herbs and grasses for the cure of chills. They are all dextrous in the manufacture of splints out of willow twigs, and seem to meet with much success in their treatment of gunshot wounds, which they do not dress as often as white practitioners, alleging that the latter, by so frequently removing the bandages, unduly irritate the wounds. I have known them to apply moxa, and I remember to have seen two deep scars upon the left hand of the great Apache chief Cochise, due to this cause.

It should not be forgotten that the world owes a large debt to the medicine-men of America, who first discovered the virtues of coca, sarsaparilla, jalap, cinchona, and guaiacum. They understand the administration of enemata, and have an apparatus made of the paunch of a sheep and the hollow leg bone.

Scarification is quite common, and is used for a singular purpose. The Apache scouts when tired were in the habit of sitting down and lashing their legs with bunches of nettles until the blood flowed. This, according to their belief, relieved the exhaustion.

The medicine-men of the Floridians, according to Vaca, sucked and blew on the patient, and put hot stones on his abdomen to take away pain; they also scarified, and they seemed to have used moxas. "Ils cautérisent aussi avec le feu."¹

The medicine-men of Hispaniola cured by suction, and when they had extracted a stone or other alleged cause of sickness it was preserved as a sacred relic, especially by the women, who looked upon it as of great aid in parturition.² Venegas speaks of a tube called the "chacuaco," formed out of a very hard black stone, used by the medicine-men of California in sucking such parts of the patient's body as were grievously afflicted with pains. In these tubes they sometimes placed lighted tobacco and blew down upon the part affected after the manner of a moxa, I suppose.³

The men of Panuco were so addicted to drunkenness that we are told: "Lorsqu'ils sont fatigués de boire leur vin par la bouche, ils se couchent, élèvent les jambes en l'air, et s'en font introduire dans le fondement au moyen d'une canule, tant que le corps peut en contenir."⁴ The administration of wine in this manner may have been as a medicine, and the Aztecs of Panuco may have known that nutriment could be assimilated in this way. It shows at least that the Aztecs were acquainted with enemata.

"Quando la enfermedad les parecia que tenia necesidad de evacuacion, usaban del ainda ò elister [clyster], con cocimientos de Iervas, i polvos, en Agua, i tomandola en la boca, con vn cañuto de hueso de pierna de Garça, la hechaban, i obraba copiosamente: i en esto pudo esta Gente ser industriada de la Cigueña, que con su largo pico se cura, como escriven los Naturales."⁵ Smith says that the medicine-men of the Araucanians "are well acquainted with the proper use of emetics, cathartics, and sudorifics. For the purpose of injection they make use of a bladder, as is still commonly practiced among the Chilenos."⁶ Oviedo says of the medicine-men: "Conoçian muchas hiervas de que usaban y eran apropiadas á diversas enfermedades."⁷ One of the most curious remedies presented in Bancroft's first volume is the use of a poultice of mashed poison-ivy leaves as a remedy for ringworm by the Indians of Lower California.

The Indians of Topia (in the Sierra Madre, near Sinaloa), were in the habit of scarifying their tired legs and aching temples.⁸ The Arawaks, of Guiana, also scarified, according to Spencer.⁹ The inhabitants of

¹ Ternaux-Compans, vol. 7, pp. 114, 115.

² Notes from Gomara, Hist. de las Indias, pp. 172-173.

³ History of California, vol. 1, p. 97.

⁴ Ternaux-Compans, vol. 10, p. 85.

⁵ Herrera, dec. 4, lib. 9, cap. 8, p. 188.

⁶ Smith, Araucanians, p. 234.

⁷ Bancroft, Native Races, vol. 1, p. 779.

⁸ Alegre, Historia de la Compañía de Jesus en Nueva-España, vol. 1, p. 401.

⁹ Desc. Sociology.

Kamchatka use enemata much in the same way as the Navajo and Apache do.¹ They also use moxa made of a fungus.²

It has never been my good fortune to notice an example of trephining among our savage tribes, although I have seen a good many wounded, some of them in the head. Trephining has been practiced by the aborigines of America, and the whole subject as noted among the primitive peoples of all parts of the globe has been treated in a monograph by Dr. Robert Fletcher, U. S. Army.³

Dr. Fordyce Grinnell, who was for some years attached to the Wichita Agency as resident physician, has published the results of his observations in a monograph, entitled "The healing art as practiced by the Indians of the Plains," in which he says: "Wet cupping is resorted to quite frequently. The surface is scarified by a sharp stone or knife, and a buffalo horn is used as the cupping glass. Cauterizing with red-hot irons is not infrequently employed." A cautery of "burning pith" was used by the Araucanians.⁴

"It may be safely affirmed that a majority of the nation [Choctaw] prefer to receive the attentions of a white physician when one can be obtained. * * * When the doctor is called to his patient he commences operations by excluding all white men and all who disbelieve in the efficacy of his incantations."⁵ "The [Apache] scouts seem to prefer their own medicine-men when seriously ill, and believe the weird singing and praying around the couch is more effective than the medicine dealt out by our camp 'sawbones.'"⁶ The promptness with which the American Indian recovers from severe wounds has been commented upon by many authorities. From my personal observation I could, were it necessary, adduce many examples. The natives of Australia seem to be endowed with the same recuperative powers.⁷

After all other means have failed the medicine-men of the Southwest devote themselves to making altars in the sand and clay near the couch of the dying, because, as Antonio Besias explained, this act was all the same as extreme unction. They portray the figures of various animals, and then take a pinch of the dust or ashes from each one and rub upon the person of the sick man as well as upon themselves. Similar altars or tracings were made by the medicine-men of Guatemala when they were casting the horoscope of a child and seeking to determine what was to be its medicine in life. This matter of sand altars has been fully treated by Matthews in the report of the Bureau of Ethnology for 1883-'84, and there are several representations to be found in my Snake Dance of the Moquis. "Writing on sand" is a mode of divination among the

¹ Kraskenninikoff, *History of Kamchatka and the Kurilski Islands*, Grieve's translation, p. 219.

² *Ibid.*, p. 220.

³ *Contributions to North American Ethnology*, vol. 5.

⁴ Smith, *Araucanians*, p. 233.

⁵ Dr. Edwin G. Meek, *Toner Collection, Library of Congress*.

⁶ Lieut. Pettit in *Jour. U. S. Mil. Serv. Instit.*, 1886, pp. 336-337.

⁷ Smyth, *Aborigines of Victoria*, vol. 1, p. 155.

Chinese.¹ Padre Boscana represents the "puplem" or medicine-men of the Indians of California as making or sketching "a most uncouth and ridiculous figure of an animal on the ground," and presumably of sands, clays, and other such materials.²

HAIR AND WIG.

The medicine-men of the Apache were, at least while young, extremely careful of their hair, and I have often seen those who were very properly proud of their long and glossy chevelure. Particularly do I recall to mind the "doctor" at San Carlos in 1885, who would never allow his flowing black tresses to be touched. But they do not touch their hair, as I have seen the Pawnee do; they do not add false hair to their own, as I have seen among the Crow of Montana and the Mohave of the Rio Colorado; they do not apply plasters of mud as do their neighbors the Yuma, Cocopa, Mohave and Pima, and in such a manner as to convince spectators that the intent was ceremonial; and they do not use wigs in their dances. Wigs made of black wool may still be found occasionally among the Pueblos, but the Apache do not use them, and there is no reference to such a thing in their myths.

It is to be understood that these paragraphs are not treating upon the superstitions concerning the human hair, as such, but simply of the employment of wigs, which would seem in former days among some of the tribes of the Southwest to have been made of human hair presented by patients who had recovered from sickness or by mourners whose relatives had died.³ Wigs with masks attached were worn by the Costa Ricans, according to Gabb.⁴

Some of the Apache-Yuma men wear long rolls of matted hair behind, which are the thickness of a finger, and two feet or more in length, and composed of old hair mixed with that growing on the head, or are in the form of a wig, made of hair that has been cut off when mourning the dead, to be worn on occasions of ceremony.⁵

Observations of the same kind have been made by Speke upon the customs of the people of Africa in his Nile,⁶ concerning the Kidi people at the head of the Nile; by Cook, in Hawkesworth's Voyages,⁷ speaking of Tahiti, and by Barcia,⁸ speaking of Greenland. Sir Samuel Baker describes the peculiar wigs worn by the tribes on Lake Albert Nyanza,

¹ Denny's *Folk Lore of China*, p. 57.

² Chinigchinich in Robinson's *California*, pp. 271, 272.

³ The reader interested in this matter may find something bearing upon it in Diego Duran, lib. 1, cap. 26, p. 327; Torquemada, *Mon. Indiana*, lib. 9, cap. 3; Venegas, *History of California*, vol. 1, p. 145; Gomara, *Conq. de Mexico*, p. 443; Herrera, *dec.* 4, lib. 4, p. 156; Maximilian of Wied, p. 411, and others; The "peñucas" mentioned of the Orinoco tribes by Padre Gamilla would seem to be nothing more than feather head-dresses, p. 96.

⁴ *Tribes and Languages of Costa Rica*, Proc. Am. Philos. Soc., Philadelphia, 1875, p. 563.

⁵ Corbusier, in *American Antiquarian*, Sept., 1886, p. 279.

⁶ *Source of the Nile*, p. 567.

⁷ Vol. 2, p. 150.

⁸ *Ensayo Cronologico*, p. 136.

formed of the owner's hair and contributions from all sources plastered with clay into a stiff mass.¹

Melchior Diaz reported that the people of Cibola "élèvent dans leurs maisons des animaux velus, grands comme des chiens d'Espagne. Ils les tondent, ils en font des perruques de couleurs." This report was sent by the Viceroy Mendoza to the Emperor Charles V. Exactly what these domesticated animals were, it would be hard to say; they may possibly have been Rocky Mountain sheep,² though Mr. Cushing, who has studied the question somewhat extensively, is of the opinion that they may have been a variety of the llama.

The Assinaboine used to wear false hair, and also had the custom of dividing their hair into "joints" of an inch or more, marked by a sort of paste of red earth and glue;³ The Mandan did the same.⁴ In this they both resemble the Mohave of the Rio Colorado. "The Algonquins believed also in a malignant Manitou. * * * She wore a robe made of the hair of her victims, for she was the cause of death."⁵

The Apache, until within the last twenty years, plucked out the eyelashes and often the eyebrows, but only a few of them still persist in the practice. Kane says that the Winnebagoes "have the custom of pulling out their eyebrows."⁶ Herrera says that among the signs by which the Tascaltecs recognized their gods when they saw them in visions, were "vianle sin cejas, i sin pestañas."⁷

MUDHEADS.

Reference has been made to a ceremonial plastering of mud upon the heads of Indians. When General Crook was returning from his expedition into the Sierra Madre, Mexico, in 1883, in which expedition a few of the enemy had been killed, the scouts upon reaching the San Bernardino River made a free use of the sweat bath, with much singing and other formulas, the whole being part of the lustration which all warriors must undergo as soon as possible after being engaged in battle. The Apache proper did not apply mud to their heads, but the Apache-Yuma did.

Capt. Grossman, U. S. Army,⁸ says of the Pima method of purification after killing an Apache, that the isolation of the warrior lasts for sixteen days, during which period no one speaks to him, not even the old woman who brings him his food. The first day he touches neither food nor drink, and he eats sparingly for the whole time, touch-

¹ For the Shamans of Kodiak, see Lisiansky, *Voyage*, London, 1814, p. 208; for the Mexicans, Padre José Acosta, Paris, 1600, cap. 26, p. 256; Society Islands, Malte-Brun, *Univ. Geography*, vol. 3, lib. 58, p. 634, Boston, 1825. Sir Samuel Baker, *The Albert Nyanza*, vol. 1, p. 211.

² Ternaux-Compans, vol. 9, p. 294.

³ Catlin, *North American Indians*, London, 1845, vol. 1, p. 55.

⁴ *Ibid.*, p. 95.

⁵ Parkman, *Jesuits in North America*, p. cxxxiv.

⁶ *Wanderings of an Artist in North America*, p. 40.

⁷ Dec. 2, lib. 6, p. 161.

⁸ *Smithsonian Report for 1871*.

ing neither meat nor salt; he bathes frequently in the Gila River and nearly the whole time keeps his head covered with a plaster of mud and mesquite.

"The boyes [of the Massagueyes] of seven or eight yeeres weare clay fastned on the hayre of the head, and still renewed with new clay, weighing sometimes five or six pounds. Nor may they be free hereof till in warre or lawfull fight hee hath killed a man."¹

According to Padre Geronimo Boscana, the traditions of the Indians of California show that they "fed upon a kind of clay."² But this clay was often plastered upon their heads "as a kind of ornament." These were the Indians of San Juan Capistrano, who strongly resembled the Mohave. After all, the "mudheads" of the Mohave are no worse than those people in India who still bedaub their heads with "the holy mud of the Ganges." Up to this time the mud has been the "blue mud" of the Colorado and other rivers, but when we find Herbert Spencer mentioning that the heads of the Comanche are "besmeared with a dull red clay" we may suspect that we have stumbled upon an analogue of the custom of the Aztec priests, who bedaubed their heads with the coagulating lifeblood of their human victims. We know that there has been such a substitution practiced among the Indians of the Pueblo of Jemez, who apply red ocher to the mouth of the stone mountain lion, in whose honor human blood was once freely shed. The practice of so many of the Plains tribes of painting the median line of the head with vermilion seems to be traceable back to a similar custom.

SCALP SHIRTS.

The shirt depicted on Pl. III, made of buckskin and trimmed with human scalps, would seem to belong to the same category with the mantles made of votive hair, mentioned as being in use among the California tribe a little more than a century ago. It was presented to me by Little Big Man, who led me to believe that it had once belonged to the great chief of the Sioux, Crazy Horse, or had at least been worn by him. Of its symbolism I am unable to find the explanation. The colors yellow and blue would seem to represent the earth and water or sky, the feathers attached would refer to the birds, and the round circle on the breast is undoubtedly the sun. There is a cocoon affixed to one shoulder, the significance of which I do not know.

THE RHOMBUS, OR BULL ROARER.

The rhombus was first seen by me at the snake dance of the Tusayan, in the village of Walpi, Ariz., in the month of August, 1881. Previous to that date I had heard of it vaguely, but had never been able to see it in actual use. The medicine-men twirled it rapidly, and with a uniform motion, about the head and from front to rear, and succeeded

¹ Purchas, lib. 9, cap. 12, sec. 4, p. 1555, edition of 1622.

² Chinigchinich, p. 253.



SCALP SHIRT OF "LITTLE BIG MAN" (SIOUX).

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in faithfully imitating the sound of a gust of rain-laden wind. As explained to me by one of the medicine-men, by making this sound they compelled the wind and rain to come to the aid of the crops. At a later date I found it in use among the Apache, and for the same purpose. The season near the San Carlos Agency during the year 1884 had been unusually dry, and the crops were parched. The medicine-men arranged a procession, two of the features of which were the rhombus and a long handled cross, upon which various figures were depicted. Of the latter, I will speak at another time.

Again, while examining certain ruins in the Verde Valley, in central Arizona, I found that the "Cliff Dwellers," as it has become customary to call the prehistoric inhabitants, had employed the same weapon of persuasion in their intercourse with their gods. I found the rhombus also among the Rio Grande Pueblo tribes and the Zuñi. Dr. Washington Matthews has described it as existing among the Navajo and Maj. J. W. Powell has observed it in use among the Utes of Nevada and Utah. As will be shown, its use in all parts of the world seems to have been as general as that of any sacred implement known to primitive man, not even excepting the sacred cords or rosaries discussed in this paper. Three forms of the rhombus have come under my own observation, each and all apparently connected in symbolism with the lightning. The first terminates in a triangular point, and the general shape is either that of a long, narrow, parallelogram, capped with an equilateral triangle, or else the whole figure is that

of a slender isosceles triangle. Where the former shape was used, as at the Tusayan snake dance, the tracing of a snake or lightning in blue or yellow followed down the length of the rhombus and terminated in the small triangle, which did duty as the snake's head. The second pattern was found by Dr. Matthews among the Navajo, and by myself in the old cliff dwellings. The one which I found was somewhat decayed, and the extremity of the triangle was broken off. There was no vestige of painting left. The second form was serrated on both edges to simulate the form



FIG. 430.—Rhombus of the Apache.

of the snake or lightning. The third form, in use among the Apache, is an oblong of 7 or 8 inches in length, one and a quarter inches in width by a quarter in thickness. One extremity, that through which the cord passes, is rounded to rudely represent a human head, and the whole bears a close resemblance to the drawings of schoolboys which are intended for the human figure. The Apache explained that the lines on the front side of the rhombus were the entrails and those on the rear side the hair of their wind god. The hair is of several colors, and represents the lightning. I did not ascertain positively that such



FIG. 431.—Rhombus of the Apache

was the case, but was led to believe that the rhombus of the Apache was made by the medicine-men from wood, generally pine or fir, which had been struck by lightning on the mountain tops. Such wood is held in the highest estimation among them, and is used for the manufacture of amulets of especial efficacy. The Apache name for the rhombus is *tzi-ditindi*, the "sounding wood." The identification of the rhombus or "bull roarer" of the ancient Greeks with that used by the Tusayan in their snake dance was first made by E. B. Tylor in the *Saturday Review* in a criticism upon "The Snake Dance of the Moquis of Arizona."

The Kaffirs have the rhombus among their playthings:

The nodiwu is a piece of wood about 6 or 8 inches long, and an inch and a half or 2 inches wide, and an eighth or a quarter of an inch thick in the middle. Towards the edges it is beveled off, so that the surface is convex, or consists of two inclined planes. At one end it has a thong attached to it by which it is whirled rapidly round. * * * There is a kind of superstition connected with the nodiwu, that playing with it invites a gale of wind. Men will, on this account, often prevent boys from using it when they desire calm weather for any purpose. This superstition is identical with that which prevents many sailors from whistling at sea.¹

Of the Peruvians we are informed that "their belief was that there was a man in the sky with a sling and a stick, and that in his power were the rain, the hail, the thunder, and all else that appertains to the regions of the air, where clouds are formed."²

The sacred twirler of the snake dance is found in Greece, America, Africa and New Zealand. It survives as a toy in England and the United States.³ The same peculiar instrument has been noticed in the religious ceremonials of the Australians, especially in the initiatory rites of the "bora." It is called the "tirricoty."⁴ The twirling of the tzi-ditindi in medicine or prayer corresponds to the revolution of the prayer wheel of the Lamas.

THE CROSS.

The sign of the cross appears in many places in Apache symbolism. The general subject of the connection of the cross with the religion of the aborigines of the American continent has been so fully traversed by previous authors that I do not care to add much more to the subject beyond saying that my own observation has assured me that it is related to the cardinal points and the four winds, and is painted by warriors upon their moccasins upon going into a strange district in the hope of keeping them from getting on a wrong trail.

In October, 1884, I saw a procession of Apache men and women, led by the medicine-men bearing two crosses, made as follows: The vertical arm was 4 feet 10 inches long, and the transverse between 10 and 12 inches, and each was made of slats about 1½ inches wide, which looked as if they had been long in use. They were decorated with blue polka dots upon the unpainted surface. A blue snake meandered down the longer arm. There was a circle of small willow twigs at top; next below that, a small zinc-cased mirror, a bell, and eagle feathers. Nosey, the Apache whom I induced to bring it to me after the ceremony, said that they carried it in honor of Guzanutli to induce her to send rain, at that time much needed for their crops. It is quite likely that this particular case represents a composite idea; that the original beliefs of the

¹ Theal, Kaffir Folk-lore, pp. 209-210.

² Clements R. Markham, Note on Garcilasso de la Vega, in Hakluyt Soc., vol. 41, p. 183, quoting Acosta, lib. 5, cap. 4.

³ Andrew Lang, Custom and Myth, New York, 1885, chapter entitled "The bull roarer," pp. 29-44.

⁴ John Fraser, The Aborigines of Australia; their Ethnic Position and Relations, pp. 161-162.

Apache have been modified to some extent by the crude ideas of the Mexican captives among them, who still remember much that was taught them in the churches of the hamlets in northern Mexico, from which they were kidnapped years ago; but, on the other hand, it is to be remembered that the cross has always formed a part of the Apache symbolism; that the snake does not belong to the Christian faith, and that it has never been allowed to appear upon the cross since the time of the Gnostics in the second and third centuries. Therefore, we must regard that as a Pagan symbol, and so must we regard the circle of willow twigs, which is exactly the same as the circle we have seen attached to the sacred cords for the cure of headache.¹

The cross was found in full vogue as a religious emblem among the aborigines all over America. Father Le Clercq² speaks of its very general employment by the Gaspesians: "Ils ont parmi eux, tout infideles qu'ils soient, la Croix en singuliere veneration, qu'ils la portent figurée sur leurs habits & sur leur chair; qu'ils la tiennent à la main dans tous leurs voïages, soit par mer, soit par terre; & qu'enfin ils la posent au dehors & au dedans de leurs Cabannes, comme la marque d'honneur qui les distingue des autres Nations du Canada." He narrates³ that the Gaspé tradition or myth was, that the whole tribe being ravaged by a plague, the medicine-men had recourse to the Sun, who ordered them to make use of the cross in every extremity.

Herrera relates that the followers of Hernandez de Cordoba found at Cape Catoche "unos Adoratorios . . . i Cruces pintadas que les causò gran admiracion."⁴ He also says that Juan de Grijalva on the island of Cozumel found a number of oratories and temples, but one in particular was made in the form of a square tower, with four openings. Inside this tower was a cross made of lime, which the natives revered as the god of the rain; "una Cruz de Cal, de tres varas en alto. à la qual tenian por el Dios de la lluvia."⁵

NECKLACES OF HUMAN FINGERS.

The necklace of human fingers, an illustration of which accompanies this text (Pl. IV), belonged to the foremost of the medicine-men of a brave tribe—the Cheyenne of Montana and Wyoming. They were the backbone of the hostility to the whites, and during the long and arduous campaign conducted against them by the late Maj. Gen. George Crook, which terminated so successfully in the surrender of 4,500 of the allied Sioux and Cheyenne, at Red Cloud and Spotted Tail agencies, in the early spring of 1877, it was a noted fact that wherever a band of the

¹ "When the rain-maker of the Lenni Lennape would exert his power, he retired to some secluded spot and drew upon the earth the figure of a cross (its arms toward the cardinal points?), placed upon it a piece of tobacco, a gourd, a bit of some red stuff, and commenced to cry aloud to the spirits of the rains."—Brinton, *Myths of the New World*, New York, 1868, p. 96 (after Loskiel).

² Père Chrestien Le Clercq, *Gaspésie*, Paris, 1691, p. 170.

³ *Ibid.*, cap. x, pp. 172-199.

⁴ *Ibid.*, lib. 2, p. 48.

⁵ *Ibid.*, p. 59.

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NECKLACE OF HUMAN FINGERS.



Cheyenne was to be found there the fighting was most desperate. It is a matter now well established that the Cheyenne are an offshoot of the Algonquian family, speaking a dialect closely resembling that of the Cree, of British America.

It may interest some readers to listen to a few words descriptive of the manner in which such a ghastly relic of savagery came into my possession. On the morning of the 25th of November, 1876, the cavalry and Indian scouts (Sioux, Shoshoni, Arapaho, Pawnee, and a few of the Cheyenne themselves), of Gen. Crook's command, under the leadership of the late Brig. Gen. Ranald S. Mackenzie, then colonel of the Fourth Cavalry, surprised and destroyed the main village of the Cheyenne, on the headwaters of the Powder River, in the Big Horn Mountains, Wyoming. The onslaught was irresistible, the destruction complete, and the discomfited savages were forced to flee from their beds, half naked and with nothing save their arms and ammunition. More than half of the great herd of ponies belonging to the savages were killed, captured, or so badly wounded as to be of no use to the owners. The cold became so intense that on the night after the fight eleven papooses froze to death in their mothers' arms, and the succeeding night, three others. This blow, the most grievous ever inflicted upon the plains tribes, resulted in the surrender, first of the Cheyenne, and later on of the principal chief of the Sioux, the renowned Crazy Horse; after which the Sioux troubles were minimized into the hunt for scattered bands. Undoubtedly, among the bitterest losses of valuable property suffered by the Cheyenne on this occasion were the two necklaces of human fingers which came into my possession, together with the small buckskin bag filled with the right hands of papooses belonging to the tribe of their deadly enemies, the Shoshoni. These were found in the village by one of our scouts—Baptiste Pourrier, who, with Mr. Frank Guard, was holding an important and responsible position in connection with the care of the great body of Indian scouts already spoken of. From these two gentlemen I afterwards obtained all the information that is here to be found regarding the Cheyenne necklace.

The second necklace, consisting of four fingers, was buried, as Gen. Crook did not wish to have kept more than one specimen, and that only for scientific purposes. Accordingly, the necklace here depicted was sent first to the U. S. Military Academy at West Point, New York, and later to the National Museum in Washington, where it was believed it could better fulfill its mission of educating students in a knowledge of the manners and customs of our aborigines.

The buckskin bag, with the papooses' hands, was claimed by the Shoshoni scouts, who danced and wailed all night, and then burned the fearful evidence of the loss sustained by their people.

The necklace is made of a round collar of buckskin, incrustated with the small blue and white beads purchased from the tralers, these being arranged in alternate spaces of an inch or more in length. There are

also attached numbers of the perforated wampum shell beads of native manufacture. Pendant from this collar are five medicine arrows, the exact nature of which, it was, of course, impossible to determine from the owner himself. Both Frank and Baptiste agreed that an arrow might become "medicine" either from having been shot into the person of the owner himself or into the body of an enemy, or even from having been picked up under peculiar circumstances. The owner, High Wolf or Tall Wolf, admitted as much after he had surrendered at the Red Cloud Agency and had made every effort to obtain the return of his medicine, which was this necklace.

The four medicine bags to be seen in the picture are worthy of attention. They were carefully examined under a powerful glass by Dr. H. C. Yarrow, U. S. Army, in the city of Washington, and pronounced to be human scrota. The first of these contained a vegetable powder, somewhat decomposed, having a resemblance to hoddentin; the second was filled with killikinnick; the third with small garnet-colored seeds like the chia in use among the Apache, and the fourth with a yellow, clayey-white vegetable matter not identified. The fifth, also, remained unidentified.

Besides the above, there are artificial teeth, resembling those of the fossil animals abundant in the Bad Lands of South Dakota, but cut out of soft stone.

The fingers—eight altogether—are the left-hand middle fingers of Indians of hostile tribes, killed by High Wolf. I obtained the list and could insert it here were it worth while to do so. The fingers have not been left in the natural state, but have been subjected to very careful and elaborate antiseptic treatment in order thoroughly to desiccate them. They were split longitudinally on the inner side and after the bone had been extracted the surface of the skin, both inside and out, received a treatment with a wash or paint of ochereous earth, the same as is used for the face. I was told that the bones were not replaced but that sticks were inserted to maintain the fingers in proper shape.

Of the reason for making use of such a trophy or relic, there is not much to be said; even the savages know little and say less. From the best information that I have been able to gather, it would seem to be based partly upon a vainglorious desire to display the proofs of personal prowess, and partly upon the vague and ill defined, but deeply rooted, belief in the talismanic or "medicinal" potency possessed by all parts of the human body, especially after death. It was such a belief which impelled the Mandan, Aztecs, and others of the American tribes to preserve the skulls of their dead as well as among the Aztecs those of the victims sacrificed in honor of their gods. As has been shown in another place, the Zuni and others take care to offer food at stated periods to the skulls of their enemies.

The use of necklaces of human fingers or of human teeth is to be found in many parts of the world, and besides the fingers themselves,

we find the whole arm, or in other cases only the nails. The Cheyenne did not always restrict themselves to fingers; they generally made use of the whole hand, or the arm of the slaughtered enemy. In a colored picture drawn and painted by one of themselves I have a representation of a scalp dance, in which the squaws may be seen dressed in their best, carrying the arms of enemies elevated on high poles and lances. There is no doubt in my mind that this custom of the Cheyenne of cutting off the arm or hand gave rise to their name in the sign language of the "Slashers," or "Wrist Cutters," much as the corresponding tribal peculiarity of the Dakota occasioned their name of the "Coupe Gorge" or "Throat Cutters."

The necklace of human fingers is found among other tribes. A necklace of four human fingers was seen by the members of the Lewis and Clarke expedition among the Shoshoni at the headwaters of the Columbia, in the early years of the present century. Early in the spring of 1858 Henry Youle Hind refers to the allies of the Ojibwa on Red River as having "two fingers severed from the hands of the unfortunate Sioux."¹ In Eastman's "Legends of the Sioux," we read of "Harpsthinah, one of the Sioux women, who wore as long as she could endure it, a necklace made of the hands and feet of Chippewah children."² We read that in New Zealand, "Several rows of human teeth, drawn on a thread, hung on their breasts."³ Capt. Cook speaks of seeing fifteen human jaw bones attached to a semicircular board at the end of a long house on the island of Tahiti. "They appeared to be fresh, and there was not one of them that wanted a single tooth;"⁴ and also, "the model of a canoe, about three feet long, to which were tied eight human jaw bones; we had already learnt that these were trophies of war."⁵ Capt. Byron, R. N., saw in the Society Islands, in 1765, a chief who "had a string of human teeth about his waist, which was probably a trophy of his military prowess."⁶

"The wild Andamanese, who live only on the fruits of their forests and on fish, so far revere their progenitors that they adorn their women and children with necklaces and such like, formed out of the finger and toe-nails of their ancestors."⁷

Bancroft says⁸ that the Californians did not generally scalp, but they did cut off and keep the arms and legs of a slain enemy or, rather, the hands and feet and head. They also had the habit of plucking out and preserving the eyes.

Kohl assures us that he has been informed that the Ojibwa will frequently cut fingers, arms, and limbs from their enemies and preserve

¹ Assiniboine and Saskatchewan Expedition, vol. 2, p. 123.

² New York, 1849, pp. x, xxix, 47.

³ Forster, Voyage Round the World, vol. 1, pp. 219, 519.

⁴ Hawkesworth, op. cit., vol. 2, p. 161.

⁵ Ibid., p. 257.

⁶ Ibid., vol. 1, p. 113.

⁷ Forlong, Rivers of Life, vol. 1, pp. 541, 542.

⁸ Nat. Races, vol. 1, p. 380.

these ghastly relics for use in their dances. Sometimes the warriors will become so excited that they will break off and swallow a finger.¹

Tanner says of the Ojibwa: "Sometimes they use sacks of human skin to contain their medicines, and they fancy that something is thus added to their efficacy."²

Of the savages of Virginia we read: "Mais d'autres portent pour plus glorieuse parure une main seiche de quelqu'un de leurs ennemis."³

Of the Algonkin we read: "Il y en a qui ont une partie du bras et la main de quelque Hiroquois qu'ils ont tué; cela est si bien vidée que les ongles restent toutes entières."⁴

The Mohawk "place their foe against a tree or stake and first tear all the nails from his fingers and run them on a string, which they wear the same as we do gold chains. It is considered to the honor of any chief who has vanquished or overcome his enemies if he bite off or cut off some of their members, as whole fingers."⁵

The Ceniz (Asinai) of Texas, were seen by La Salle's expedition in 1687-1690, torturing a captive squaw. "They then tore out her hair, and cut off her fingers."⁶

In volume 2 of Kingsborough's Mexican Antiquities, in the plates of the Vatican manuscript, is to be seen a representation of an Aztec priest or other dignitary holding out in his hands two human arms. In plate 76 of the same is a priest offering up a human sacrifice, the virile member of the victim cut off.

Teoyamaqui, the wife of Huitzilpochtli, the Aztec god of war, was depicted with a necklace of human hands.⁷ Squier also says that Darga or Kali, the Hindu goddess, who corresponds very closely to her, was represented with "a necklace of skulls" and "a girdle of dissevered human hands."

The Hindu goddess Kali was decorated with a necklace of human skulls.⁸ In the Propaganda collection, given in Kingsborough,⁹ are to be seen human arms and legs.

"On the death of any of the great officers of state, the finger bones and hair are also preserved; or if they have died shaven, as sometimes occurs, a bit of their mbügü dress will be preserved in place of the hair."¹⁰
"Their families guard their tombs."¹¹

The principal war fetiches of Uganda "consist of dead lizards, bits,

¹ Kohl, Kitchi-gami, pp. 345, 346.

² Tanner's Narrative, p. 372.

³ John de Laet, lib. 3, cap. 18, p. 90, quoting Capt. John Smith.

⁴ Le Jeune in Jesuit Relations, 1633, vol. 1, Quebec, 1858.

⁵ Third Voyage of David Peter De Vries to New Amsterdam, in Trans. N. Y. Hist. Soc., vol. 3, p. 91.

⁶ Charlevoix, New France, New York, 1866, vol. 4, p. 105.

⁷ Squier, Serpent Symbol, p. 197.

⁸ Coleman, Mythology of the Hindus, London, 1832, p. 63.

⁹ Vol. 3.

¹⁰ Speke, Source of the Nile, London, 1863, p. 500.

¹¹ Ibid.

of wood, hide, nails of dead people, claws of animals, and beaks of birds." Stanley saw them displayed before King Mtesa.¹

"Some of the women in Gippsland wear round the neck human hands, which, Mr. Hull says, were beautifully prepared. He moreover informs me that they sometimes wear the parts of which the 'Lingam' and 'Priapus' were the emblems."² "The Gippsland people keep the relics of the departed. They will cut off the hands to keep as a remembrance, and these they will attach to the string that is tied round the neck."³

Smyth also relates that the women of some of the Australian tribes preserve "the hands of some defunct member of the tribe—that of some friend of the woman's, or perhaps one belonging to a former husband. This she keeps as the only remembrance of one she once loved; and, though years may have passed, even now, when she has nothing else to do, she will sit and moan over this relic of humanity. Sometimes a mother will carry about with her the remains of a beloved child, whose death she mourns."⁴ The Australians also use the skulls of their "nearest and dearest relatives" for drinking vessels; thus, a daughter would use her mother's skull, etc.⁵

"One of the most extraordinary of their laws is, that a widow, for every husband she marries after the first, is obliged to cut off a joint of a finger, which she presents to her husband on the wedding day, beginning at one of the little fingers."⁶

In the *Army and Navy Journal*, New York, June 23, 1888, is mentioned a battle between the Crow of Montana and the Piegan, in which the former obtained some of the hands and feet of dead warriors of the first-named tribe and used them in their dances.

Catlin shows that the young Sioux warriors, after going through the ordeal of the sun dance, placed the little finger of the left hand on the skull of a sacred buffalo and had it chopped off.⁷

"The sacrifices [of American Indians] at the fasts at puberty sometimes consist of finger joints."⁸

In Dodge's *Wild Indians* is represented (Pl. VI, 13) a Cheyenne necklace of the bones of the first joint of the human fingers, stripped of skin and flesh. I have never seen or heard of anything of the kind, although I have served with the Cheyenne a great deal and have spoken about their customs. My necklace is of human fingers mummified, not of bones.

Fanny Kelly says of a Sioux chief: "He showed me a puzzle or game he had made from the finger bones of some of the victims that

¹ Stanley, *Through the Dark Continent*, vol. 1, p. 327.

² Miles, *Demigods and Demonia*, in *Jour. Ethnol. Soc.*, London, vol. 3, p. 28, 1854.

³ Smyth, *Aborigines of Victoria*, vol. 1, p. 30.

⁴ *Ibid.*, p. 131.

⁵ *Ibid.*, p. 348.

⁶ Peter Kolben, speaking of the Hottentots, in Knox, vol. 2, p. 394.

⁷ O-kee-pa, pp. 28-29.

⁸ Frazer, *Totemism*, Edinburgh, 1887, pp. 54, 55; after Maximilian.

had fallen beneath his own tomahawk. The bones had been freed from the flesh by boiling, and, being placed upon a string, were used for playing some kind of Indian game."¹

Strabo recounts in his third book that the Lusitanians sacrificed prisoners and cut off their right hands to consecrate them to their gods.

Dulaure says that the Germans attached the heads and the right hands of their human victims to sacred trees.²

Adoni-bezek cut off the thumbs and great toes of seventy kings of Syria.³

The necklace of human fingers is not a particle more horrible than the ornaments of human bones to be seen in the cemetery of the Capuchins in Rome at the present day. I have personally known of two or three cases where American Indians cut their enemies limb from limb. The idea upon which the practice is based seems to be the analogue of the old English custom of sentencing a criminal to be "hanged, drawn, and quartered."

Brand gives a detailed description of the "hand of glory," the possession of which was believed by the peasantry of Great Britain and France to enable a man to enter a house invisible to the occupants. It was made of the hand of an executed (hanged) murderer, carefully desiccated and prepared with a great amount of superstitious mummery. With this holding a candle of "the fat of a hanged man" burglars felt perfectly secure while engaged in their predatory work.⁴ The belief was that a candle placed in a dead man's hand will not be seen by any but those by whom it is used. Such a candle introduced into a house kept those who were asleep from awakening.

The superstition in regard to the "hand of glory" was widely diffused throughout France, Germany, Spain, and Great Britain. As late as the year 1831 it was used by Irish burglars in the county Meath.

Dr. Frank Baker delivered before the Anthropological Society of Washington, D. C., a lecture upon these superstitions as related to the "hand of glory," to which the student is respectfully referred.⁵

An Aztec warrior always tried to procure the middle finger of the left hand of a woman who had died in childbirth. This he fastened to his shield as a talisman.⁶ The great weapon of the Aztec witches was the left arm of a woman who had died in her first childbirth.⁷ Pliny mentions "still-born infants cut up limb by limb for the most abominable practices, not only by widwives, but by harlots even as well!"⁸

¹ Kelly, *Narrative of Captivity*, Cincinnati, 1871, p. 143.

² *Différens Cultes*, vol. 1, p. 57.

³ *Judges*, I, 7.

⁴ Brand, *Pop. Ant.*, London, 1882, vol. 3, p. 278.

⁵ *American Anthropologist*, Washington, D. C., January, 1888.

⁶ *Kingsborough*, vol. 8, p. 70. The Aztec believed that the woman who died in childbirth was equal to the warrior who died in battle and she went to the same heaven. The middle finger of the left hand is the finger used in the necklace of human fingers.

⁷ Sahagun, in *Kingsborough*, vol. 7, p. 147.

⁸ Pliny, *Nat. Hist.*, lib. 28, cap. 20. Holland's translation

The opinions entertained in Pliny's time descended to that of the Reformation—

Finger of birth-strangled babe,
Ditch-deliver'd by a drab.¹

"Scrofula, imposthumes of the parotid glands, and throat diseases, they say, may be cured by the contact of the hand of a person who has been carried off by an early death;" but, he goes on to say, any dead hand will do, "provided it is of the same sex as the patient and that the part affected is touched with the back of the left hand."² A footnote adds that this superstition still prevails in England in regard to the hand of a man who has been hanged.

The use of dead men's toes, fingers, spinal vertebræ, etc., in magical ceremonies, especially the fabrication of magical lamps and candles, is referred to by Frommann.³

Grimm is authority for the statement that in both France and Germany the belief was prevalent that the fingers of an unborn babe were "available for magic."⁴

In England witches were believed to "open graves for the purpose of taking out the joints of the fingers and toes of dead bodies . . . in order to prepare a powder for their magical purposes."⁵

Saint Athanase dit même, que ces parties du corps humain [i. e., hands, feet, toes, fingers, etc.] étoient adorées comme des dieux particuliers."⁶

According to the sacred lore of the Brahmans "the Tirtha sacred to the Gods lies at the root of the little finger, that sacred to the Rishis in the middle of the fingers, that sacred to Men at the tips of the fingers, that sacred to Agni (fire) in the middle of the hand."⁷

In the Island of Ceylon "debauchees and desperate people often play away the ends of their fingers."⁸

Hone shows that "every joint of each finger was appropriated to some saint."⁹

NECKLACES OF HUMAN TEETH.

A number of examples are to be found of the employment of necklaces of human teeth. In my own experience I have never come across any specimens, and my belief is that among the Indians south of the Isthmus such things are to be found almost exclusively. I have found no reference to such ornamentation or "medicine" among the tribes of North America, but there are many to show the very general dissemination of the custom in Africa and in the islands of the South Sea. Gomara says that the Indians of Santa Marta wore at their necks, like

¹ Shakespeare, *Macbeth*, act 4, scene 1.

² Pliny, *Nat. Hist.*, lib. 28, cap. 11.

³ *Tractatus de Fascinatione*, Nuremberg, 1675, p. 681.

⁴ *Teutonic Mythology*, vol. 3, p. 1073.

⁵ Brand, *Pop. Ant.*, vol. 3, p. 10.

⁶ Montfaucon, *l'Antiquité expliquée*, vol. 2, liv. 4, cap. 6, p. 249.

⁷ *Vāsishtāna*, cap. 3, pars. 64-68, p. 25 (*Sacred Books of the East*, Oxford, 1882, Max Müller's edition).

⁸ *Travels of Two Mohammedans through India and China*, in Pinkerton's *Voyages*, vol. 7, p. 218.

⁹ *Every-Day Book*, vol. 2, col. 95.

dentists, the teeth of the enemies they had killed in battle.¹ Many of the Carib, we are told by a Spanish writer, ostentatiously wear necklaces made of strings of the teeth of the enemies whom they have slain.² Padre Fray Alonzo Fernandez says of the Carib: "Traen los dientes con los cabellos de los que mataron por collares, como hazian antiguamente los Scitas."³ The people of New Granada "traen al cuello dientes de los que matavan."⁴ Picart says that the natives of New Granada and Cumana "portent au col les dents des ennemis qu'ils ont massacrez."⁵ The Spaniards found in the temple of the Itzaes, on the island of Peten, an idol made of "yesso," which is plaster, and in the head, which was shaped like the sun, were imbedded the teeth of the Castilians whom they had captured and killed.⁶

"They strung together the teeth of such of their enemies as they had slain in battle and wore them on their legs and arms as trophies of successful cruelty."⁷

Stanley says, referring to the natives of the Lower Congo country: "Their necklaces consisted of human, gorilla, and crocodile teeth, in such quantity, in many cases, that little or nothing could be seen of the neck."⁸

"The necklaces of human teeth which they [Urangi and Rubunga, of the Lower Congo] wore."⁹ Again, "human teeth were popular ornaments for the neck."¹⁰ When a king dies they [the Wahūma, of the head of the Nile] cut out his lower jaw and preserve it covered with beads.¹¹

Schweinfurth¹² speaks of having seen piles of "lower jawbones from which the teeth had been extracted to serve as ornaments for the neck" by the Monbutto of Africa. "A slaughtered foe was devoured from actual bloodthirstiness and hatred by the Niam-Niams of Central Africa. . . . They make no secret of their savage craving, but ostentatiously string the teeth of their victims round their necks, adorning the stakes erected beside their dwellings for the habitation of the trophies with the skulls of the men they have devoured. Human fat is universally sold."¹³

¹ "Traen los dientes al cuello (como sacamuclas) por bravosidad."—Gomara, *Historia de las Indias*, p. 291.

² "Los Caberres y muchos Caribes, usan por gala muchas sargas de dientes y muelas de gente para dar á entender que son muy valientes por los despojos que allí ostentan ser de sus enemigos que mataron."—Gumilla, *Orinoco*, Madrid, 1741, p. 65.

³ Padre Fray Alonzo Fernandez, *Historia Ecclesiastica*, Toledo, 1611, p. 17.

⁴ *Ibid.*, p. 161.

⁵ *Cérémonies et Costumes*, Amsterdam, 1735, vol. 6, p. 114.

⁶ "Formada la cara como de Sol, con rayos de Nacar al rededor, y perfilada de lo mismo; y en la boca embutidos los dientes, que quitaron á los Españoles, que avian muerto."—Villaguitierre, *Hist. de la Conquista de la Provincia de el Itza*, Madrid, 1701, p. 500. (Itza seems to have been the country of the Lacandoncs.)

⁷ Edwards, speaking of the Carib, quoted by Spencer, *Desc. Sociology*. The same custom is ascribed to the Tupinambi of Brazil. *Ibid.*, quoting from Southey.

⁸ *Through the Dark Continent*, vol. 2, p. 286.

⁹ *Ibid.*, p. 288.

¹⁰ *Ibid.*, p. 290.

¹¹ Speke, *Source of the Nile*, London, 1863, p. 500.

¹² *Heart of Africa*, vol. 2, p. 54.

¹³ *Ibid.*, vol. 1, p. 285.

The four front teeth were extracted by the men and women of the Latooka and other tribes of the White Nile, but no explanation is given of the custom.¹

In Dahomey, strings of human teeth are worn.²

Freycinet saw in Timor, Straits of Malacca, "a score of human jaw-bones, which we wished to purchase; but all our offers were met by the word 'pamali,' meaning sacred."³

In one of the "morais" or temples entered by Kotzebue in 1818, on the Sandwich Islands, there were two great and ugly idols, one representing a man, the other a woman. "The priests made me notice that both statues, which had their mouths wide open, were furnished with a row of human teeth."⁴

The Sandwich Islanders kept the jaw bones of their enemies as trophies.⁵ King Tamaahmaah had a "spitbox which was set round with human teeth, and had belonged to several of his predecessors."⁶

Among some of the Australian tribes the women wear about their necks the teeth which have been knocked out of the mouths of the boys at a certain age.⁷ This custom of the Australians does not obtain among the North American tribes, by whom the teeth, as they fall out, are carefully hidden or buried under some tree or rock. At least, I have been so informed by several persons, among others by Chato, one of the principal men of the Chiricahua Apache.

Molina speaks of the customs of the Araucanians, who, after torturing their captives to death, made war flutes out of their bones and used the skulls for drinking vessels.⁸ The Abipones of Paraguay make the bones of their enemies into musical instruments.⁹

The preceding practice is strictly in line with the "medicinal" and "magical" values attached in Europe to human teeth, human skin, etc. The curious reader may find much on this subject in the works of Frommann, Beckherius, Etmuller, Samuel Augustus Flemming, and others of the seventeenth century, where it will be shown that the ideas of the people of Europe of that period were only in name superior to those of the savages of America, the islands of the South Seas, and of Central Africa. In my work upon "The Scatalogic Rites of all Nations" I have treated this matter more in extenso, but what is here adduced will be sufficient for the present article.

The skin of Ziska, the Bohemian reformer, was made into a "medicine drum" by his followers.

¹ Sir Samuel Baker, *The Albert N'yanza*, Philadelphia, 1869, p. 154 et seq.

² Burton, *Mission to Gelele*, vol. 1, p. 135 et seq.

³ *Voyage Round the World*, London, 1823, pp. 209, 210.

⁴ Kotzebue, *Voyage*, London, 1821, vol. 2, p. 202. See also Villaguitierre, cited above.

⁵ Capt. Cook's First Voyage, in Pinkerton's *Voyages*, London, 1812, vol. 11, pp. 513, 515.

⁶ Campbell, *Voyage Round the World*, N. Y., 1819, p. 153.

⁷ Frazer, *Totemism*, Edinburgh, 1887, p. 28.

⁸ *Historia de Chile*, Madrid, 1795, vol. 2, p. 80.

⁹ Spencer, *Desc. Sociology*.

THE SCRATCH STICK.

When Gen. Crook's expedition against the Chiricahua Apache reached the heart of the Sierra Madre, Mexico, in 1883, it was my good fortune to find on the ground in Geronimo's rancheria two insignificant looking articles of personal equipment, to which I learned the Apache attached the greatest importance. One of these was a very small piece of hard wood, cedar, or pine, about two and a half to three inches long and half a finger in thickness, and the other a small section of the cane indigenous to the Southwest and of about the same dimensions. The first was the scratch stick and the second the drinking reed.

The rule enjoined among the Apache is that for the first four times one of their young men goes out on the warpath he must refrain from scratching his head with his fingers or letting water touch his lips. How to keep this vow and at the same time avoid unnecessary personal discomfort and suffering is the story told by these petty fragments from the Apache's ritual. He does not scratch his head with his fingers; he makes use of this scratch stick. He will not let water touch his lips, but sucks it into his throat through this tiny tube. A long leather cord attached both stick and reed to the warrior's belt and to each other. This was all the information I was able to obtain of a definite character. Whether these things had to be prepared by the medicine-men or by the young warrior himself; with what ceremonial, if any, they had to be manufactured, and under what circumstances of time and place, I was unable to ascertain to my own satisfaction, and therefore will not extend my remarks or burden the student's patience with incoherent statements from sources not absolutely reliable. That the use of the scratch stick and the drinking reed was once very general in America and elsewhere, and that it was not altogether dissociated from ritualistic or ceremonial ideas, may be gathered from the citations appended.

In her chapter entitled "Preparatory ceremony of the young warrior" Mrs. Emerson says: "He does not touch his ears or head with his hand," explaining in a foot note, "the head was sometimes made a sacrificial offering to the sun."¹ Tanner relates that the young Ojibwa warrior for the "three first times" that he accompanies a war party "must never scratch his head or any other part of his body with his fingers, but if he is compelled to scratch he must use a small stick."² Kohl states that the Ojibwa, while on the warpath, "will never sit down in the shade of a tree or scratch their heads; at least, not with their fingers. The warriors, however, are permitted to scratch themselves with a piece of wood or a comb."³ Mackenzie states regarding the Indians whom he met on the Columbia, in 52° 38', N. lat., "instead of a

¹ Indian Myths, Boston, 1884, p. 256.

² Tanner's Narrative, p. 122.

³ Kitchi-gami, p. 344.

comb they [the men] have a small stick hanging by a string from one of the locks [of hair], which they employ to alleviate any itching or irritation in the head."¹

The Tlinkit of British North America use these scratchers made of basalt or other stone.

"The pipe-stem carrier (i. e., the carrier of the sacred or 'medicine' pipe) of the Crees, of British North America, dares not scratch his own head, without compromising his own dignity, without the intervention of a stick, which he always carries for that purpose."²

Bancroft³ quotes Walker as saying that "a Pima never touches his skin with his nails, but always with a small stick for that purpose, which he renews every fourth day and wears in his hair."

As part of the ceremony of "initiating youth into manhood" among the Creeks, the young neophyte "during the twelve moons . . . is also forbidden to pick his ears or scratch his head with his fingers, but must use a small splinter to perform these operations."⁴ The Apache-Yuma men carry in their hair "a slender stick or bone about 8 inches long, which serves them as a comb."⁵

The idea that these scratch sticks replace combs is an erroneous one; Indians make combs in a peculiar way of separate pieces of wood, and they are also very fond of brushing their long locks with the coarse brushes, which they make of sacaton or other grass.

"One other regulation, mentioned by Schomburgk, is certainly quaint; the interesting father may not scratch himself with his finger nails, but may use for this purpose a splinter, especially provided, from the mid-rib of a cokerite palm."⁶

When a Greenlander is about to enter into conversation with the spirits "no one must stir, not so much as to scratch his head."⁷

In the New Hebrides most of the natives "wear a thin stick or reed, about 9 inches long, in their hair, with which they occasionally disturb the vermin that abound in their heads."⁸

Alarcon, describing the tribes met on the Rio Colorado, in 1541, says: "They weare certaine pieces of Deeres bones fastened to their armes, wherewith they strike off the sweate."⁹

In German folk-lore there are many references to the practice in which the giants indulged frequently in scratching themselves, sometimes as a signal to each other. Just what significance to attach to these stories I can not presume to say, as Grimm merely relates the fact without comment.¹⁰

¹ Voyages, p. 323.

² Kaue, Wanderings of an Artist in North America, p. 399.

³ Native Races, vol. 1, p. 553.

⁴ Hawkins, quoted by Gatschet, Migration Legend of the Creeks, Philadelphia, 1834, vol. 1, p. 185.

⁵ Corbuaier, in American Antiquarian, September, 1886, p. 279.

⁶ Everard F. im Thurn, Indians of Guiana, p. 218.

⁷ Crantz, History of Greenland, London, 1767, vol. 1, pp. 210-211.

⁸ Forster, Voyage Round the World, vol. 2, pp. 275, 288.

⁹ Hakluyt, Voyages, vol. 3, p. 506.

¹⁰ Grimm, Teutonic Mythology, vol. 2, p. 544.

Of the *Amoyssinians*, Bruce says: "Their hair is short and curled like that of a negro's in the west part of Africa, but this is done by art not by nature, each man having a wooden stick with which he lays hold of the lock and twists it round like a screw till it curls in the form he desires."¹ In a foot note, he adds: "I apprehend this is the same instrument used by the ancients, and censured by the prophets, which in our translation is rendered *crimping-pins*."

Possibly the constant use of the scratch stick in countries without wood suggested that it should be carried in the hair, and hence it would originate the fashion of wearing the hair crimped round it, and after a while it would itself be used as a crimping-pin.

Thus far, the suggestion of a religious or ceremonial idea attaching to the custom of scratching has not been apparent, unless we bear in mind that the warrior setting out on the warpath never neglects to surround himself with all the safeguards which the most potent incantations and "medicine" of every kind can supply. But Herbert Spencer tells us in two places that the Creeks attach the idea of a ceremonial observance to the custom. He says that "the warriors have a ceremony of scratching each other as a sign of friendship;"² and again, "scratching is practiced among young warriors as a ceremony or token of friendship. When they have exchanged promises of inviolable attachment, they proceed to scratch each other before they part."³

Dr. J. Hampden Porter remarks that this ceremonial scratching may be a "survival" of the blood covenant, and that in earlier times the young warriors, instead of merely scratching each other's arms, may have cut the flesh and exchanged the blood. The idea seems to be a very sensible one.

Father Alegre describes a ceremonial scratching which may have been superseded by the scratch stick, to which the medicine-men of certain tribes subjected the young men before they set out on the warpath. Among the Pima and Opata the medicine-men drew from their quivers the claws of eagles, and with these gashed the young man along the arms from the shoulders to the wrists.⁴

This last paragraph suggests so strongly certain of the practices at the sun dance of the tribes farther to the north that it may be well to compare it with the other allusions in this paper to that dance.

It will be noticed that the use of the scratch-stick, at least among the tribes of America, seems to be confined to the male sex; but the information is supplied by Mr. Henshaw, of the Bureau of Ethnology, that the Indians of Santa Barbara, Cal., made their maidens at the

¹ *Travels to discover the source of the Nile in the years 1768, etc.*, Dublin, 1791, vol. 3, p. 410.

² *Desc. Sociology*.

³ *Ibid.*, quoting Schoolcraft.

⁴ "Haza de su carcaz algunos picos y uñas de águila secos y endurecidos, con los cuales comienza á rasarle desde los hombros hasta las muñecas."—*Historia de la Compañía de Jesus en Nueva España, Mexico 1842*, vol. 2, pp. 218, 219.

time of attaining womanhood wear pendant from the neck a scratcher of abalone shell, which they had to use for an indefinite period when the scalp became irritable.

Prof. Otis T. Mason, of the National Museum, informs me that there is a superstition in Virginia to the effect that a young woman enciente for the first time must, under no circumstances, scratch her head with her fingers, at least while uncovered; she must either put on gloves or use a small stick.

The Parsi have a festival at which they serve a peculiar cake or bread called "draona," which is marked by scratches from the finger nails of the woman who has baked it.¹

No stress has been laid upon the appearance in all parts of the world of "back scratchers" or "scratch my backs," made of ivory, bone, or wood, and which were used for toilet purposes to remove irritation from between the shoulder blades or along the spine where the hand itself could not reach. They are to the present day in use among the Chinese and Japanese, were once to be found among the Romans and other nations of Europe, and instances of their occasional employment until a very recent date might be supplied.

THE DRINKING REED.

Exactly what origin to ascribe to the drinking reed is now an impossibility, neither is it probable that the explanations which the medicine-men might choose to make would have the slightest value in dispelling the gloom which surrounds the subject. That the earliest conditions of the Apache tribe found them without many of the comforts which have for generations been necessities, and obliged to resort to all sorts of expedients in cooking, carrying, or serving their food is the most plausible presumption, but it is submitted merely as a presumption and in no sense as a fact. It can readily be shown that in a not very remote past the Apache and other tribes were compelled to use bladders and reeds for carrying water, or for conveying water, broth, and other liquid food to the lips. The conservative nature of man in all that involves his religion would supply whatever might be needed to make the use of such reeds obligatory in ceremonial observances wherein there might be the slightest suggestion of religious impulse. We can readily imagine that among a people not well provided with forks and spoons, which are known to have been of a much later introduction than knives, there would be a very decided danger of burning the lips with broth, or of taking into the mouth much earthy and vegetable matter or ice from springs and streams at which men or women might wish to drink, so the use of the drinking reed would obviate no small amount of danger and discomfort.

¹Shāyaat lá-shāyaat, cap. 3, par. 32, p. 284 (Max Müller edition, Oxford, 1890). When the "drón" has been marked with three rows of finger-nail scratches it is called a "frasaast."

Water was carried in reeds by the Dyaks of Borneo, according to Bock.¹ The manner in which the natives of the New Hebrides and other islands of the South Pacific Ocean carry water in bamboo joints recalls the Zuñi method of preserving the sacred water of the ocean in hollow reeds.²

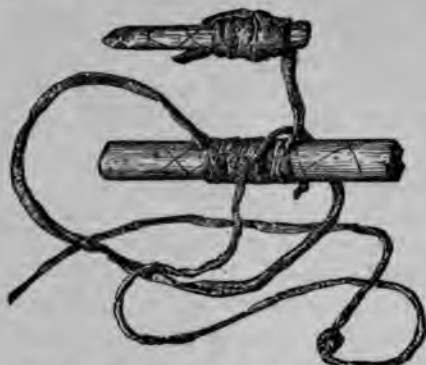


FIG. 432.—The scratch stick and drinking reed.

Mr. F. H. Cushing shows that "so far as language indicates the character of the earliest water vessels which to any extent met the requirements of the Zuñi ancestry, they were tubes of wood or sections of canes."³ Long after these reeds had disappeared from common use, the priests still persisted in their use for carrying the water for the sacred ceremonies. The mother of the king of Uganda gave to Speke "a beautifully-worked pombé suck-

ing-pipe."⁴ For ordinary purposes these people have "drinking gourds." In Ujiji, Cameron saw an old chief sucking pombé, the native beer, through a reed;⁵ and, later on in his narrative, we learn that the reed is generally used for the purposes of drinking. "The Malabars reckoned it insolent to touch the vessel with their lips when drinking."⁶ They made use of vessels with a spout, which were no more and no less than the small hollow-handled soup ladles of the Zuñi and Tusa-yan, through which they sipped their hot broth.

In an ancient grave excavated not far from Salem, Massachusetts, in 1873, were found five skeletons, one of which was supposed to be that of the chief Nanephasemet, who was killed in 1605 or 1606. He was the king of Namkeak. On the breast of this skeleton were discovered "several small copper tubes . . . from 4 to 8 inches in length, and from one-eighth to one-fourth of an inch in diameter, made of copper rolled up, with the edges lapped."⁷

Alarcon relates that the tribes seen on the Rio Colorado by him in 1541, wore on one arm "certain small pipes of cane." But the object or purpose of wearing these is not indicated.⁸

The natives of the Friendly Islands carried in their ears little cylinders of reed, although we learn that these were "filled with a red solid

¹ *Head-Hunters of Borneo*, London, 1881, p. 139.

² See, for the New Hebrides, Forster, *Voyage Round the World*, vol. 2, p. 255.

³ *Report of the Bureau of Ethnology*, 1882-'83, p. 482.

⁴ Speke, *Source of the Nile*, London, 1863, pp. 306, 310.

⁵ Cameron, *Across Africa*, London, 1877, vol. 1, p. 276.

⁶ De Gama's *Discovery of the East Indies*, in Knox, *Voyages*, London, 1767, vol. 2, p. 324.

⁷ Andrew K. Ober, in the *Salem Gazette*, Salem, Mass.

⁸ Hakluyt, *Voyages*, vol. 3, p. 508; also, Ternaux-Compans, *Voy.*, vol. 9, pp. 307, 308.

substance."¹ Among the Narrinyeri of Australia, when young men are to be initiated into the rank of warriors, during the ceremonies "they are allowed to drink water, but only by sucking it up through a reed."² Admiral von Wrangel says of the Tehuktchi of Siberia: "They suck their broth through a small tube of reindeer bone," which "each individual carries about with him."³ Padre Sahagun says that the human victim whom the Aztecs offered up in sacrifice was not allowed to touch water with his lips, but had to suck it through a reed."⁴

"The Mexicans had a forty-days' fast in memory of one of their sacred persons who was tempted *forty* days on a mountain. He drinks through a reed. He is called the Morning Star."⁵ The Mexicans, according to Fray Diego Duran, placed before the statues of their dead bowls of "vino," with "rosas," tobacco (this seems to be the proper translation of the word "humazos," smokes), and a reed called the "drinker of the sun," through which the spirit could imbibe.⁶

"The suction pipes of steatite," mentioned by Schoolcraft, as found in the mounds, may have been the equivalents of our drinking reeds, and made of steatite to be the more readily preserved in the ritual of which they formed part.

Copper cylinders $1\frac{1}{4}$ inches long and $\frac{3}{8}$ of an inch in diameter were found in the mounds of the Mississippi Valley by Squier and Davis. The conjecture that they had been used "for ornaments" does not seem warranted.⁷

We should not forget that there was a semideification of the reed itself by the Aztec in their assignment of it to a place in their calendar under the name of "acatl."⁸

Mrs. Ellen Russell Emerson speaks of the custom the warriors of the northern tribes had which suggests that she had heard of the drinking reed without exactly understanding what it meant. She says that warriors carry bowls of birch bark "from one side of which the warrior drinks in going to battle—from the other, on his return. These bowls are not carried home, but left on the prairie, or suspended from trees within a day's journey of his village."⁹

Among the Brahmans practices based upon somewhat similar ideas are to be found: every morning, upon rising, "ils prennent trois fois de Peau dans la main, & en jettent trois fois dans leur bouche, évitant d'y toucher avec la main."¹⁰

¹ Forster, *Voyage Round the World*, vol. 1, p. 435.

² Smyth, *Aborigines of Victoria*, vol. 1, p. 66.

³ English edition, New York, 1842, p. 271.

⁴ Kingsborough, vol. 6, p. 100.

⁵ Godfrey Higgins, *Anacalypsis*, vol. 2, book 1, cap. 4, sec. 9, p. 31.

⁶ Y ponía delante un canuto grande y queso [grueso] para con que bebiese: este canuto llamaban "bebedero del Sol."—Diego Duran, vol. 1, cap. 38, p. 386.

⁷ Smithsonian Contributions, vol. 1, p. 151.

⁸ The reed, which is the proper meaning of the word "acatl," is the hieroglyphic of the element water. Veytia, quoted by Thomas, in 3rd Ann. Rep., Bu. Eth., 1881-1882, p. 42 et seq.

⁹ *Indian Myths*, Boston, 1884, p. 280.

¹⁰ Picart, *Cérémonies et Costumes Religieuses de tous les Peuples du Monde*, Amsterdam, 1736, vol. 6, part 2, p. 103.

The fundamental reason upon which the use of the drinking reed is based is that the warrior or devotee shall not let water touch his lips. It is strange to find among the regulations with regard to taking water by the warrior caste: "He shall not sip water while walking, standing, lying down, or bending forward."¹

The Dharma-sūtra, traditionally connected with the Rishi-Vasishtha, of the Seventh Mandala of the Rig-Veda, is a relic of a Vedic school of the highest antiquity. Its seat was in the present northwestern provinces of India, and, like the Dharmasāstra of Gautama, it is the sole surviving record from this source.²

There was another service performed by reeds or tubes in the domestic economy of nations around the north pole. As the Apache are derived from an Arctic ancestry it does not seem amiss to allude to it. Lord Lonsdale, in describing the capture of a whale which he witnessed, says that the Eskimo women "first of all gathered up the harpoons and then pulled out all the spears. As each spear was withdrawn a blow-pipe was pushed into the wound and the men blew into it, after which the opening was tied up. When every wound had been treated in this manner the whale resembled a great windbag and floated high in the water."³

In the National Museum at Washington, D. C., there are many pipes made of the bones of birds, which were used by the Inuit as drinking tubes when water had to be taken into the mouth from holes cut in the ice. These drinking tubes seem to be directly related to our subject, although they may also have been used as Lonsdale describes the pipes for blowing the dead whale full of air. Another point to be mentioned is that the eagle pipe kept in the mouth of the young warrior undergoing the torture of the sun dance among the Sioux and other tribes on the plains is apparently connected with the "bebedero del Sol" of the peoples to the south.³

The use of this drinking reed, shown to have been once so intimately associated with human sacrifice, may have disappeared upon the introduction of labrets, which seem, in certain cases at least, to be associated with the memory of enemies killed in battle, which would be only another form of human sacrifice. This suggestion is advanced with some misgivings, and only as a hypothesis to assist in determining for what purpose labrets and drinking tubes have been employed. The Apache have discontinued the use of the labret, which still is to be found among their congeners along the Lower Yukon, but not among those living along the lower river.⁴ According to Dall the custom was probably adopted from the Inuit; he also shows that whenever labrets are worn in a tribe they are worn by both sexes, and that the women assume them at the first appearance of the catamenia.

¹ *Vāsishta*, cap. 3, pars. 26-30, pp. 20-21. Sacred Books of the East, Oxford, 1882, vol. 14, edition of Max Müller.

² *Ibid.*

³ Diego Duran, *loc. cit.*

⁴ See Dall, *Masks and Labrets*, p. 151.

"This is to be noted, that how many men these Savages [Brazilians] doe kill, so many holes they will have in their visage, beginning first in their nether lippe, then in their cheekes, thirdly, in both their eye-browes, and lastly in their eares."¹

Cabeza de Vaca speaks of the Indians near Malhado Island, "They likewise have the nether lippe bored, and within the same they carrie a piece of thin Cane about halfe a finger thicke."² Herrera relates very nearly the same of the men of "Florida": "Traian una tetilla oradada, metido por el agujero un pedaço de Caña, i el labio baxero tambien agujereado, con otra caña en él."³ But Herrera probably obtained his data from the narrative of Vaca.

In looking into this matter of labrets as connected or suspected as being in some way connected with the drinking reed, we should not expect to find the labret adhering very closely to the primitive form, because the labret, coming to be regarded more and more as an ornament, would allow greater and greater play to the fancy of the wearer or manufacturer, much the same as the crosses now worn by ladies, purely as matter of decoration, have become so thoroughly examples of dexterity in filagree work as to have lost the original form and significance as a declaration of faith. But it is a subject of surprise to find that the earlier writers persistently allude to the labrets in the lips of the Mexican deities, which probably were most tenacious of primitive forms, as being shaped like little reeds—"cañutillos."

Herrera says of Tescatlipoca: "Que era el Dios de la Penitencia, i de los Jubileos . . . Tenia Çarcillo de Oro, i Plata en el labio baxo, con un cañutillo cristalino, de un geme de largo."⁴ The high priest, he says, was called *topilçin*, and in sacrificing human victims he wore "debaxo del labio, junto al medio de la barba, una pieça como cañutillo, de una piedra aqul."⁵

Father Acosta also speaks of the tube (canon) of crystal worn by Tezcatlipoca in the lower lip: "En la leure d'embas un petit canon de crystal, de la longueur d'un xeme ou demy pied."⁶

Speaking of Quetzalcoatl Clavigero says: "From the under lip hung a crystal tube."⁷ From Diego Duran's account of this "bezote" or labret it must have been hollow, as he says it contained a feather: "En el labio bajo tenia un bezote de un veril cristalino y en el estaba metida una pluma verde y otras veces azul."⁸

In the Popul Vuh is to be found a myth which gives an account of the origin of labrets. It relates that two night watchers over the flowers

¹Peter Carder, an Englishman captive among the Brazilians, 1578-1586, in Purchas, vol. 4, lib. 6, cap. 5, p. 1189.

²Purchas, vol. 4, lib. 8, cap. 1, sec. 2, p. 1508.

³Dec. 4, lib. 4, p. 69.

⁴Dec. 3, lib. 2, p. 67.

⁵Ibid., p. 70.

⁶Histoire Naturelle des Indes, Paris, 1600, lib. 5, cap. 9, p. 224.

⁷History of Mexico, Philadelphia, 1817, vol. 2, p. 6.

⁸Duran, op. cit., vol. 3, cap. 4, p. 211.

in the garden of Xibalba had in some manner proved derelict in duty, and had their lips split as a punishment.¹

In Paraguay a tribe called the Chiriguanes, "se percent la levre inférieure & ils y attachent un petit Cilindre d'étain ou d'argent, ou de Resine transparente. Ce prétendu ornement s'appelle *Tembeta*."²

¹Brasseur de Bourbourg's translation, cap. 12, p. 175.

²Picart, *Cérémonies et Costumes Religieuses de tous les Peuples du Monde*, Amsterdam, 1743, vol. 8, p. 287.

CHAPTER II.

HODDENTIN, THE POLLEN OF THE TULE, THE SACRIFICIAL POWDER OF THE APACHE; WITH REMARKS UPON SACRED POWDERS AND BREAD OFFERINGS IN GENERAL.

“Trifles not infrequently lead to important results. In every walk of science a trifle disregarded by incurious thousands has repaid the inquisitiveness of a single observer with unhopd-for knowledge.”¹

The taciturnity of the Apache in regard to all that concerns their religious ideas is a very marked feature of their character; probably no tribe with which our people have come in contact has succeeded more thoroughly in preserving from profane inquiry a complete knowledge of matters relating to their beliefs and ceremonials. How much of this ignorance is to be attributed to interpreters upon whom reliance has necessarily been placed, and how much to the indisposition of the Apache to reveal anything concerning himself, it would be fruitless to inquire, but, in my own experience, when I first went among them in New Mexico and Arizona twenty-three years ago, I was foolish enough to depend greatly upon the Mexican captives who had lived among the Apache since boyhood, and who might be supposed to know exactly what explanation to give of every ceremony in which the Apache might engage. Nearly every one of these captives, or escaped captives, had married among the Apache, and had raised families of half-breed children, and several of them had become more Apache than the Apache themselves. Yet I was time and again assured by several of these interpreters that the Apache had no religion, and even after I had made some progress in my investigations, at every turn I was met by the most contradictory statements, due to the interpreter's desire to inject his own views and not to give a frank exposition of those submitted by the Apache. Thus, an Apache god would be transmuted into either a “santo” or a “diablo,” according to the personal bias of the Mexican who happened to be assisting me. “Assanutlije” assumed the disguise of “Maria Santissima,” while ceremonies especially sacred and beneficent in the eyes of the savages were stigmatized as “brujeria” and “hechiceria” (witchcraft) in open defiance of the fact that the Apache have as much horror and dread of witches as the more enlightened of their brethren who in past ages suffered from their machinations in

¹Deane, *Serpent Worship*, London, 1833, p. 410.

Europe and America. The interpreters had no intention to deceive; they were simply unable to disengage themselves from their own prejudices and their own ignorance; they could not, and they would not,



FIG. 433.—Bag containing hoddentin.

credit the existence of any such thing as religion, save and excepting that taught them at their mothers' knees in the petty hamlets of Sonora and of which they still preserved hazy and distorted recollections. One of the first things to be noticed among the Apache, in this connection, was the very general appearance of little bags of buckskin, sometimes ornamented, sometimes plain, which were ordinarily attached to the belts of the warriors, and of which they seemed to be especially careful.¹

What follows in this chapter was not learned in an hour or a day, but after a long course of examination and a comparison of statements extracted from different authorities.

The bags spoken of revealed when opened a quantity of yellow colored flour or powder, resembling cornmeal, to which the Apache gave the name of "hoddentin," or "hadntin," the meaning of which word is "the powder or pollen of the tule," a variety of the cat-tail rush, growing in all the little ponds and cienegas of the Southwest.

I made it the touchstone of friendship that every scout or other Apache who wished for a favor at my hands should relate something concerning his religious belief. I did not care much what topic he selected; it might be myths, clan laws, war customs, medicine—anything he pleased, but it had to be something and it had to be accurate. Hoddentin having first attracted my attention, I very naturally made many of my first inquiries about it, and, while neglecting no opportunity for independent observation, drew about me the most responsible men and women, heard what each had to say, carefully compared and contrasted it with the statements of the others, and now give the result.

I noticed that in the dances for the benefit of the sick the medicine-men in the intervals between chants applied this yellow powder to the forehead of the patient, then in form of a cross upon his breast, then in a circle around his couch, then upon the heads of the chanters and of sympathizing friends, and lastly upon their own heads and into their own mouths. There is a considerable difference in method, as medicine-men allow themselves great latitude, or a large "personal equa-

¹The medicine sack or bag of the Apache, containing their "hoddentin," closely resembles the "bulla" of the Romans—in which "On y mettait des préservatifs contre les maléfices." Musée de Naples, London, 1836, p. 4. Copy shown me by Mr. Spofford, of the Library of Congress.

tion," in all their dealings with the supernatural. No Apache would, if it could be avoided, go on the warpath without a bag of this precious powder somewhere upon his person, generally, as I have said, attached to his ammunition belt. Whenever one was wounded, hurt, or taken sick while on a scout, the medicine-man of the party would walk in front of the horse or mule ridden by the patient and scatter at intervals little pinches of hoddentin, that his path might be made easier. As was said to me: "When we Apache go on the warpath, hunt, or plant, we always throw a pinch of hoddentin to the sun, saying 'with the favor of the sun, or permission of the sun, I am going out to fight, hunt, or plant,' as the case may be, 'and I want the sun to help me.'"

I have noticed that the Apache, when worn out with marching, put a pinch of hoddentin on their tongues as a restorative.

"Hoddentin is eaten by sick people as a remedy."¹

"Before starting out on the warpath, they take a pinch of hoddentin, throw it to the sun, and also put a pinch on their tongues and one on the crown of the head. . . . When they return, they hold a dance, and on the morning of that day throw pinches of hoddentin to the rising sun, and then to the east, south, west, and north, to the four winds."²

I am unable to assert that hoddentin is used in any way at the birth of a child; but I know that as late as 1886 there was not a babe upon the San Carlos reservation, no matter how tender its age, that did not have a small bag of hoddentin attached to its neck or dangling from its cradle. Neither can I assert anything about its use at time of marriage, because, among the Apache, marriage is by purchase, and attended with little, if any, ceremony. But when an Apache girl attains the age of puberty, among other ceremonies performed upon her, they throw hoddentin to the sun and strew it about her and drop on her head flour of the piñon, which flour is called by the Chiricahua Apache "nostehi," and by the Sierra Blanca Apache "opé."³

"Upon attaining the age of puberty, girls fast one whole day, pray, and throw hoddentin to the sun."⁴ When an Apache dies, if a medicine-man be near, hoddentin is sprinkled upon the corpse. The Apache buried in the clefts of rocks, but the Apache-Mohave cremated. "Before lighting the fire the medicine-men of the Apache-Mohave put hoddentin on the dead person's breast in the form of a cross, on the forehead, shoulders, and scattered a little about."⁵

The very first thing an Apache does in the morning is to blow a little pinch of hoddentin to the dawn. The Apache worship both dawn and darkness, as well as the sun, moon, and several of the planets.

¹ Information of Tze-go-juni.

² Information of Concepcion.

³ See notes, a few pages farther on, from Kohl; also there from Godfrey Higgins. The word "opé" suggests the name the Tusayan have for themselves, Opi, or Opika, "bread people."

⁴ Information of Tze-go-juni.

⁵ Information of Mike Burns.

"When the sun rises we cast a pinch of hoddentin toward him, and we do the same thing to the moon, but not to the stars, saying 'Gun-ju-le, chigo-na-ay, si-chi-zi, gun-ju-le, inzayu, ijanale,' meaning 'Be good, O Sun, be good.' 'Dawn, long time let me live'; or, 'Don't let me die for a long time,' and at night, 'Gun-ju-le, chil-jilt, si-chi-zi, gun-ju-le, inzayu, ijanale,' meaning 'Be good, O Night; Twilight, be good; do not let me die.'" "In going on a hunt an Apache throws hoddentin and says 'Gun-ju-le, chigo-na-ay, cha-ut-si, ping, kladitza,' meaning 'Be good, O Sun, make me succeed deer to kill.'"¹

The name of the full moon in the Apache language is "klego-na-ay," but the crescent moon is called "tzontzose" and hoddentin is always offered to it.²

"Hoddentin is thrown to the sun, moon (at times), the morning star, and occasionally to the wagon."³ "The Apache offer much hoddentin to 'Na-u-kuzze,' the Great Bear."⁴ "Our custom is to throw a very small pinch of hoddentin at dawn to the rising sun."⁵ "The women of the Chiricahua throw no hoddentin to the moon, but pray to it, saying: "Gun-ju-le, klego-na-ay," (be good, O Moon)."⁶

When the Apache plant corn the medicine-men bury eagle-plume sticks in the fields, scatter hoddentin, and sing. When the corn is partially grown they scatter pinches of hoddentin over it.⁷

The "eagle-plume sticks" mentioned in the preceding paragraph suggests the "ke-thawn" mentioned by Matthews in "The Mountain Chant."⁸

"When a person is very sick the Apache make a great fire, place the patient near it, and dance in a circle around him and the fire, at the same time singing and sprinkling him with hoddentin in the form of a cross on head, breast, arms, and legs."⁹

In November, 1885, while at the San Carlos agency, I had an interview with Nantadotash, an old blind medicine-man of the Akañe or Willow gens, who had with him a very valuable medicine-hat which he refused to sell, and only with great reluctance permitted me to touch. Taking advantage of his infirmity, I soon had a picture drawn in my notebook, and the text added giving the symbolism of all the ornamentation attached. Upon discovering this, the old man became much excited, and insisted upon putting a pinch of hoddentin upon the drawing, and then recited a prayer, which I afterwards succeeded in getting verbatim. After the prayer was finished, the old man arose and marked with hoddentin the breast of his wife, of Moses, of Antonio,

¹ Information of Mickey Free.

² Information of Alehise, Mike, and others.

³ Information of Francesca and other captive Chiricahua squaws.

⁴ Information of Moses Henderson.

⁵ Information of Chato.

⁶ Information of Tze-go-juni.

⁷ Information of Moses Henderson and other Apache at San Carlos.

⁸ Bureau of Ethnology. Report for 1883-'84.

⁹ Information of Francesca and others.

of other Apache present, and then of myself, putting a large pinch over my heart and upon each shoulder, and then placed the rest upon his own tongue. He explained that I had taken the "life" out of his medicine hat, and, notwithstanding the powers of his medicine, returned in less than a month with a demand for \$30 as damages. His hat never was the same after I drew it. My suggestion that the application of a little soap might wash away the clots of grease, soot, and earth adhering to the hat, and restore its pristine efficacy were received with the scorn due to the sneers of the scoffer.

"In time of much lightning, the Apache throw hoddentin and say: 'Gun-ju-le, ittindi,' be good, Lightning."¹

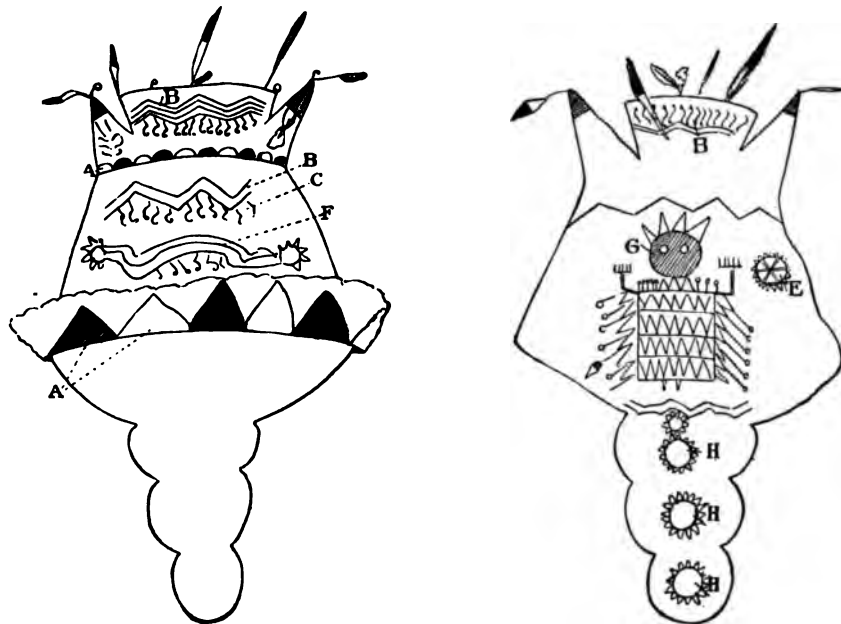


FIG. 434.—Nan-ta-de-tash's medicine hat.

Tzit-jizinde, "the Man who likes Everybody," who said he belonged to the Inoschujochin—Manzanita or Bearberry clan—showed me how to pray with hoddentin in time of lightning or storm or danger of any kind. Taking a small pinch in his fingers, he held it out at arm's length, standing up, and repeated his prayer, and then blew his breath hard. I was once with a party of Apache while a comet was visible. I called their attention to it, but they did not seem to care. On the other hand, Antonio told me that the "biggest dance" the Apache ever had was during the time that "the stars all fell out of the sky" (1833).

"The only act of a religious character which I observed . . . was shortly after crossing the river they [i. e., the American officers] were

¹ Information of Tze-go-juni.

met by a small party of the Indians, one of whom chalked a cross on the breast of each, with a yellow earth, which he carried in a satchel at his belt. Previous to doing so he muttered some words very solemnly with his hands uplifted and eyes thrown upwards. Again, on arriving at the camp of the people, the chief and others in greeting them took a similar vow, touching thereafter the yellow chalked cross. Sonora may have furnished them with some of their notions of a Deity.¹

"The yellow earth," seen by Dr. Smart was, undoubtedly, hoddentin, carried in a medicine bag at the belt of a medicine-man. Some years ago I went out with Al. Seiber and a small party of Apache to examine three of their "sacred caves" in the Sierra Pinal and Sierra Ancha. No better opportunity could have been presented for noting what they did. The very last thing at night they intoned a "medicine" song, and at early dawn they were up to throw a pinch of hoddentin to the east.

Moses and John, two of the Apache mentioned above, requested permission to go off in the mountains after deer and bear, supposed to be plentiful in the higher altitudes. Before leaving camp, Moses blew a pinch of hoddentin toward the sun, repeating his prayer for success, and ending it with a sharp, snappy "ek," as if to call attention. In one of the sacred caves visited on this trip, the Apache medicine-men assembled for the purpose of holding their snake dance. This I have never seen among the Apache, but that they celebrate it and that it is fully the equal of the repulsive rite which I have witnessed and noted among the Tusayan² I am fully assured. I may make reference to some of its features in the chapter upon animal worship and ophic rites.

From a multiplicity of statements, the following are taken: Conception had seen the snake dance over on the Carrizo, near Camp Apache; the medicine-men threw hoddentin upon the snakes. He said: "After getting through with the snake, the medicine-man suffered it to glide off, covered with the hoddentin, thrown by admiring devotees."

Mike Burns had no remembrance of seeing hoddentin thrown to the sun. He had seen it thrown to the snake, "in a kind of worship."

Nott and Antonio stated that "when they find that a snake has wriggled across the trail, especially the trail to be followed by a war party, they throw hoddentin upon the trail." Nott took a pinch of hoddentin, showed how to throw it upon the snake, and repeated the prayer, which I recorded.

Corbusier instances a remedy in use among the Tonto Apache. This consisted in applying a rattlesnake to the head or other part suffering from pain. He continues: "After a time the medicine-man rested the snake on the ground again, and, still retaining his hold of it with his right hand, put a pinch of yellow pollen into its mouth with his left, and rubbed some along its belly."³

¹Smart, in Smithsonian Report for 1867, p. 419.

²Snake Dance of Moquis of Arizona, New York, 1884.

³In the third volume of Kingsborough, on plate 17 (Aztec picture belonging to M. Pejernavy, Pesth, Hungary), an Aztec, probably a priest, is shown offering food to a snake, which eats it out of his hand.

He then held his hand out to a man, who took a pinch of the powder and rubbed it on the crown of a boy's head. Yellow pollen treated in this manner is a common remedy for headache, and may frequently be seen on the crowns of the heads of men and boys."¹

Hoddentin is used in the same manner as a remedy for headache among the San Carlos Apache, but the medicine-men apply a snake to the person of a patient only when their "diagnosis" has satisfied them that he has been guilty of some unkindness to a snake, such as stepping upon it, in which case they pretend that they can cure the man by applying to the part affected the portion of the reptile's body upon which he trampled.

The Apache state that when their medicine-men go out to catch snakes for their snake dance, they recite a prayer and lay their left hand, in which is some hoddentin, at the opening of the snake's den, through which the reptile must crawl, and, after a short time the snake will come out and allow himself to be handled.

Hoddentin is also offered to other animals, especially the bear, of which the Apache, like their congeners the Navajo, stand in great awe and reverence. When a bear is killed, the dance which is held becomes frenzied; the skin is donned by all the men, and much hoddentin is thrown, if it can be obtained. One of these dances which I saw in the Sierra Madre, Mexico, in 1883, lasted all night, without a moment's cessation in the singing and prancing of the participants.

A great deal of hoddentin is offered to the "ka-chu" (great or jack rabbit).²

The Apache medicine-man, Nakay-do-klunni, called by the whites "Bobbydoklinny," exercised great influence over his people at Camp Apache, in 1881. He boasted of his power to raise the dead, and predicted that the whites should soon be driven from the land. He also drilled the savages in a peculiar dance, the like of which had never been seen among them. The participants, men and women, arranged themselves in files, facing a common center, like the spokes of a wheel, and while thus dancing hoddentin was thrown upon them in profusion. This prophet or "doctor" was killed in the engagement in the Cibicu canyon, August 30, 1881.

In a description of the "altars" made by the medicine-men of the Apache-Yuma at or near Camp Verde, Arizona, it is shown that this sacred powder is freely used. Figures were drawn upon the ground to represent the deities of the tribe, and the medicine-men dropped on all, except three of them, a pinch of yellow powder (hoddentin) which was taken from a small buckskin bag. This powder was put upon the head, chest, or other part of the body of the patient.

Surgeon Corbusier, U. S. Army,³ says that the ceremony just described was "a most sacred one and entered into for the purpose of averting the

¹ Corbusier, in *American Antiquarian*, November, 1883, pp. 336-37.

² Information of Moses Henderson.

³ *American Antiquarian*, Sept. and Nov., 1886.

diseases with which the Apache at Camp Verde had been afflicted the summer previous."

I am not sure that the Apache-Yuma have not borrowed the use of hoddentin from the Apache. My reason for expressing this opinion is that I have never seen an Apache without a little bag of hoddentin when it was possible for him to get it, whereas I have never seen an Apache-Yuma with it except when he was about to start out on the warpath. The "altars" referred to by Corbusier are made also by the Apache, Navajo, Zuñi, and Tusayan. Those of the Apache, as might be inferred from their nomadic state, were the crudest; those of the Navajo, Zuñi, and Tusayan display a wonderful degree of artistic excellence. The altars of the Navajo have been described and illustrated by Dr. Washington Matthews,¹ and those of the Tusayan by myself.²

Moses Henderson, wishing me to have a profitable interview with his father, who was a great snake doctor among the Apache, told me that when he brought him to see me I should draw two lines across each other on his right foot, and at their junction place a bead of the chalhuitl, the cross to be drawn with hoddentin. The old man would then tell me all he knew.

The Apache, I learned, at times offer hoddentin to fire, an example of pyrodelia for which I had been on the lookout, knowing that the Navajo have fire dances, the Zuñi the Feast of the Little God of Fire, and the Apache themselves are not ignorant of the fire dance.

Hoddentin seems to be used to strengthen all solemn compacts and to bind faith. I had great trouble with a very bright medicine-man named Na-a-cha, who obstinately refused to let me look at the contents of a phylactery which he constantly wore until I let him know that I, too, was a medicine-man of eminence. The room in which we had our conversation was the quarters of the post surgeon, at that time absent on scout. The chimney piece was loaded with bottles containing all kinds of drugs and medicines. I remarked carelessly to Na-a-cha that if he doubted my powers I would gladly burn a hole through his tongue with a drop of fluid from the vial marked "Acid, nitric," but he concluded that my word was sufficient, and after the door was locked to secure us from intrusion he consented to let me open and examine the phylactery and make a sketch of its contents. To guard against all possible trouble, he put a pinch of hoddentin on each of my shoulders, on the crown of my head, and on my chest and back. The same performance was gone through with in his own case. He explained that hoddentin was good for men to eat, that it was good medicine for the bear, and that the bear liked to eat it. I thought that herein might be one clew to the reason why the Apache used it as a medicine. The bear loves the tule swamp, from which, in days primeval, he sallied out to attack the squaws and children gathering the tule powder or tule bulb. Poorly

¹ Ann. Rep. Bu. Eth., 1883-'84.

² Snake Dance of the Moquis.

armed, as they then were, the Apache must have had great trouble in resisting him; hence they hope to appease him by offering a sacrifice acceptable to his palate. If acceptable to the chief animal god, as the bear seems to have been, as he certainly was the most dangerous, then it would have been also acceptable to the minor deities like the puma, snake, eagle, etc., and, by an easy transition, to the sun, moon, and other celestial powers. This opinion did not last long, as will be shown. From its constant association with all sacrifices and all acts of worship, hoddentin would naturally become itself sanctified and an object of worship, just as rattles, drums, standards, holy grails, etc., in different parts of the world have become fetichistic. I was not in the least surprised when I heard Moses Henderson reciting a prayer, part of which ran thus: "Hoddentin eshkin, bi hoddentin ashi" ("Hoddentin child, you hoddentin I offer"), and to learn that it was a personification of hoddentin.

The fact that the myths of the Apache relate that Assanut-li-je spilled hoddentin over the surface of the sky to make the Milky Way may be looked upon as an inchoate form of a calendar, just as the Aztecs transferred to their calendar the reed, rabbit, etc.

So constant is the appearance of hoddentin in ceremonies of a religious nature among the Apache that the expression "hoddentin schlawn" (plenty of hoddentin) has come to mean that a particular performance or place is sacred. Yet, strange to say, this sacred pollen of the tule is gathered without any special ceremony; at least, I noticed none when I saw it gathered, although I should not fail to record that at the time of which I speak the Apache and the Apache-Yuma were returning from an arduous campaign, in which blood had been shed, and everything they did—the bathing in the sweat lodges and the singing of the Apache and the plastering of mud upon their heads by the Apache-Yuma—had a reference to the lustration or purgation necessary under such circumstances. Not only men but women may gather the pollen. When the tule is not within reach our cat-tail rush is used. Thus, the Chiricahua, confined at Fort Pickens, Florida, gathered the pollen of the cat-tail rush, some of which was given me by one of the women who gathered it.

Before making an examination into the meaning to be attached to the use of hoddentin, it is well to determine whether or not such a powder or anything analogous to it is to be found among the tribes adjacent.

THE "KUNQUE" OF THE ZUÑI AND OTHERS.

The term "kunque" as it appears in this chapter is one of convenience only. Each pueblo, or rather each set of pueblos, has its own name in its own language, as, for example, the people of Laguna and Acoma, who employ it in all their ceremonies as freely as do the Zuñi, call it in their tongue "hinawa." In every pueblo which I visited—and I visited them all, from Oraibi of Tusayan, on the extreme west, to

Picuris, on the extreme east; from Taos, in the far north, to Isleta del Sur, in Texas—I came upon this kunque, and generally in such quantities and so openly exposed and so freely used that I was both astonished and gratified; astonished that after centuries of contact with the Caucasian the natives should still adhere with such tenacity to the ideas of a religion supposed to have been extirpated, and gratified to discover a lever which I could employ in prying into the meaning of other usages and ceremonials.

Behind the main door in the houses at Santa Clara, San Ildefonso, Picuris, Laguna, Acoma, San Felipe, Jemez, and other towns, there is a niche containing a bowl or saucer filled with this sacred meal, of which the good housewife is careful to throw a pinch to the sun at early dawn and to the twilight at eventide. In every ceremony among the Pueblos naturally enough, more particularly among those who have been living farthest from the Mexicans, the lavish scattering of sacred meal is the marked feature of the occasion. At the snake dance of the Tusayan, in 1881, the altars were surrounded with baskets of pottery and with flat plaques of reeds, which were heaped high with kunque. When the procession moved out from under the arcade and began to make the round of the sacred stone the air was white with meal, and in my imagination I could see that it was a procession of Druids circling about a "sacred stone" in Ireland previous to the coming of St. Patrick. When the priests threw the snakes down upon the ground it was within a circle traced with kunque, and soon the snakes were covered with the same meal flung upon them by the squaws. There was only one scalp left among the Tusayan in 1881, but there were several among the Zuñi, and one or two each at Acoma and Laguna. In every one of these towns kunque was offered to the scalps.

At the feast of the Little God of Fire among the Zuñi, in 1881, my personal notes relate that "the moment the head of the procession touched the knoll upon which the pueblo is built the mass of people began throwing kunque upon the Little God and those with him as well as on the ground in front of, beside, and behind them. This kunque was contained in sacred basket-shaped bowls of earthenware. The spectators kept the air fairly musty with clouds of the sacred kunque. This procession passed around the boundaries of the pueblo of Zuñi, stopping at eight holes in the ground for the purpose of enacting a ceremonial of consecration suggestive of the 'terminalia' of the Romans. They visited each of the holes, which were 18 inches deep and 12 inches square, with a sandstone slab to serve as a cover. Each hole was filled with kunque and sacrificial plumes. * * * 'Every morning of the year, when the sky is clear, at the rising of Lucero [the morning star], at the crowing of the cock, we throw corn flour [kunque] to the sun. I am never without my bag of kunque; here it is [drawing it from his belt]. Every Zuñi has one. We offer it to the sun for good rain and good crops.'"¹

¹Interview with Pedro Pino.

Subsequently Pedro went on to describe in detail a phallic dance and ceremony, in which there was a sort of divination. The young maiden who made the lucky guess was richly rewarded, while her less fortunate companions were presented with a handful of kunque, which they kept during the ensuing year. This dance is called "ky'áklú," and is independent of the great phallic dance occurring in the month of December. Pedro also stated that until very recently the Zuñi were in the habit of celebrating a fire dance at Noche Buena (Christmas). There were four piles of wood gathered for the occasion, and upon each the medicine-men threw kunque in profusion. This dance, as Pedro described it, closely resembled one mentioned by Landa in his *Cosas de Yucatan*. High up on the vertical face of the precipice of Tâaiyalana there is a phallic shrine of the Zuñi to which I climbed with Mr. Frank Cushing. We found that the place had been visited by young brides who were desirous of becoming mothers. The offerings in every case included kunque.

In the account given in the *National Tribune*, Washington, District of Columbia, May 20, 1886, of the mode of life of the Zuñi woman Welwa while in the national capital, and while engaged in the kirmes, we read:

She also strewed sacred corn meal along on her way to the theater to bring good luck to her and the other dancers. * * * She has gone from her comfortable room to pray in the street at daylight every morning, whatever the weather has been. * * * At such times she strews corn meal all around her until the front-door steps and the sidewalk are much daubed with dough. But this is not the corn meal in common use in the United States, but is sacred meal ground in Zuñi with sacred stones.¹

So long a time has elapsed since any of the Pueblos have been on the warpath that no man can describe their actual war customs except from the dramatic ceremonial of their dances or from the stories told him by the "old men." The following from an eyewitness will therefore be of interest: "Before the Pueblos reached the heights they were ordered to scale they halted on the way to receive from their chiefs some medicine from the medicine bags which each of them carried about his person. This they rubbed upon their heart, as they said, to make it big and brave, and they also rubbed it upon other parts of their bodies and upon their rifles for the same purpose."²

The constant use of kunque by the different Pueblo tribes has been noticed from the first days of European contact. In the relation of Don Antonio de Espejo (1583) we are told that upon the approach of the Spaniards to the town of Zaguato, lying 28 leagues west of Zuñi, "a great multitude of Indians came forth to meet them, and among the rest their Caçiques, with so great demonstration of joy and gladness,

¹ Kunque has added to the cornmeal the meal of two varieties of corn, blue and yellow, a small quantity of pulverized sea shells, and some sand, and when possible a fragment of the blue stone called "chalchihuitl." In grinding the meal on the metates the squaws are stimulated by the medicine-men who keep up a constant singing and drumming.

² Simpson, Expedition to the Navajo Country, in Senate Doc. 64, 31st Cong., 1st sess., 1849-'50, p. 96.

that they cast much meale of Maiz upon the ground for the horses to tread upon."¹

I am under the impression that the ruins of this village are those near the ranch of Mr. Thomas V. Keam, at Keam's Canyon, Arizona, called by the Navajo "Talla-hogandi," meaning "singing house," in reference to the Spanish mission which formerly existed there. This village is, as I have hitherto shown, the ruin of the early pueblo of Awátubi.

In his poem descriptive of the conquest of New Mexico, entitled "Nueva Mejico," Alcalá de Henares, 1610, Villagrà uses the following language:²

Passando à Mohoçe, Zibola, y Zuni,
 Por cuias nobles tierras descubrimos,
 Una gran tropa de Indios que venia,
 Con cantidad harina que esparcian,
 Sobre la gente toda muy apriessa,
 Y entrando assi en los pueblos las mugeres
 Dieron en arrojarlos tanta della,
 Que dimos en tomarles los costales,
 De donde resultò tener con ellas,
 Unas carnestolendas bien reñidas.

It is gratifying to observe that the Spanish writer in the remote wilds of America struck upon an important fact in ethnology: that the throwing of "harina" or flour by the people of Tusayan (Mohoçe or Moqui), Cibola, and Zuñi (observe the odd separation of "Zibola" from either Moqui or Zuñi) was identical with the "carnestolendas" of Spain, in which, on Shrove Tuesday, the women and girls cover all the men they meet with flour. The men are not at all backward in returning the compliment, and the streets are at times filled with the farinaceous dust.

"Harina de maiz azul" is used by Mexicans in their religious ceremonies, especially those connected with the water deities.³ The Peruvians, when they bathed and sacrificed to cure themselves of sickness, "untandose primero con Harina de Maiz, i con otras cosas, con muchas, i diversas ceremonias, i lo mismo hacen en los Baños."⁴ The kunque of the Peruvians very closely resembled that of the Zuñi. We read that it was a compound of different-colored maize ground up with sea shells.⁵ The Peruvians had a Priapic idol called Hua-can-qui, of which we read: "On offre à cette idole une corbeille ornée de plumes de diverses couleurs et remplie d'herbes odoriférantes; on y met aussi de la *farine de maïs* que l'on renouvelle tous les mois, et les femmes se lavent la

¹ Hakluyt, Voyages, vol. 3, p. 470. "Echavan mucha harina de maiz por el suelo para que la pisassen los caballos."—Padre Fray Juan Gonzales de Mendoza, De las Cosas de Chino, etc., Madrid, 1586, p. 172. See also the Relacion of Padre Fray Alonso Fernandez, Historia Eclesiastica de Nuestros Tiempos, Toledo, 1611, pp. 15, 16.

² P. 162.

³ Diego Duran, vol. 2, cap. 49, pp. 506, 507.

⁴ Herrera, dec. 5., lib. 4, cap. 5, p. 92.

⁵ Padre Christoval de Molina, Fables and Rites of the Yncas, translated by Markham in Hakluyt Soc. Trans., vol. 48, p. 63, London, 1873.

figure avec celle que l'on ôte, en accompagnant cette ablution de plusieurs cérémonies superstitieuses."¹

The tribes seen on the Rio Colorado in 1540 by Alarcon "carry also certaine little long bagges about an hand broade tyed to their left arme, which serve them also instead of brasers for their bowes, full of the powder of a certaine herbe, whereof they make a certaine beverage.² We are at a loss to know what this powder was, unless hoddentin. The Indians came down to receive the son of the sun, as Alarcon led them to believe him to be, in full gala attire, and no doubt neglected nothing that would add to their safety.

"Ils mirent dans leur bouche du maïs et d'autres semences, et les lancèrent vers moi en disant que c'était la manière dont ils faisaient les sacrifices au soleil."³

Kohl speaks of seeing inside the medicine wigwam, during the great medicine ceremonies of the Ojibwa, "a snow-white powder."⁴ In an address delivered by Dr. W. J. Hoffman before the Anthropological Society of Washington, D. C., May 2, 1888, upon the symbolism of the Midē', Jes'sakkid, and Wábeno of the Ojibwa of Minnesota, he stated in reply to a question from me that he had not been able to find any of the "snow-white powder" alluded to by Kohl in Kitchi-gami.⁵

In Yucatan, when children were baptized, one of the ceremonies was that the *chac*, or priest in charge, should give the youngster a pinch of corn meal, which the boy threw in the fire. These *chacs* were priests of the god who presided over baptism and over hunting.⁶

At the coronation of their kings the Aztecs had a sacred unction, and a holy water, drawn from a sacred spring, and "about his neck is tied a small gourd, containing a certain powder, which is esteemed a strong preservative against disease, sorcery, and treason."⁷

"At the entrance to one of the narrow defiles of the Cordilleras . . . a large mass of rock with small cavities upon its surface, into which the Indians, when about to enter the pass, generally deposit a few glass beads, a handful of meal, or some other propitiatory offering to the 'genius' supposed to preside over the spot and rule the storm."

Again, "on receiving a plate of broth, an Indian, before eating, spills a little upon the ground; he scatters broadcast a few pinches of the meal that is given him, and pours out a libation before raising the wine cup to his lips, as acts of thanksgiving for the blessings he receives."⁸

When Capt. John Smith was captured by the Pamunkey tribe of Vir-

¹ Montesinos, pp. 161, 162, in Ternaux-Compans, vol. 17, *Mémoires sur l'ancien Pérou*.

² Relation of the voyage of Don Fernando Alarcon, in Hakluyt *Voyages*, vol. 3, p. 508.

³ Alarcon in Ternaux-Compans, *Voy.*, vol. 9, p. 330. See also in Hakluyt *Voyages*, vol. 3, p. 516.

⁴ Kitchi-gami, London, 1860, p. 51.

⁵ See also on the subject Acosta, *Hist. Naturelle des Indes*, lib. 5, cap. 19, p. 241.

⁶ Landu, *Cosas de Yucatan*, Paris, 1864, page 148.

⁷ Bancroft, *Native Races*, vol. 2, p. 145. See also Clavigero, *Hist. of Mexico*, Philadelphia, 1817, vol. 2, p. 128.

⁸ Smith, *Araucanians*, 1855, pp. 274-275.

ginia in 1607 he was taken to "a long house," where, on the morning following "a great grim fellow" came skipping in, "all painted over with coale, mingled with oyle. With most strange gestures and passions he began his invocation, and environed the fire with a circle of meale." This priest was followed by six others, who "with their rattles began a song, which ended, the chiefe priest layd downe five wheat cornes." This ceremony was apparently continued during the day and repeated on the following two days.¹ Capt. Smith's reception by the medicine-men of the Virginians is described by Picart.² These medicine-men are called "prêtres," and we are informed that they sang "des chants magiques." The grains of wheat ("grains de blé") were "rangez cinq à cinq."

Gomara tells us that in the religious festivals of Nicaragua there were used certain "taleguillas con polvos," but he does not tell what these "polvos" were; he only says that when the priests sacrifice themselves they cured the wounds, "curan las heridas con polvo de herbas ó carbon."³

While the Baron de Graffenreid was a prisoner in the hands of the Tuscarora, on the Neuse River, in 1711, the conjurer or high priest ("the priests are generally magicians and even conjure up the devil") "made two white rounds, whether of flour or white sand, I do not know, just in front of us."⁴

Lafitau says of one of the medicine women of America: "Elle comença d'abord par préparer un espace de terrain qu'elle nétoya bien & qu'elle couvrit de farine, ou de cendre très-bien bluttée (je ne me souviens pas exactement laquelle des deux)."⁵

In a description of the ceremonial connected with the first appearance of the catamenia in a Navajo squaw, there is no reference to a use of anything like hoddentm, unless it may be the corn which was ground into meal for a grand feast, presided over by a medicine-man.⁶

When a woman is grinding corn or cooking, and frequently when any of the Navajo, male or female, are eating, a handful of corn meal is put in the fire as an offering (to the sun).⁷

The Pueblos of New Mexico are described as offering sacrifices of food to their idols. "Los Indios del Norte tienan multitud de Idolos, en pequeños Adoratorios, donde los ponen de comer."⁸

Maj. Backus, U. S. Army, describes certain ceremonies which he saw performed by the Navajo at a sacred spring near Fort Defiance, Arizona, which seems to have once been a geyser:

¹ Smith, True Travels, Adventures and Observations, Richmond, 1819, vol. 1, p. 161.

² Cérémonies et Costumes, Amsterdam, 1735, vol. 6, p. 74.

³ Historia de las Indias, p. 284.

⁴ Colonial Records of North Carolina, 1886, vol. 1, p. 930.

⁵ Mœurs des Sauvages, Paris, 1724, vol. 1, p. 386.

⁶ Personal notes of May 26, 1881: conversation with Chi and Damon at Fort Defiance, Navajo Agency, Arizona.

⁷ Ibid.

⁸ Barcia, Ensayo Cronologico, p. 160.

I once visited it with three other persons and an Indian doctor, who carried with him five small bags, each containing some vegetable or mineral substance, all differing in color. At the spring each bag was opened and a small quantity of its contents was put into the right hand of each person present. Each visitor, in succession, was then required to kneel down by the spring side, to place his closed hand in the water up to his elbow, and after a brief interval to open his hand and let fall its contents into the spring. The hand was then slowly withdrawn and each one was then permitted to drink and retire. ¹

Columbus in his fourth voyage touched the mainland, going down near Brazil. He says:

In Cariay and the neighboring country there are great enchanters of a very fearful character. They would have given the world to prevent my remaining there an hour. When I arrived they sent me immediately two girls very showily dressed; the eldest could not be more than eleven years of age and the other seven, and both exhibited so much immodesty that more could not be expected from public women. They carried concealed about them a magic powder. ²

The expedition of La Salle noticed, among the Indians on the Mississippi, the Natchez, and others, "todos los dias, que se detuvieren en aquel Pueblo, ponía la Cacica, encima de la Sepultura de Marle [i. e., a Frenchman who had been drowned], una Cestilla llena de Espigas de Maíz, tostado." ³

"He showed me, as a special favor, that which give him his power—a bag with some reddish powder in it. He allowed me to handle it and smell this mysterious stuff, and pointed out two little dolls or images, which, he said, gave him authority over the souls of others; it was for their support that flour and water were placed in small birch-rind saucers in front." ⁴

On page 286, narrative of the Jeannette Arctic expedition, Dr. Newcomb says: "One day, soon after New Year's, I was out walking with one of the Indians. Noticing the new moon, he stopped, faced it, and, blowing out his breath, he spoke to it, invoking success in hunting. The moon, he said, was 'Tyunne,' or ruler of deers, bears, seals, and walrus." The ceremony herein described I have no doubt was analogous in every respect to hoddentin-throwing. As the Indians mentioned were undoubtedly Tinneh, my surmise seems all the more reasonable. ⁵

Tanner relates that among the Ojibwa the two best hunters of the band had "each a little leather sack of medicine, consisting of certain roots pounded fine and mixed with red paint, to be applied to the little images or figures of the animals we wish to kill." ⁶

"In the parish of Walsingham, in Surrey, there is or was a custom which seems to refer to the rites performed in honor of Pomona. Early in the spring the boys go round to the several orchards in the parish

¹ Schoolcraft, Ind. Tribes, vol. 4, p. 213.

² Columbus Letters, in Hakluyt Soc. Works, London, 1847, vol 2, p. 192.

³ Barcia, Ensayo Cronológico, p. 279.

⁴ The medicine-men of the Swampy Creeks, as described in Bishop of Rupert's Land's works, quoted by Henry Youle Hind, Canadian Exploring Expedition, vol. 1, p. 113.

⁵ Personal notes, November 22, 1885, at Baker's ranch, summit of the Sierra Ancha, Arizona.

⁶ Tanner's Narrative, p. 174.

and whip the apple trees. . . . The good woman gives them some meal."¹

Among the rustics of Great Britain down to a very recent period there were in use certain "love powders," the composition of which is not known, a small quantity of which had to be sprinkled upon the food of the one beloved.²

Attached to the necklace of human fingers before described, captured from one of the chief medicine-men of the Cheyenne Indians, is a bag containing a powder very closely resembling hoddentin, if not hoddentin itself.

It is said that the Asinai made sacrifice to the scalps of their enemies, as did the Zuñi as late as 1881. "Ofrecen á las calaveras pinole molido y de otras cosas comestibles."³

Perrot says the Indians of Canada had large medicine bags, which he calls "pindikossan," which, among other things, contained "des racines ou des poudres pour leur servir de médecines."⁴

In an article on the myth of Manibozho, by Squier, in *American Historical Magazine Review*, 1848, may be found an account of the adventures of two young heroes, one of whom is transferred to the list of gods. He commissioned his comrade to bring him offerings of a white wolf, a polecat, some pounded maize, and eagles' tails.

Laplanders sprinkle cow and calf with flour.⁵

Cameron met an old chief on the shores of Lake Tanganyika, of whom he says: "His forehead and hair were daubed with vermilion, yellow, and white powder, the pollen of flowers."⁶

In the incantations made by the medicine-men of Africa, near the head of the Congo, to preserve his expedition from fire, Cameron saw the sacrifice of a goat and a hen, and among other features a use of powdered bark closely resembling hoddentin: "Scraping the bark off the roots and sticks, they placed it in the wooden bowl and reduced it to powder." The head medicine-man soon after "took up a handful of the powdered bark and blew some toward the sun and the remainder in the opposite direction."⁷

The magic powder, called "uganga," used as the great weapon of divination of the nganga, or medicine-men of some of the African tribes, as mentioned by Speke,⁸ must be identical with the powder spoken of by Cameron.

Near the village of Kapoka, Cameron was traveling with a caravan

¹ Blount, *Tenures of Land and Customs of Manors*, London, 1874, p. 355.

² Brand, *Popular Antiquities*, London, 1882, vol. 3, pp. 307 et seq.

³ *Cronica Seráfica*, p. 434.

⁴ Nicolas Perrot, *Mœurs, Costumes et Religion des sauvages de l'Amérique Septentrionale* (Ed. of Rev. P. J. Tailhan, S. J.) Leipzig, 1864. Perrot was a *coureur de bois*, interpreter, and donnee of the Jesuit missions among the Ottawa, Sioux, Iowa, etc., from 1665 to 1701.

⁵ Leems', *Account of Danish Lapland*, in Pinkerton's *Voyages*, London, 1814, vol. 1, p. 484.

⁶ *Across Africa*, London, 1877, vol. 1, p. 277.

⁷ *Ibid.*, vol. 2, pp. 118, 120.

⁸ *Source of the Nile*, London, 1863, introd., p. XXI.

in which the principal man was a half-breed Portuguese named Alvez. "On Alvez making his entry he was mobbed by women, who shrieked and yelled in honor of the event and pelted him with flour." This was Alvez's own home and all this was a sign of welcome.¹

Speke describes a young chief wearing on his forehead "antelope horns, stuffed with magic powder to keep off the evil eye."²

After describing an idol, in the form of a man, in a small temple on the Lower Congo, Stanley says: "The people appear to have considerable faith in a whitewash of cassava meal, with which they had sprinkled the fences, posts, and lintels of doors."³

"According to Consul Hutchinson (in his interesting work 'Impressions of Western Africa'), the Botikaimon [a medicine-man], previous to the ceremony of coronation, retires into a deep cavern, and there, through the intermediary of a 'rukaruka' (snake demon), consults the demon Maon. He brings back to the king the message he receives, sprinkles him with a yellow powder called 'tsheoka,' and puts upon his head the hat his father wore."⁴ In a note, it is stated that: "Tsheoka is a vegetable product, obtained, according to Hutchinson, by collecting a creamy coat that is found on the waters at the mouth of some small rivers, evaporating the water, and forming a chalky mass of the residue."⁵ Schultze says⁶ that the Congo negroes "appease the hurricane" by "casting meal into the air."

The voodoo ceremonies of the negroes of New Orleans, which would seem to have been transplanted from Africa, include a sprinkling of the congregation with a meal which has been blessed by the head medicine-man or conjurer.

At the feast of Huli, at the vernal equinox (our April fool's day), the Hindu throw a purple powder (abir) upon each other with much sportive pleasantry. A writer in "Asiatick Researches"⁷ says they have the idea of representing the return of spring, which the Romans called "purple."

During the month of Phalgoonu, there is a festival in honor of Krishna, when the "Hindus spend the night in singing and dancing and wandering about the streets besmeared with the dolu (a red) powder, in the daytime carrying a quantity of the same powder about with them, which, with much noise and rejoicing, they throw over the different passengers they may meet in their rambles. Music, dancing, fireworks, singing, and many obscenities take place on this occasion."⁸

On pages 434-435 of my work, "Scatalogic Rites of all Nations," are to be found extracts from various authorities in regard to the Hindu

¹ Cameron, *Across Africa*, London, 1877, vol. 2, p. 201.

² *Source of the Nile*, London, 1863, pp. 130, 259.

³ *Dark Continent*, vol. 2, p. 260.

⁴ Schultze, *Fetichism*, New York, 1885, p. 53.

⁵ *Ibid.*, footnote, page 53.

⁶ *Ibid.*, p. 67.

⁷ *Asiatick Researches*, Calcutta, 1805, vol. 8, p. 78.

⁸ Coleman, *Mythology of the Hindus*, London, 1832, p. 44.

feast of Holi or Hulica, in which this statement occurs: "Troops of men and women, wreathed with flowers and drunk with bang, crowd the streets, carrying sacks full of bright-red vegetable powder. With this they assail the passers-by, covering them with clouds of dust, which soon dyes their clothes a startling color."

"Red powder (gulál) is a sign of a bad design of an adulterous character. During the Holi holidays, the Maháráj throws gulál on the breasts of female and male devotees."¹

"In India, the devotees throw red powder on one another at the festival of the Huli, or vernal equinox. This red powder, the Hindoos say, is the imitation of the pollen of plants, the principle of fructification, the flower of the plant."²

The women of the East Indies (Brahmins), on the 18th of January, celebrate a feast in honor of the goddess Parvati: "Leur but est d'obtenir une longue vie pour leurs maris, & qu'elles ne deviennent jamais veuves. Elles font une Image de Parvati avec de la farine de riz & du grain rouge qu'elles y mêlent; elles l'ornent d'habits & de fleurs & après l'avoir ainsi servie pendant neuf jours, elles la portent le dixième dans un Palenquin hors de la Ville. Une foule de femmes mariées la suivent, on la jette ensuite dans un des étangs sacrez, où on la laisse, & chacune s'en retourne chez elle."³

Speaking of the methods in use among the Lamas for curing disease, Rev. James Gilmour says: "Throwing about small pinches of millet seed is a usual part of such a service."⁴

Dr. W. W. Rockhill described to me a Tibetan festival, which includes a procession of the God of Mercy, in which procession there are masked priests, holding blacksnake whips in their hands, and carrying bags of flour which they throw upon the people.

The use of these sacred powders during so many different religious festivals and ceremonies would seem to resemble closely that made by the Apache of hoddentin and the employment of kunque by the Zuñi and others; and from Asia it would seem that practices very similar in character found their way into Europe. Of the Spanish witches it is related:

When they entered people's houses they threw a powder on the faces of the inmates, who were thrown thereby into so deep a slumber that nothing could wake them, until the witches were gone. . . . Sometimes they threw these powders on the fruits of the field and produced hail which destroyed them. On these occasions the demon accompanied them in the form of a husbandman, and when they threw the powders they said:

"Polvos, polvos,
Pierda se tado,
Queden los nuestros,
Y abrasense otros."⁵

¹ History of the Sect of the Mahárájahs, quoted by Inman, *Ancient Faiths*, etc., vol. 1, p. 393.

² Higgins, *Anacalypsis*, vol. 1, p. 261.

³ Picart, *Cérémonies et Cōtumes*, etc., vol. 6, part 2, p. 119.

⁴ *Among the Mongols*, London, 1883, p. 179.

⁵ Wright, *Sorcery and Magic*, London, 1851, vol. 1, p. 346.

Higgins says: "The flour of wheat was the sacrifice offered to the *Χρης* or Ceres in the *Εὐχαριστία*."¹

What relation these powders have had to the "carnestolendas" of the Spanish and Portuguese, already alluded to, and the throwing of "confetti" by the Italians, which is a modification, it would be hard to say. Some relation would appear to be suggested.

USE OF POLLEN BY THE ISRAELITES AND EGYPTIANS.

There are some suggestions of a former use of pollen among the Israelites and Egyptians.

Manna, which we are assured was at one time a source of food to the Hebrews, was afterward retained as an offering in the temples. Forlong, however, denies that it ever could have entered into general consumption. He says:

Manna, as food, is an absurdity, but we have the well-known produce of the desert oak or ash—*Fraxinus*. . . . An omer of this was precious, and in this quantity, at the spring season, not difficult to get; it was a specially fit tribute to be "laid up" before any Phallic Jah, as it was the pollen of the tree of Jove and of Life, and in this sense the tribe lived spiritually on such "spiritual manna" as this god supplied or was supplied with.²

The detestation in which the bean was held by the high-caste people of Egypt does not demonstrate that the bean was not an article of food to a large part of the population, any more than the equal detestation of the occupation of swineherd would prove that none of the poor made use of swine's flesh. The priesthood of Egypt were evidently exerting themselves to stamp out the use of a food once very common among their people, and to supersede it with wheat or some other cereal. They held a man accursed who in passing through a field planted with beans had his clothing soiled with their pollen. Speke must have encountered a survival of this idea when he observed in equatorial Africa, near the sources of the Nile, and among people whose features proclaimed their Abyssinian origin, the very same aversion. He was unable to buy food, simply because he and some of his followers had eaten "the bean called maharagüé." Such a man, the natives believed, "if he tasted the products of their cows, would destroy their cattle."³

One other point should be dwelt upon in describing the kunque of the Zuñi, Tusayan, and other Pueblos. It is placed upon one of the sacred flat baskets and packed down in such a manner that it takes the form of one of the old-fashioned elongated cylindro-conical cheeses. It should be noted also that by something more than a coincidence this form was adhered to by the peoples farther to the south when they arranged their sacred meal upon baskets.

At the festival of the god Teutleco the Aztecs made "de harina de

¹ *Anacalypsis*, vol. 2, p. 244.

² *Rivers of Life*, vol. 1, p. 161.

³ *Source of the Nile*, London, 1863, pp. 205, 208.

maiz un montecillo muy tupido de la forma de un queso."¹ This closely resembles the corn meal heaps seen at the snake dance of the Tusayan.

The Zuñi, in preparing kunque or sacred meal for their religious festivals, invariably made it in the form of a pyramid resting upon one of their flat baskets. It then bore a striking resemblance to the pyramids or phalli which the Egyptians offered to their deities, and which Forlong thinks must have been "just such Lingham-like sweet-bread as we still see in Indian Sivaic temples."² Again, "the orthodox Hislop, in his *Two Babylons*, tells us that 'bouns,' buns, or bread offered to the gods from the most ancient times were similar to our 'hotcross' buns of Good Friday, that . . . the buns known by that identical name were used in the worship of the Queen of Heaven, the goddess Easter (Ishtar or Astarti) as early as the days of Kekrops, the founder of Athens, 1500 years B. C."³

Forlong⁴ quotes Capt. Wilford in *Asiatick Researches*, vol. 8, p. 365, as follows:

When the people of Syracuse were sacrificing to goddesses, they offered cakes called *mulloi*, shaped like the female organ; and Dulare tells us that the male organ was similarly symbolised in pyramidal cakes at Easter by the pious Christians of Saintogne, near Rochelle, and handed about from house to house; that even in his day the festival of Palm Sunday was called *La Fête des Pinnes*, showing that this fête was held to be on account of both organs, although, of course, principally because the day was sacred to the palm, the ancient tree Phallus. . . . We may believe that the Jewish cakes and show bread were also emblematic.

Mr. Frank H. Cushing informs me that there is an annual feast among the Zuñi in which are to be seen cakes answering essentially to the preceding description.

HODDENTIN A PREHISTORIC FOOD.

The peculiar manner in which the medicine-men of the Apache use the hoddentin (that is, by putting a pinch upon their own tongues); the fact that men and women make use of it in the same way, as a restorative when exhausted; its appearance in myth in connection with Assanutlije, the goddess who supplied the Apache and Navajo with so many material benefits, all combine to awaken the suspicion that in hoddentin we have stumbled upon a prehistoric food now reserved for sacrificial purposes only. That the underlying idea of sacrifice is a food offered to some god is a proposition in which Herbert Spencer and W. Robertson Smith concur. In my opinion, this definition is incomplete; a perfect sacrifice is that in which a *prehistoric* food is offered to a god, and, although in the family oblations of everyday life we meet with the food of the present generation, it would not be difficult to show that where the whole community unites in a function of exceptional impor-

¹ Sahagun, vol. 2, in Kingsborough, vol. 6, p. 29.

² Forlong, *Rivers of Life*, vol. 1, p. 184.

³ *Ibid.*, pp. 185, 186.

⁴ *Ibid.*, p. 186.

tance the propitiation of the deities will be effected by foods whose use has long since faded away from the memory of the laity.

The sacred feast of stewed puppy and wild turnips forms a prominent part of the sun dance of the Sioux, and had its parallel in a collation of boiled puppy (*catullus*), of which the highest civic and ecclesiastical dignitaries of pagan Rome partook at stated intervals.

The reversion of the Apache to the food of his ancestors—the hoddentin—as a religious offering has its analogue in the unleavened bread and other obsolete farinaceous products which the ceremonial of more enlightened races has preserved from oblivion. Careful consideration of the narrative of Cabeza de Vaca sustains this conclusion. In the western portion of his wanderings we learn that for from thirty to forty days he and his comrades passed through tribes which for one-third of the year had to live on “the powder of straw” (on the powder of *bledos*), and that afterwards the Spaniards came among people who raised corn. At that time, Vaca, whether we believe that he ascended the Rio Concho or kept on up the Rio Grande, was in a region where he would certainly have encountered the ancestors of our Apache tribe and their brothers the Navajo. The following is Herrera’s account of that part of Vaca’s wanderings: “*Padeciendo mucha hambre en treinta i quatro Jornadas, pasando por una Gente que la tercera parte del Año comen polvos de paja, i los huvieron de comer, por haver llegado en tal ocasion.*”¹

This powder (*polvo*) of *paja* or grass might at first sight seem to be grass seeds; but why not say “flour,” as on other occasions? The phrase is an obscure one, but not more obscure than the description of the whole journey. In the earlier writings of the Spaniards there is ambiguity because the new arrivals endeavored to apply the names of their own plants and animals to all that they saw in the western continent. Neither Castañeda nor Cabeza de Vaca makes mention of hoddentin, but Vaca does say that when he had almost ended his journey: “*La côte ne possède pas de maïs; on n’y mange que de la poudre de paille de blette.*” “*Blette*” is the same as the Spanish “*bledos*.”² “*Nous parvinmes chez une peuplade qui, pendant le tiers de l’année, ne vit que de poudre de paille.*” “We met with a people, who the third part of the yeere eate no other thing save the powder of straw.”³

Davis, who seems to have followed Herrera, says: “These Indians lived one-third of the year on the powder of a certain straw After leaving this people they again arrived in a country of permanent habitations, where they found an abundance of maize. . . . The inhabitants gave them maize both in grain and flour.”⁴

The Tusayan Indians were formerly in the habit of adding a trifle of

¹ Dec. 6, lib. 1, p. 9.

² Ternaux-Compans, *Voyages*, vol. 7, pp. 242, 250.

³ Relation of Cabeza de Vaca in Purchas, vol. 4, lib. 8, cap. 1, sec. 4, p. 1524.

⁴ Conquest of New Mexico, p. 100.

chopped straw to their bread, but more as our own bakers would use bran than as a regular article of diet.

Barcia¹ makes no allusion to anything resembling hoddentin or "polvos de bledos" in his brief account of Vaca's journey. But Buckingham Smith, in his excellent translation of Vaca's narrative, renders "polvos de paja" thus: "It was probably the seed of grass which they ate. I am told by a distinguished explorer that the Indians to the west collect it of different kinds and from the powder make bread, some of which is quite palatable." And for "polvos de bledos": "The only explanation I can offer for these words is little satisfactory. It was the practice of the Indians of both New Spain and New Mexico to beat the ear of young maize, while in the milk, to a thin paste, hang it in festoons in the sun, and, being thus dried, was preserved for winter use."

This explanation is very unsatisfactory. Would not Vaca have known it was corn and have said so? On the contrary, he remarks in that very line in Smith's own translation: "There is no maize on the coast."

The appearance of all kinds of grass seeds in the food of nearly all the aborigines of our southwestern territory is a fact well known, but what is to be demonstrated is the extensive use of the "powder" of the tule or cat-tail rush. Down to our day, the Apache have used not only the seeds of various grasses, but the bulb of the wild hyacinth and the bulb of the tule. The former can be eaten either raw or cooked, but the tule bulb is always roasted between hot stones. The taste of the hyacinth bulb is somewhat like that of raw chestnuts. That of the roasted tule bulb is sweet and not at all disagreeable.²

Father Jacob Baegert³ enumerates among the foods of the Indians of southern California "the roots of the common reed" (i. e., of the tule).

Father Alegre, speaking of the tribes living near the Laguna San Pedro,⁴ in latitude 28° north—two hundred leagues north of the City of Mexico—says that they make their bread of the root, which is very frequent in their lakes, and which is like the plant called the "anea" or rush in Spain. "Forman el pan de una raiz muy frecuente en sus lagunas, semejante á las que llaman aneas en España."⁵

The Indians of the Atlantic Slope made bread of the bulb of a plant which Capt. John Smith⁶ says "grew like a flag in marshes." It was roasted and made into loaves called "tuckahoe."⁷

Kalm, in his Travels in North America,⁸ says of the tuckahoe:

It grows in several swamps and marshes and is commonly plentiful. The hogs greedily dig up its roots with their noses in such places, and the Indians of Carolina likewise gather it in their rambles in the woods, dry it in the sun, grind, and make

¹ Ensayo Cronológico, pp. 12 et seq.

² See also on this point Corbusier, in *American Antiquarian*, November, 1886.

³ Rau's translation in *Smithsonian Ann. Rep.*, 1863, p. 364.

⁴ Probably the Lake of Parras.

⁵ *Historia de la Compañía de Jesus en Nueva-España*, vol. 1, p. 284.

⁶ *History of Virginia*.

⁷ See also article by J. Howard Gore, *Smithsonian Report*, 1881.

⁸ *Pinkerton, Voyages*, London, 1814, vol. 13, p. 468.

bread of it. Whilst the root is fresh it is harsh and acrid, but, being dried, it loses the greater part of its acrimony. To judge by these qualities, the tuckahoe may very likely be the *Arum virginianum*.

The Shoshoni and Bannock of Idaho and Montana eat the tulle bulb.¹

Something analogous to hoddentin is mentioned by the chronicler of Drake's voyage along the California coast about A. D. 1540. Speaking of the decorations of the chiefs of the Indians seen near where San Francisco now stands, he says another mark of distinction was "a certain downe, which groweth up in the countrey upon an herbe much like our lectuce, which exceeds any other downe in the world for finenesse and beeing layed upon their cawles, by no winds can be removed. Of such estimation is this herbe amongst them that the downe thereof is not lawfull to be worne, but of such persons as are about the king, . . . and the seeds are not used but onely in sacrifice to their gods."²

Mr. Cushing informs me that hoddentin is mentioned as a food in the myths of the Zuñi under the name of oneya, from oellu, "food."

In Kamtchatka the people dig and cook the bulbs of the Kamtchatka lily, which seems to be some sort of a tuber very similar to that of the tulle.

"Bread is now made of rye, which the Kamtchadals raise and grind for themselves; but previous to the settlement of the country by the Russians the only native substitute for bread was a sort of baked paste, consisting chiefly of the grated tubers of the purple Kamtchatkan lily."³

HODDENTIN THE YIAUHTLI OF THE AZTECS.

There would seem to be the best of reason for an identification of hoddentin with the "yiauhtli" which Sahagun and Torquemada tell us was thrown by the Aztecs in the faces of victims preparatory to sacrificing them to the God of Fire, but the explanation given by those authors is not at all satisfactory. The Aztecs did not care much whether the victim suffered or not; he was sprinkled with this sacred powder because he had assumed a sacred character.

Padre Sahagun⁴ says that the Aztecs, when about to offer human sacrifice, threw "a powder named 'yiauhtli' on the faces of those whom they were about to sacrifice, that they might become deprived of sensation and not suffer much pain in dying."

In sacrificing slaves to the God of Fire, the Aztec priests "tomaban ciertos polvos de una semilla, llamada Yauhtli, y polvoreaban las caras

¹ Personal notes, April 5, 1881.

² Drake, *World Encompassed*, pp. 124-126, quoted by H. H. Bancroft, *Native Races*, vol. 1, pp. 387-388. (This chaplain stated so many things ignorantly that nothing is more probable than that he attempted to describe, without seeing it, the plant from which the Indians told him that hoddentin (or downe) was obtained. The principal chief or "king" would, on such an awe-inspiring occasion as meeting with strange Europeans, naturally want to cover himself and followers with all the hoddentin the country afforded.)

³ Kennan, *Tent Life in Siberia*, p. 66.

⁴ Quoted by Kingsborough, vol. 6, p. 100.

con ellas, para que perdiesen el sentido, y no sintiesen tanto la muerte cruel, que las daban."¹

Guautli, generally spelled "yautli," one of the foods paid to Montezuma as tribute, may have been tule pollen. Gallatin says: "I can not discover what is meant by the guautli. It is interpreted as being *semilla de Bledo*; but I am not aware of any other native grain than maize having been, before the introduction of European cereales, an article of food of such general use, as the quantity mentioned seems to indicate."²

Among the articles which the king of Atzapotzalco compelled the Aztecs to raise for tribute is mentioned "ahuautli (que es como bledos)."³

"BLEDOS" OF ANCIENT WRITERS—ITS MEANING.

Lafitau⁴ gives a description of the Iroquois mode of preparing for the warpath. He says that the Iroquois and Huron called war "n'ondoutagette" and "gaskenragette." "Le terme *Ondouta* signifie le duvet qu'on tire de l'épy des Roseaux de Marais & signifie aussi la plante toute entiere, dont ils se servent pour faire les nattes sur quoi ils couchent, de sorte qu'il y a apparence qu'ils avoient affecté ce terme pour la Guerre, parce que chaque Guerrier portoit avec soy sa natte dans ces sortes d'expéditions."

This does not seem to be the correct explanation. Rather, it was because they undoubtedly made some sacrificial meal of this "duvet," or pollen, and used it as much as the Apache do hoddentin, their sacred meal made of the pollen of the tule, which is surely a species of "roseaux de marais."

The great scarcity of corn among the people passed while en route to Cibola is commented upon in an account of Coronado's expedition to Cibola, in *Coleccion de Documentos Inéditos, relativos al descubrimiento, conquista y colonizacion de las posesiones Españolas de América y Oceanía*.⁵

We are also informed⁶ that the people of Cibola offered to their idols "polbos amarillos de flores."

Castañeda speaks of the people beyond Chichilticale making a bread of the mesquite which kept good for a whole year. He seems to have been well informed regarding the vegetable foods of the tribes passed through by Coronado's expedition.⁷

That the "blettes" or "bledos" did not mean the same as grass is a certainty after we have examined the old writers, who each and all

¹ Torquemada, *Monarchia Indiana*, vol. 2, lib. 10, cap. 22, p. 274.

² Gallatin, in *Trans. Am. Ethnol. Soc.*, vol. 1, pp. 117-118.

³ Vetancurt, *Teatro Mexicano*, vol. 1, p. 271.

⁴ *Mœurs des Sauvages*, vol. 2, pp. 194, 195.

⁵ Madrid, 1870, vol. 14, p. 320.

⁶ *Ibid.*

⁷ Ternaux-Compans, *Voyages*, vol. 9, p. 159.

show that the *bledos* meant a definite kind of plant, although exactly what this plant was they fail to inform us. It can not be intended for the sunflower, which is mentioned distinctly by a number of writers as an article of diet among the Indians of the Southwest.¹

TZOALLI.

An examination of the Spanish writers who most carefully transmitted their observations upon the religious ceremonies of the Aztecs and other nations in Mexico and South America brings out two most interesting features in this connection. The first is that there were commemorative feasts of prehistoric foods, and the second that one or more of these foods has played an important part in the religion of tribes farther north. The first of these foods is the "tzoalli," which was the same as "*bledos*," which latter would seem beyond question to have been *hoddentin* or *yiauhli*. Brasseur de Bourbourg's definition simply states that the tzoalli was a compound of leguminous grains peculiar to Mexico and eaten in different ways: "Le Tzohualli était un composé de graines légumineuses particulières au Mexique, qu'on mangeait de diverses manières."²

In the month called *Tepeilhuitl* the Aztecs made snakes of twigs and covered them with dough of *bledos* (a kind of grain or hay seed). Upon these they placed figures, representing mountains, but shaped like young children.³ This month was the thirteenth on the Mexican calendar, which began on our February 1. This would put it October 1, or thereabout.

Squier cites Torquemada's description of the sacrifices called *Ecatontin*, offered to the mountains by the Mexicans. In these they made figures of serpents and children and covered them with "dough," named by them tzoalli, composed of the seeds of *bledos*.⁴

A dramatic representation strongly resembling those described in the two preceding paragraphs was noted among the *Tusayan* of Arizona by Mr. Taylor, a missionary, in 1881, and has been mentioned at length in *The Snake Dance of the Moquis*. Clavigero relates that the Mexican priests "all eat a certain kind of gruel which they call *Etzalli*."⁵

Torquemada relates that the Mexicans once each year made an idol or statue of *Huitzilpotchli* of many grains and the seeds of *bledos* and other vegetables which they kneaded with the blood of boys who were sacrificed for the purpose. "Juntaban muchos granos y semilla de

¹ Among others consult *Cronica Seráfica y Apostolica* of Espinosa, Mexico, 1746, p. 419, speaking of the *Asinaí* of Texas in 1700: "Siembran tambien cantidad de Gyrasoles que se dan muy corpulentos y la flor muy grande que en el centro tienen la semilla como de pifiones y de ella mixturada con el maiz hacen un bollo que es de mucho sabor y sustancia."

² Brasseur de Bourbourg, *Hist. Nations Civilisées*, quoted by Bancroft, *Native Races*, vol. 3, p. 421.

³ Sahagun, in book 7. Kingsborough, p. 71.

⁴ Squier, *Serpent Symbol*, p. 193, quoting Torquemada, lib. 7, cap. 8.

⁵ *History of Mexico*, Philadelphia, 1817, vol. 2, p. 79. See the additional note from Clavigero, which would seem to show that this *etsalli* was related to the *espadafia* or rush.

Bledos, y otras legumbres, y molianlas con mucha devocion, y recato, y de ellas amasaban, y formaban la dicha Estatua, del tamaño y estatura de un Hombre. El licor, con que se resolbian y desleian aquellas harinas era sangre de Niños, que para este fin se sacrificaban."¹

It is remarkable the word "maiz" does not occur in this paragraph. Huitzilpotechli being the God of War, it was natural that the ritual devoted to his service should conserve some, if not all, of the foods, grains, and seeds used by the Mexicans when on the warpath in the earliest days of their history; and that this food should be made into a dough with the blood of children sacrificed as a preliminary to success is also perfectly in accordance with all that we know of the mode of reasoning of this and other primitive peoples. Torquemada goes on to say that this statue was carried in solemn procession to the temple and idol of Huitzilpotechli and there adorned with precious jewels (chalchihuitl), embedded in the soft mass. Afterward it was carried to the temple of the god Paynalton, preceded by a priest carrying a snake in the manner that the priests in Spain carried the cross in the processions of the church. "Con una Culebra mui grande, y gruesa en las manos, tortuosa, y con muchas bueltas, que iba delante, levantada en alto, á manera de Cruz, en nuestras Procesiones."² This dough idol, he says, was afterwards broken into "migajas" (crumbs) and distributed among the males only, boys as well as men, and by them eaten after the manner of communion; "este era su manera de comunion."³ Herrera, speaking of this same idol of Vitzliputzli, as he calls him, says it was made by the young women of the temple, of the flour of bledos and of toasted maize, with honey, and that the eyes were of green, white, or blue beads, and the teeth of grains of corn. After the feast was over, the idol was broken up and distributed to the faithful, "á manera de comunion." "Las Doncellas recogidas en el templo, dos Dias antes de la Fiesta, amasaban harina de Bledos, i de Maiz tostado, con miel, y de la masa hacian un Idolo grande, con los ojos de cuentas grandes, verdes, azules, o blancas: i por dientes grauos de maiz."⁴

H. H. Bancroft speaks of the festival in honor of Huitzilpochtli. "the festival of the wafer or cake." He says: "They made a cake of the meal of bledos, which is called tzoalli," which was afterward divided in a sort of communion.⁵ Diego Duran remarks that at this feast the chief priest carried an idol of dough called "tzoally," which is made of the seeds of bledos and corn made into a mass with honey.⁶ "Un ydolo de masa, de una masa que llaman tzoally, la cual se hace de semilla de bledos y maiz amasado con miel." This shows that

¹ *Monarquía Indiana*, vol. 2, lib. 6, cap. 36, p. 71.

² *Ibid.*, p. 72.

³ *Ibid.*, p. 73.

⁴ *Ibid.*, lib. 2, pp. 71, 72.

⁵ *Native Races*, vol. 2, p. 23.

⁶ *Diego Duran*, vol. 3, p. 157.

“bledos” and “maiz” were different things.¹ A few lines farther on Duran tells us that this cake, or bread, was made by the nuns of the temple, “las mozas del recogimiento de este templo,” and that they ground up a great quantity of the seed of bledos, which they call huauhtly, together with toasted maize. “Molian mucha cantidad de semilla de bledos que ellos llaman huauhtly juntamente con maiz tostado.”² He then shows that the “honey” (miel) spoken of by the other writers was the thick juice of the maguey. “Despues de molido, amasabanlo con miel negra de los magueis.”

Acosta describes a Mexican feast, held in our month of May, in which appeared an idol called Huitzilpotchli, made of “mays rosty,” “semençe de blettes,” and “amassoient avec du miel.”³

In the above citations it will be seen that huauhtly or yuauhtli and tzoally were one and the same. We also find some of the earliest if not the very earliest references to the American popped corn.

That the Mexicans should have had such festivals or feasts in honor of their god of battles is no more extraordinary than that in our own country all military reunions make it a point to revert to the “hard tack” issued during the campaigns in Virginia and Tennessee. Many other references to the constant use as a food, or at least as a sacrificial food, of the bledos might be supplied if needed. Thus Diego Duran devotes the twelfth chapter of his third book to an obscure account of a festival among the Tepanecs, in which appeared animal gods made of “masa de semilla de bledos,” which were afterwards broken and eaten.

Torquemada speaks of such idols employed in the worship of snakes and mountains.⁴ In still another place this authority tells us that similar figures were made and eaten by bride and groom at the Aztec marriage ceremony.⁵

The ceremonial manner in which these seeds were ground recalls the fact that the Zuñi regard the stones used for grinding kunque as sacred and will not employ them for any other purpose.

Idols made of dough much after the fashion of the Aztecs are to be found among the Mongols. Meignan speaks of seeing “an idol, quite open to the sky and to the desert, representing the deity of travelers. It was made of compressed bread, covered over with some bituminous substance, and perched on a horse of the same material, and held in its hand a lance in Don Quixote attitude. Its horrible features were surmounted with a shaggy tuft of natural hair. A great number of offerings of all kinds were scattered on the ground all around. Five or six images, formed also of bread, were bending in an attitude of prayer before the deity.”⁶

¹ See notes already given from Buckingham Smith's translation of Vaca.

² Diego Duran. vol. 3, p. 196.

³ José Acosta, *Hist. des Indes*, ed. of Paris, 1600, liv. 5, cap. 24, p. 250.

⁴ *Monarchia Indiana*. lib. 10, cap. 33.

⁵ *Ibid.*, lib. 6, cap. 48.

⁶ *From Paris to Pekin*, London, 1885, pp. 312, 313.

Dr. Edwin James, the editor of Tanner's Narrative,¹ cites the "Calica Puran" to show that medicinal images are employed by the people of the East Indies when revenge is sought upon an enemy; "water must be sprinkled on the meal or earthen victim which represents the sacrificer's enemy."

In those parts of India where human sacrifice had been abolished, a substitutive ceremony was practiced "by forming a human figure of flour-paste, or clay, which they carry into the temples, and there cut off its head or mutilate it, in various ways, in presence of the idols."²

Gomara describes the festival in honor of the Mexican God of Fire, called "Xocothuecl," when an idol was used made of every kind of seed and was then enwrapped in sacred blankets to keep it from breaking. "Hacian aquella noche un ídolo de toda suerte de semillas, envolviaulo en mantas benditas, y liábanlo, porque no se deshiciese."³

These blessed blankets are also to be seen at the Zuñi feast of the Little God of Fire, which occurs in the month of December. It is a curious thing that the blessed blankets of the Zuñi are decorated with the butterfly, which appeared upon the royal robes of Montezuma.

What other seeds were used in the fabrication of these idols is not very essential to our purpose, but it may be pointed out that one of them was the seed of the "agenjo," which was the "chenopodium" or "artemisia," known to us as the "sagebrush."

Of the Mexicans we learn from a trustworthy author: "Tambien usaban alguna manera de comunión ó recepcion del sacramento, y es que hacian unos idolitos chiquitos de semilla de bledos ó cenizos, ó de otras yerbas, y ellos mismos se los recibian, como cuerpo ó memoria de sus dioses."⁴

Mendieta wrote his *Historia Eclesiástica Indiana* in 1596, "al tiempo que esto escribo (que es por Abril del año de noventa y seis)"⁵ and again,⁶ "al tiempo que yo esto escribo."

The Mexicans, in the month of November, had a festival in honor of Tezcatlipuca. "Hacian unos bollos de masa de maíz y semejante de agenjos, aunque son de otra suerte que los de acá, y echábanlos á coeer en ollas con agua sola. Entre tanto que hervian y se cocian los bollos, tañian los muchachos un atabal . . . y después comíauselos con gran devocion."⁷

Gomara's statement, that while these cakes of maize and wormwood seed were cooking the young men were beating on drums, would find its parallel in any account that might be written of the behavior of the Zuñi, while preparing for their sacred feasts. The squaws grind the

¹ New York, 1830, p. 191.

² Dubois, *People of India*, London, 1817, p. 490.

³ Gomara, *Historia de Méjico*, p. 445.

⁴ Mendieta, *Hist. Eclesiástica Ind.*, p. 108.

⁵ *Ibid.*, p. 402.

⁶ *Ibid.*, p. 515.

⁷ Gomara, *Historia de Méjico*, p. 446.

meal to be used on these occasions to the accompaniment of singing by the medicine-men and much drumming by a band of assistants selected from among the young men and boys.

Mr. Francis La Flèche, a nearly full-blood Omaha Indian, read before the Anthropological Society of Washington, D. C., in 1888, a paper descriptive of the funeral customs of his people, in which he related that when an Indian was supposed to be threatened with death the medicine-men would go in a lodge sweat-bath with him and sing, and at the same time "pronouncing certain incantations and sprinkling the body of the client with the powder of the artemisia, supposed to be the food of the ghosts."¹

To say that a certain powder is the food of the ghosts of a tribe is to say indirectly that the same powder was once the food of the tribe's ancestors.

The Peruvians seem to have made use of the same kind of sacrificial cakes kneaded with the blood of the human victim. We are told that in the month of January no strangers were allowed to enter the city of Cuzco, and that there was then a distribution of corn cakes made with the blood of the victim, which were to be eaten as a mark of alliance with the Inca. "Les daban unos Bollos de Maíz, con sangre de el sacrificio, que comian, en señal de confederacion con el Inga."²

Balboa says that the Peruvians had a festival intended to signalize the arrival of their young men at manhood, in which occurred a sort of communion consisting of bread kneaded by the young virgins of the sun with the blood of victims. This same kind of communion was also noted at another festival occurring in our month of September of each year. ("Un festin composé de pain pétri par les jeunes vierges du Soleil avec le sang des victimes."³) There were other ceremonial usages among the Aztecs, in which the tule rush itself, "espadaña," was employed, as at childbirth, marriage, the festivals in honor of Tlaloc, and in the rough games played by boys. It is possible that from being a prehistoric food the pollen of the tule, or the plant which furnished it, became associated with the idea of sustenance, fertility, reproduction, and therefore very properly formed part of the ritual necessary in weddings or connected with the earliest hours of a child's life, much as rice has been used so freely in other parts of the world.⁴

Among the Aztecs the newly born babe was laid upon fresh green tule rushes, with great ceremony, while its name was given to it.⁴

Gomara says that the mats used in the marriage ceremonies of the Aztecs were made of tules. "Esteras verdes de espadañas."⁵

"They both sat down upon a new and curiously wrought mat, which was spread in the middle of the chamber close to the fire." The marriage bed was made "of mats of rushes, covered with small sheets,

¹ From the account of lecture appearing in the Evening Star, Washington, D. C., May 19 1888.

² Herrera, dec. 5, lib. 4, cap. 5, p. 92.

³ Balboa, Histoire du Pérou, in Ternaux-Compans, Voyages, vol. 15, pp. 124 and 127.

⁴ See the explanatory text to the Codex Mendoza, in Kingsborough, vol. 5, p. 90, et seq.

⁵ Historia de Méjico, p. 439.

with certain feathers, and a gem of chalchihuitl in the middle of them."¹

The third festival of Tlaloc was celebrated in the sixth month, which would about correspond to our 6th of June.² But there was another festival in honor of the Tlaloc, which seems very hard to understand. A full description is given by Bancroft.³ To celebrate this it was incumbent upon the priests to cut and carry to the temples bundles of the tule, which were woven into a sacred mat, after which there was a ceremonial procession to a tule swamp in which all bathed.

The Aztecs, like the Apache, had myths showing that they sprang originally from a reed swamp. There was an Aztec god, Napatecutli, who was the god of the tule and of the mat-makers.⁴ This rush was also strewn as part of several of their religious ceremonies.

Fosbrooke⁵ has this to say about certain ceremonies in connection with the churches in Europe: "At certain seasons the Choir was strewed with hay, at others with sand. On Easter sabbath with ivy-leaves; at other times with rushes." He shows that hay was used at Christmas and the vigil of All Saints, at Pentecost, Athelwold's Day, Assumption of the Blessed Virgin, and Ascension, etc.

The Mexican populace played a game closely resembling our "blind man's buff" in their seventeenth month, which was called Tititl and corresponded to the winter solstice. In this game, called "nechichiquavilo," men and boys ran through the streets hitting every one whom they met with small bags or nets ("taleguillas ó redecillas") filled with tule powder or fine paper ("lenas de flor de las espadañas ó de algunos papeles rotos").⁶

The same thing is narrated by other early Spanish writers upon Mexico.

In the myths of Guatemala it is related that there were several distinct generations of men. The first were made of wood, without heart or brains, with worm-eaten feet and hands. The second generation was an improvement upon this, and the women are represented as made of tule. "Las mugeres fueron hechas de corazon de espadaña."⁷

Picart, enumerating the tree gods of the Romans, says that they had deified "les Roseaux pour les Rivieres."⁸

GENERAL USE OF THE POWDER AMONG INDIANS.

This very general dissemination among the Indians of the American continent of the sacred use of the powder of the tule, of images, idols, or sacrificial cakes made of such prehistoric foods, certainly suggests

¹ Clavigero, History of Mexico, Philadelphia, 1817, vol. 2, p. 101.

² "They strewed the temple in a curious way with rushes."—Ibid., p. 78.

³ Native Races, vol. 3, pp. 334-343.

⁴ Sahagun, in Kingsborough, vol. 7, p. 16.

⁵ British Monachism, London, 1817, p. 289.

⁶ Kingsborough, vol. 7, p. 83, from Sahagun.

⁷ Ximenez, Guatemala, Translated by Scherzer, p. 13.

Cérémonies et Costumes, etc., vol. 1, p. 27.

that the Apache and the Aztecs, among whom they seem to have been most freely used on ceremonial occasions, were invaders in the country they respectively occupied, comparatively recent in their arrival among the contiguous tribes like the Zuñi and Tusayan who on corresponding occasions offered to their gods a cultivated food like corn. The Tlascaltec were known in Mexico as the "bread people," possibly because they had been acquainted with the cultivation of the cereals long before the Aztecs. Similarly, there was a differentiation of the Apache from the sedentary Pueblos. The Apache were known to all the villages of the Pueblos as a "corn-buying tribe," as will presently be shown. It is true that in isolated cases and in widely separated sections the Apache have for nearly two centuries been a corn-planting people, because we find accounts in the Spanish chronicles of the discovery and destruction by their military expeditions of "trojes" or magazines of Apache corn near the San Francisco (or Verde) River, in the present Territory of Arizona, as early as the middle of the last century. But the general practice of the tribe was to purchase its bread or meal from the Pueblos at such times as hostilities were not an obstacle to free trade. There was this difference to be noted between the Apache and the Aztecs: The latter had been long enough in the valley of Anahuac to learn and adopt many new foods, as we learn from Duran, who relates that at their festivals in honor of Tezeatlipoca, or those made in pursuance of some vow, the woman cooked an astonishing variety of bread, just as, at the festivals of the Zuñi, Tusayan, and other Pueblos in our own time, thirty different kinds of preparations of corn may be found.¹ I was personally informed by old Indians in the pueblos along the Rio Grande that they had been in the habit of trading with the Apache and Comanche of the Staked Plains of Texas until within very recent years; in fact, I remember seeing such a party of Pueblos on its return from Texas in 1869, as it reached Fort Craig, New Mexico, where I was then stationed. I bought a buffalo robe from them. The principal article of sale on the side of the Pueblos was cornmeal. The Zuñi also carried on this mixed trade and hunting, as I was informed by the old chief Pedro Pino and others. The Tusayan denied that they had ever traded with the Apache so far to the east as the buffalo country, but asserted that the Comanche had once sent a large body of their people over to Walpi to trade with the Tusayan, among whom they remained for two years. There was one buffalo robe among the Tusayan at their snake dance in 1881, possibly obtained from the Ute to the north of them.

The trade carried on by the "buffalo" Indians with the Pueblos was noticed by Don Juan de Oñate as early as 1599. He describes them as "dressed in skins, which they also carried into the settled provinces to sell, and brought back in return cornmeal."²

¹ "Tanta diferencia de manjares y de géneros de pan que era cosa estraña."—Diego Duran, vol. 3 cap. 4, p. 219.

² Davis, Conquest of New Mexico, p. 273.

Gregg¹ speaks of the "Comancheros" or Mexicans and Pueblos who ventured out on the plains to trade with the Comanche, the principal article of traffic being bread. Whipple² refers to this trade as carried on with all the nomadic tribes of the Llano Estacado, one of which we know to have been the eastern division of the Apache. The principal article bartered with the wild tribes was flour, i. e., cornmeal.

In another place he tells us of "Pueblo Indians from Santo Domingo, with flour and bread to barter with the Káí-ò-was and Comanches for buffalo robes and horses."³ Again, Mexicans were seen with flour, bread, and tobacco, "bound for Comanche land to trade. We had no previous idea of the extent of this Indian trade."⁴ Only one other reference to this intertribal commerce will be introduced.

Vetancurt⁵ mentions that the Franciscan friars, between 1630 and 1680, had erected a magnificent "temple" to "Our Lady of the Angels of Porciúncula," and that the walls were so thick that offices were established in their concavities. On each side of this temple, which was erected in the pueblo of Pecos (situated at or near the head of the Pecos River, about 30 miles southeast of Santa Fé, New Mexico, on the eastern rim of the Llano Estacado), were three towers. At the foot of the hill was a plain about one league in circumference, to which the Apache resorted for trade. These were the Apache living on the plains of Texas. They brought with them buffalo robes, deer skins and other things to exchange for corn. They came with their dog-trains loaded, and there were more than five hundred traders arriving each year.

Observe that here we have the first and only reference to the use of dog trains by the Apache who in every other case make their women carry all plunder in baskets on their backs. In this same extract from Vetancurt there is a valuable remark about Quivira: "Este es el paso para los reinos de la Quivira."

ANALOGUES OF HODDENTIN.

In the citation from the Spanish poet Villagra, already given, the suggestion occurs that some relationship existed between the powder scattered so freely during the Spanish "carnestolendas" and the "kunque" thrown by the people of Tusayan upon the Spaniards and their horses when the Spaniards first entered that country. This analogy is a very striking one, even though the Spaniards have long since lost all idea of the meaning of the practice which they still follow. It is to be noted, however, that one of the occasions when this flour is most freely

¹Commerce of the Prairies, vol. 2, p. 54.

²Pacific R. R. Report, 1856, vol. 3, pt. 1, p. 34.

³Ibid., p. 34.

⁴Ibid., p. 38.

⁵Los Apaches traian pieles de tibolas, gamuzas y otras cosas, á hacer cambio por maiz. "Venian con sus reatas de perros cargados mas de quinientos mercaderes cada año."—Teatro Mexicano, vol. 3, p. 323.

used is the Eve of All Saints (Hallowe'en), when the ghosts or ancestors of the community were to be the recipients of every attention.¹

In the East, the use of the reddish or purple powder called the "gula" is widely prevalent, but it is used at the feast of Huli, which occurs at the time of the vernal equinox.

There seems to have been used in Japan in very ancient days a powder identical with the hoddentin, and, like it, credited with the power to cure and rejuvenate.

In the mythical period, from the most ancient times to about B. C. 200, being the period of the so-called pure Japanese "medicine," it is related that Ona-muchi-no-mikoko gave these directions to a hare which had been flayed by a crocodile: "Go quickly now to the river mouth, wash thy body with fresh water, then take the pollen of the sedges and spread it about, and roll about upon it; whereupon thy body will certainly be restored to its original state."²

There is no indication that in the above case the "pollen of the sedges" had ever occupied a place in the list of foods. It would appear that its magical effects were strictly dependent upon the fact that it was recognized as the reproductive agent in the life of the plant.

No allusion has yet been made to the hoddentin of the Navajo, who are the brothers of the Apache. Surgeon Matthews³ has referred to it under the name of 'tqa-di-tin', or 'ta-di-tin', "the pollen, especially the pollen of corn."

This appears to me to be a very interesting case of a compromise between the religious ideas of two entirely different systems or sects. The Navajo, as now known to us, are the offspring of the original Apache or Tinnah invaders and the refugees from the Rio Grande and Zuñi Pueblos, who fled to the fierce and cruel Apache to seek safety from the fiercer and more cruel Spanish.

The Apache, we have shown, offer up in sacrifice their traditional food, the pollen of the tule. The Zuñi, as we have also shown, offer up their traditional food, the meal of corn, to which there have since been added sea shells and other components with a symbolical significance. The Navajo, the progeny of both, naturally seek to effect a combination or compromise of the two systems and make use of the pollen of the corn. Kohl narrates an Ojibwa legend to the effect that their god Menaboju, returning from the warpath, painted his face with "pleasant yellow stripes . . . of the yellow foam that covers the water in spring," and he adds that this is "probably the yellow pollen that falls from the pine." He quotes⁴ another legend of the magic red

¹ In burlesque survivals the use of flour prevails not only all over Latin Europe, but all such portions of America as are now or have been under Spanish or Portuguese domination. The breaking of eggshells over the heads of gentlemen upon entering a Mexican ball room is one manifestation of it. Formerly the shell was filled with flour.

² Dr. W. Norton Whitney. *Notes from the History of Medical Progress in Japan*, Yokohama, 1885, p. 248.

³ The prayer of a Navajo Shaman, in *American Anthropologist*, vol. 1, No. 2, 1888, p. 169.

⁴ Kitchi-gami, pp. 416, 423, 424.

powder for curing diseases once given by the snake spirit of the waters to an Ojibwa.

Godfrey Higgins¹ has this to say of the use of pollen by the ancients which he recognizes as connected with the principle of fertility:

Αρωμα, the sweet smell, means also a flower, that is Pushpa or Pusahto. This was the language of the followers of the Phasah or the Lamb—it was the language of the Flower, of the Natzir, of the Flos-floris of Flora, of the Arouma, and of the flour of Ceres, or the Eucharistia. It was the language of the pollen, the pollen of plants, the principle of generation, of the Pole or Phallus.

Again he says:

Buddha was a flower, because as flour or pollen he was the principle of fructification or generation. He was flour because flour was the fine or valuable part of the plant of Ceres, or wheat, the pollen which, I am told, in this plant, and in this plant alone, renews itself when destroyed. When the flour, pollen, is killed, it grows again several times. This is a very beautiful type or symbol of the resurrection. On this account the flour of wheat was the sacrifice offered to the Χρῆς or Ceres in the Εὐχαριστία. In this pollen we have the name of pall or pallium and of Pallas, in the first language meaning *wisdom*. . . . When the devotee ate the bread he ate the pollen, and thus ate the body of the God of generation; hence might come transubstantiation.

Lupton,² in 1660, describes a "powder of the flowers [pollen?] of elder, gathered on a midsummer day," which was taken to restore lost youth. Brand, it may be as well to say, traces back the custom of throwing flour into the faces of women and others on the streets at Shrovetide, in Minorca and elsewhere, to the time of the Romans.³

In writing the description of the Snake Dance of the Moquis of Arizona, I ventured to advance the surmise that the corn flour with which the sacred snakes were covered, and with which the air was whitened, would be found upon investigation to be closely related to the crithomancy or divination by grains of the cereals, as practiced among the ancient Greeks. Crithomancy, strictly speaking, meant a divination by grains of corn. The expression which I should have employed was alphetomancy, a divination "by meal, flower, or branne."⁴ But both methods of divination have been noticed among the aborigines of America.

In Peru the medicine-men were divided into classes, as were those of ancient Egypt. These medicine-men "made the various means of divination specialities." Some of them predicted by "the shapes of grains of maize taken at random."⁵ In Guatemala grains of corn or of chile were used indiscriminately, and in Guazacualeo the medicine-women used grains of frijoles or black beans. In Guatemala they had what they called "ahquij." "Este modo de adivinar se llama ahquij, malol-

¹ Anacalypsis, London, 1836, vol. 2, pp. 242-244.

² Brand, Pop. Antiq., vol. 3, p. 285.

³ Ibid., vol. 1, p. 69.

⁴ Ibid., vol. 3, pp. 329 et seq.

⁵ Brinton, Myths of the New World, New York, 1868, pp. 278, 279.

tzitè, malol-ixim, esto es: el que adivina por el sol, ó por granos de maiz ó chile."¹

In Guazaenàlco the medicine-women "hechaban suertes con granos de Frisoles, a manera de Dados, i hacian sus invocaciones, porque eran Hechiceros: i si el Dado decia bien, proseguian en la cura, diciendo que sanaria: i si mal, no bolvian al enfermo."²

Herrera in the preceding paragraph recognizes the close similarity between this sacred ceremony of casting lots or divining, and the more orthodox method of gambling, pure and simple, which has in every case been derived from a sacred origin.

"Les Hachus [one class of Peruvian priests] consultaient l'avenir au moyen de grains de maïs ou des excréments des animaux."³

The Mexicans "para saber si los enfermos habian de morir, ó sanar de la enfermedad que tenian, echaban un puñado de maiz lo mas grueso que podian haber, y lanzábanlo siete ó ocho veces, como lanzan los dados los que los juegan, y si algun grano quedaba enhiesto, decian que era señal de muerte."⁴

Father Brebœuf relates that at the Huron feast of the dead, which occurred every 8 or 10 years and which he saw at Ossossane, "a few grains of Indian corn were thrown by the women upon the sacred relics."⁵

THE DOWN OF BIRDS IN CEREMONIAL OBSERVANCES.

No exhaustive and accurate examination of the subject of hoddentin could be made without bringing the investigator face to face with the curious analogue of "down" throwing and sprinkling which seemingly obtains with tribes which at some period of their history have been compelled to rely upon birds as a main component of their diet. Examples of this are to be met with on both sides of the Pacific as well as in remote Australia, and were the matter more fully examined there is no doubt that some other identifications might be made in very unexpected quarters. The down used by the Tehuktchi on occasions of ceremony had a suggestion of religion about it.⁶ "On leaving the shore, they sung and danced. One who stood at the head of the boat was employed in plucking out the feathers of a bird's skin and blowing them in the air."

In Langsdorff's *Travels*⁷ we learn that some of the dancers of the Koluschan of Sitka have their heads powdered with the small down feathers of the white-headed eagle and ornamented with ermine; also, that the hair and bodies of the Indians at the mission of Saint Joseph, New California, were powdered with down feathers.⁸

¹ Jimenez, Guatemala, p. 177.

² Herrera, dec. 4, lib. 9, cap. 8, p. 188.

³ Balboa, Hist. du Péron, in Ternaux-Compans, Voy., vol. 15, p. 29.

⁴ Mendieta, Hist. Eclesiástica Ind., p. 110.

⁵ Henry Youle Hind, Assiniboine and Saskatchewan Exped., vol. 2, pp. 165, 166.

⁶ Lisiansky, Voyage Round the World, London, 1814, pp. 153, 221, 223.

⁷ London, 1814, pt. 2, pl. III, p. 113.

⁸ Ibid., pl. IV, pp. 194, 195.

The Indians from the North Pacific coast seen visiting the mission of San Francisco, by Kotzebue in 1816, "had their long disordered hair covered with down."¹

Bancroft says of the Nootka of the northwest coast of British America: "the hair is powdered plentifully with white feathers, which are regarded as the crowning ornament for manly dignity in all these regions."²

The bird's down used by the Haida of British North America in their dances seems very closely related to hoddentin. They not only put it upon their own persons, but "delight to communicate it to their partners in bowing," and also "blow it into the air at regular intervals through a painted tube." They also scattered down as a sign of welcome to the first European navigators.³

In all these dances, ceremonial visits, and receptions of strangers the religious element can be discerned more or less plainly. The Indians west of the Mississippi with whom Father Hennepin was a prisoner in 1680, and who appear to have been a branch of the Sioux (Issati or Santee and Nadouessan), had a grand dance to signalize the killing of a bear. On this occasion, which was participated in by the "principaux chefs et guerriers," we learn that there was this to be noted in their dress: "ayant même leurs cheveux frottez d'huile d'ours & parsemez de plumes, rouges & blanches & les têtes chargées de duvet d'oiseaux."⁴

"Swan's and bustard's down" was used by the Accancees [i. e., the Arkansas of the Siouan stock] in their religious ceremonies.⁵

Of the war dress of the members of the Five Nations we learn from an early writer: "Their heads [previously denuded of all hair except that of the crown] are painted red down to the eye-brows and sprinkled over with white down."⁶

The Indians of Virginia at their war dances painted themselves to make them more terrible: "Pour se rendre plus terriblee, ils sèment des plumes, du duvet, ou du poil de quelque bête sur la peinture toute fraiche."⁷ Down was also used by the medicine-men of the Carib.⁸ The down of birds was used in much the same way by the tribes of Cumaná, a district of South America not far from the mouth of the Orinoco, in the present territory of Venezuela;⁹ by the Tupinambis, of Brazil, who covered the bodies of their victims with it;¹⁰ by the Chirib-

¹ Voyage, vol. 1, p. 282.

² Native Races, vol. 1, p. 179.

³ Ibid., vol. 1, pp. 170, 171.

⁴ Père Louis Hennepin, Voyage, etc., Amsterdam, 1714, pp. 339-240. Ibid., translated by B. F. French, in Historical Collections of Louisiana, pt. 1, 1846.

⁵ Joutel's Journal, in Historical Collections of Louisiana, tr. by B. F. French, pp. 181, 1846.

⁶ Maj. Rogers, Account of North America, in Knox's Voyages, vol. 2, London, 1767, p. 167.

⁷ Picart, Cérémonies et Coutumes Religieuses, etc., Amsterdam, 1735, vol. 6, p. 77.

⁸ Ibid., p. 89.

⁹ John De Laet, lib. 18, cap. 4; Gomara, Hist. de las Indias, p. 203; Padre Gumilla, Orinoco, pp. 68, 96.

¹⁰ Hans Staden, in Ternaux-Compans, Voyages, vol. 3, pp. 269, 290.

chi, of South America,¹ and by the tribes of the Isthmus of Darien.² This down has also been used by some of the Australians in their sacred dances.³ "The hair, or rather the wool upon their heads, was very abundantly powdered with white powder. . . . They powder not only their heads, but their beards too."⁴

In China "there is a widespread superstition that the feathers of birds, after undergoing certain incantations, are thrown up into the air, and being carried away by the wind work blight and destruction wherever they alight."

The down of birds seems not to have been unknown in Europe. To this day it is poured upon the heads of the bride and groom in weddings among the Russian peasantry.⁵

This leads up to the inquiry whether or not the application of tar and feathers to the person may not at an early period have been an act of religious significance, perverted into a ridiculous and infamous punishment by a conquering and unrelenting hostile sect. The subject certainly seems to have awakened the curiosity of the learned Buckle, whose remarks may as well be given.

Richard, during his stay in Normandy (1189), made some singular laws for regulating the conduct of the pilgrims in their passage by sea. "A robber, convicted of theft, shall be shaved in the manner of a champion; and boiling pitch poured upon his head, and the feathers of a pillow shaken over his head to distinguish him; and be landed at the first port where the ships shall stop."⁶

The circumstances mentioned in the text respecting tarring and feathering is a fine subject for comment by the searchers into popular antiquities.⁷

HAIR POWDER.

Speaking of the "duvet" or down, with which many American savage tribes deck themselves, Picart observes very justly: "Cet ornement est bizarre, mais dans le fond l'est il beaucoup plus que cette poudre d'or dont les Anciens, se poudroient la tête, ou que cette poudre composée d'amidon avec laquelle nos petits maitres modernes affectent de blanchir leurs cheveux ou leurs perruques?"⁸

Picart does not say, and perhaps it would not be wise for us to surmise, that these modes of powdering had a religious origin.

The custom of powdering the hair seems to be a savage "survival;" at least, it is still to be found among the Friendly Islanders, among

¹ Peter Martyr, in Hakluyt's Voyages, vol. 5, p. 460.

² Bancroft, Nat. Races of the Pacific Slope, vol. 1, p. 750.

³ Smyth, Aborigines of Victoria, vol. 1, p. 73; vol. 2, p. 302. See also Carteret's description of the natives of the Queen Charlotte Islands, visited by him in 1767.

⁴ Hawkesworth, Voyages, vol. 1, p. 379.

⁵ Perry S. Heath, A Hoosier in Russia, New York, 1888, p. 114.

⁶ Fosbrooke, British Monachism, p. 442.

⁷ See works cited in Buckle's Common place Book, vol. 2, of "Works," London, 1872, p. 47.

⁸ Picart, Cérémonies et Costumes Religieuses, vol. 6, p. 20.

whom it was observed by Forster.¹ These islanders used a white lime powder, also one of blue and another of orange made of turmeric.

The Sandwich Islanders plastered their hair over "with a kind of lime made from burnt shells,"² and Dillon speaks of the Friendly Islanders using lime, as Forster has already informed us.³ The Hottentots made a lavish use of the medicinal powder of the buchu, which they plastered on their heads, threw to their sacred animals, and used liberally at their funerals.⁴ Kolben dispels all doubt by saying: "These powderings are religious formalities." He also alludes to the use, in much the same manner, of ashes by the same people.⁵

The use of ashes also occurs among the Zuñi, the Apache (at times), and the Abipone of Paraguay. Ashes are also "thrown in the way of a whirlwind to appease it."⁶

In the Witches' Sabbath, in Germany, "it was said that the witches burned a he goat, and divided its ashes among themselves."⁷

In all the above cases, as well as in that of the use of ashes in the Christian churches, it is possible that the origin of the custom might be traced back either to a desire to share in the burnt offering or else in that of preserving some of the incinerated dust of the dead friend or relative for whom the tribe or clan was in mourning. Ashes in the Christian church were not confined to Lent alone; they "were worn four times a year, as in the beginning of Lent."⁸

Tuphramancy or divination by ashes was one of the methods of forecast in use among the priests of pagan Rome.⁹

In Northumberland the custom prevailed of making bonfires on the hills on St. Peter's day. "They made encroachments, on these occasions, upon the bonfires of the neighbouring towns, of which they took away some of the ashes by force: This they called 'carrying off the flower (probably the flour) of the wake.'¹⁰ Moresin thinks this a vestige of the ancient Cerealia."¹¹

The mourning at Iddah, in Guinea, consists in smearing the forehead "with wood ashes and clay water, which is allowed to dry on. They likewise powder their hair with wood ashes."¹¹

¹ Voyage Round the World, London, 1777, pp. 462, 463.

² Archibald Campbell, Voyage Round the World, N. Y., 1819, p. 136.

³ Voyage of La Pérouse, London, 1829, vol. 2, p. 275.

⁴ Peter Kolben's Voyage to the Cape of Good Hope, in Knox's Voyage and Travels, London, 1767, vol. 2, pp. 391, 395, 406, 407.

⁵ *Ibid.*, p. 406.

⁶ Spencer, Desc. Sociology, art. "Abipones."

⁷ Gubernatis, Zoological Mythology, London, 1872, vol. 1, p. 423.

⁸ Fosbrooke, British Monachism, p. 83.

⁹ Gaule, Mag-astromancers Posed and Puzzel'd, p. 165, quoted in Brand, Popular Antiquities, vol. 3, pp. 329 et seq.

¹⁰ Brand, Popular Antiquities, vol. 1, pp. 337, 338.

¹¹ Laird and Oldfield's Expedition into the Interior of Africa, quoted in Buckle's Common place Book, p. 466.

DUST FROM CHURCHES—ITS USE.

The last ceremonial powder to be described is dust from the ground, as among some of the Australians who smear their heads with pipe-clay as a sign of mourning.¹

The French writers mention among the ceremonies of the Natchez one in which the Great Sun "gathered dust, which he threw back over his head, and turned successively to the four quarters of the world in repeating the same act of throwing dust."²

Mention is made of "an old woman who acted as beadle" of a church, who "once brought to the bedside of a dying person some of the sweepings from the floor of the altar, to ease and shorten a very lingering death."³

Altar dust was a very ancient remedy for disease. Frommann says that, of the four tablets found in a temple of Esculapius, one bore this inscription: "Lucio affecto lateris dolore; veniret et ex ara tollerit cinerem et una cum vino comisceret et poneret supra latus; et convaluit," etc.⁴

It seems then that the mediæval use of altar dust traces back to the Roman use of altar ashes.

So hard is it to eradicate from the minds of savages ideas which have become ingrafted upon their nature that we need not be surprised to read in the Jesuit relations of affairs in Canada (1696-1702) that, at the Mission of Saint Francis, where the Indians venerated the memory of a saintly woman of their own race, Catheraine Tagikoo-ita, "pour guérir les malades que les remèdes ordinaires ne soulagent point, on avale dans l'eau ou dans un bouillon un peu de la poussière de son tombeau."

A few persons are to be found who endeavor to collect the dust from the feet of one hundred thousand Brahmins. One way of collecting this dust is by spreading a cloth before the door of a house where a great multitude of Brahmins are assembled at a feast, and, as each Brahmin comes out, he shakes the dust from his feet as he treads upon this cloth. Many miraculous cures are declared to have been performed upon persons using this dust.⁵

A widow among the Armenian devil-worshippers is required "to strew dust on her head and to smear her face with clay."⁶

CLAY-EATING.

The eating of clay would appear to have once prevailed all over the world. In places the custom has degenerated into ceremonial or is to

¹ Smyth, *Aborigines of Victoria*, vol. 2, p. 273.

² Gayarre, *Louisiana*, 1851, p. 308.

³ *Notes and Queries*, 4th ser., vol. 8, p. 505.

⁴ *Tractatus de Fascinatione*, Nuremberg, 1675, 197.

⁵ Southey, quoting Ward, in *Buckle's Common place Book*, London, 1849, 2d ser., p. 521.

⁶ *North American*, October 27, 1888.

be found only in myths. The Aztec devotee picked up a pinch of clay in the temple of Tezcatlipoca and ate it with the greatest reverence.¹

Sahagun is quoted by Squier² as saying that the Mexicans swore by the sun and "by our sovereign mother, the Earth," and ate a piece of earth.

But the use of clay by the Mexicans was not merely a matter of ceremony; clay seems to have been an edible in quite common use.

Edible earth was sold openly in the markets of Mexico; "y aun tierra," says Gomara in the list of foods given by him.³

The eating of clay was forbidden to Mexican women during pregnancy.

Diego Duran describes the ceremonial eating of clay in the temples of Mexico; "Llegó el dedo al suelo, y cogiendo tierra en él lo metió en la boca; á la cual ceremonia llamaban comer tierra santa."⁴ And again he says that in their sacrifices the Mexican nobles ate earth from the feet of the idols. "Comian tierra de la que estaba á los pies del Ydolo."⁵ But the Mexicans did not limit themselves to a ceremonial clay-eating alone. Thomas Gage relates that "they ate a kind of earth, for at one season in the year they had nets of mayle, with the which they raked up a certain dust that is bred upon the water of the Lake of Mexico, and that is kneaded together like unto oas of the sea."⁶

Diego Duran⁷ mentions the ceremonial clay-eating at the feast of Tezcatlipoca agreeing with the note already taken from Kingsborough.

There is reference to clay-eating in one of the myths given in the Popol-Vuh. The Quiche deities Hunahpu and Xbalanqué, desiring to overcome the god Cabrankan, fed him upon roasted birds, but they took care to rub one of the birds with "tizate" and to put white powder around it. The circle of white powder was, no doubt, a circle of lod-dentin or something analogous thereto, intended to prevent any baleful influence being exercised by Cabrankan. "Mais ils frottèrent l'un des oiseaux avec du *tizate* et lui mirent de la poussière blanche à l'en-tour."⁸

In a footnote the word "tizate" is explained to be a very friable whitish earth, used in polishing metals, making cement, etc.: "Terre blanchâtre fort friable, et dont ils se servent pour polir les métaux, faire du ciment, etc."

Cabeza de Vaca says that the Indians of Florida ate clay—"de la terre."⁹ He says also¹⁰ that the natives offered him many mesquite beans, which they ate mixed with earth—"mele avec de la terre."¹¹

¹ Kingsborough, vol. 5, p. 198.

² Serpent Symbols, p. 55.

³ Hist. de Mejico, p. 348.

⁴ Lib. 2, cap. 47, p. 490.

⁵ Lib. 1, cap. 18, p. 208.

⁶ New Survey of the West Indies, London, 1648, p. 51.

⁷ Op. cit., vol. 3, cap. 4.

⁸ Popol-Vuh (Brasseur de Bourbourg), p. 65.

⁹ Ternaux-Compans, Voy., vol. 7, p. 143.

¹⁰ Ibid., p. 202.

¹¹ Purchas, vol. 4, lib. 8, cap. 1, p. 1519; also, Davis, Conquest of New Mexico, p. 84.

The Jaguaces of Florida ate earth (tierra).¹

At the trial of Vasco Pocallo de Figueroa, in Santiago de Cuba, in 1522, "for cruelty to the natives," he sought to make it appear that the Indians ate clay as a means of suicide: "el abuso de los Indios en comer tierra . . . seguian matandose de intento comiendo tierra."²

The Muisecas had in their language the word "jipetera," a "disease from eating dirt."³ Whether the word "dirt" as here employed means filth, or earth and clay, is not plain; it probably means clay and earth.

Venegas asserts that the Indians of California ate earth. The traditions of the Indians of San Juan Capistrano, California, and vicinity show that "they had fed upon a kind of clay," which they "often used upon their heads by way of ornament."⁴

The Tátu Indians of California mix "red earth into their acorn bread . . . to make the bread sweet and make it go further."⁵

Long⁶ relates that when the young warrior of the Oto or Omaha tribes goes out on his first fast he "rubs his person over with a whitish clay," but he does not state that he ate it.

Sir John Franklin⁷ relates that the banks of the Mackenzie River in British North America contain layers of a kind of unctuous mud, probably similar to that found near the Orinoco, which the Timneh Indians "use occasionally as food during seasons of famine, and even at other times chew as an amusement. . . . It has a milky taste and the flavour is not disagreeable."

Father de Smet⁸ says of the Athapascan: "Many wandering families of the Carrier tribe . . . have their teeth worn to the gums by the earth and sand they swallow with their nourishment." This does not seem to have been intentionally eaten.

"Some of the Siberian tribes, when they travel, carry a small bag of their native earth, the taste of which they suppose will preserve them from all the evils of a foreign sky."⁹

We are informed that the Tunguses of Siberia eat a clay called "rock marrow," which they mix with marrow. "Near the Ural Mountains, powdered gypsum, commonly called 'rock meal,' is sometimes mixed with bread, but its effects are pernicious."¹⁰

"The Jukabiri of northeastern Siberia have an earth of sweetish and rather astringent taste," to which they "ascribe a variety of sanatory properties."¹¹

¹ Gomara, *Hist. de las Indias*, p. 182.

² Buckingham Smith, *Coleccion de Varios Documentos para la Historia de Florida*, London, 1857, vol. 1, p. 46.

³ Dollaert, *Researches in South America*, London, 1800, p. 63.

⁴ Boscaua, *Chinigichinich*, pp. 245, 253.

⁵ Powers, *Contrib. to N. A. Ethnol.*, vol. 3, p. 140.

⁶ Long's Expedition, vol. 1, p. 240.

⁷ Second Expedition to the Polar Sea, p. 19.

⁸ Oregon Missions, p. 192.

⁹ Gmelin, quoted by Southey, in *Common place Book*, 1st ser., London, 1849, p. 239.

¹⁰ Malte-Brun, *Univ. Geog.*, Philadelphia, 1827, vol. 1, lib. 37, p. 483.

¹¹ Von Wrangel, *Polar Expedition*, New York, 1842, p. 188.

There is nothing in the records relating to Victoria respecting the use of any earth for the purpose of appeasing hunger, but Grey mentions that one kind of earth, pounded and mixed with the root of the *Mene* (a species of *Hæmadorum*), is eaten by the natives of West Australia.¹

The Apache and Navajo branches of the Athapascan family are not unacquainted with the use of clay as a comestible, although among the former it is now scarcely ever used and among the latter used only as a condiment to relieve the bitterness of the taste of the wild potato; in the same manner it is known to both the Zuñi and Tusayan.

Wallace says that eating dirt was "a very common and destructive habit among Indians and half-breeds in the houses of the whites."²

"Los apasionados à comer tierra son los Indios Otomacos."³

"The earth which is eaten by the Ottomacs [of the Rio Orinoco] is fat and unctuous."⁴

Waitz⁵ cites Heusinger as saying that the Ottomacs of the Rio Orinoco eat large quantities of a fatty clay.

Clay was eaten by the Brazilians generally.⁶

The Romans had a dish called "alica" or "frumenta," made of the grain *zea* mixed with chalk from the hills at Puteoli, near Naples.⁷

According to the myths of the Cingalese, their Brahmins once "fed on it [earth] for the space of 60,000 years."⁸

PREHISTORIC FOODS USED IN COVENANTS.

It has been shown that the Apache, on several occasions, as when going out to meet strangers, entering into solemn agreements, etc., made use of the hoddentin. A similar use of food, generally prehistoric, can be noted in other regions of the world.

It was a kind of superstitious trial used among the Saxons to purge themselves of any accusation by taking a piece of barley bread and eating it with solemn oaths and execrations that it might prove poisonous or their last morsel if what they asserted or denied was not true.⁹ Those pieces of bread were first execrated by the priest, from which he infers that at a still earlier day sacramental bread may have been used for the same purpose.

At Rome, in the time of Cicero and Horace, a master who suspected that his slaves had robbed him conducted them before a priest. They were each obliged to eat a cake over which the priest had "pronounced some magical words (*carminè infectum*)."¹⁰

¹Smyth. *Aborigines of Victoria*, vol. 1, p. xxxiv.

²Travels on the Amazon, p. 311.

³Gumilla, *Orinoco*, Madrid, 1741, p. 102; the Guamas, also, *ibid.*, pp. 102 and 108.

⁴Malte-Brun, *Univ. Geog.*, Phila., 1827, vol. 3, lib. 87, p. 323.

⁵*Anthropology*, vol. 1, p. 116.

⁶Spencer, *Desc. Sociology*.

⁷Pliny, *Nat. History*, lib. 18, cap. 29.

⁸*Asiatick Researches*, Calcutta, 1801, vol. 7, p. 440.

⁹Blount, *Tenures of Land and Customs of Manors*, London, 1874, p. 2233.

¹⁰Salverte, *Philosophy of Magic*, vol. 2, p. 140.

The people living on the coast of Coramandel have an ordeal consisting in the chewing of unboiled rice. No harm will attach to him who tells the truth, but the perjurer is threatened with condign punishment in this world and in that to come.¹ Bread is bitten when the Ostaaks of Siberia take a solemn oath, such as one of fealty to the Czar.²

SACRED BREADS AND CAKES.

Since the employment of hoddentin, or tule pollen, as a sacred commemorative food would seem to have been fairly demonstrated, before closing this section I wish to add a few paragraphs upon the very general existence of ritualistic farinaceous foods in all parts of the world. They can be detected most frequently in the ceremonial reversion to a grain or seed which has passed or is passing out of everyday use in some particular form given to the cake or bread or some circumstance of time, place, and mode of manufacture and consumption which stamps it as a "survival." So deeply impressed was Grimm³ with the wide horizon spreading around the consideration of this topic that he observed: "Our knowledge of heathen antiquities will gain both by the study of these drinking usages which have lasted into later times and also of the shapes given to *baked meats*, which either retained the actual forms of ancient idols or were accompanied by sacrificial observances. A history of German cakes and bread rolls might contain some unexpected disclosures. . . . Even the shape of cakes is a reminiscence of the sacrifices of heathenism."

The first bread or cake to be mentioned in this part of the subject is the pancake, still so frequently used on the evening of Shrove Tuesday. In antiquity it can be traced back before the Reformation, before the Crusades were dreamed of, before the Barbarians had subverted Rome, before Rome itself had fairly taken shape.

There seems to have been a very decided religious significance in the preparation of pancakes on Shrove Tuesday. In Leicestershire, "On Shrove Tuesday a bell rings at noon, which is meant as a signal for the people to begin frying their pancakes."⁴

"The Norman *Crispella* (Du Cange) are evidently taken from the *Fornacalia*, on the 18th of February, in memory of the method of making bread, before the Goddess *Fornax* invented ovens."⁵

Under "Crispella," Du Cange says: "Rustici apud Normannos vocant Crespes, ova pauca mixta cum farina, et in sartagine frixa," and says that they are "ex herba, farina et oleo."⁶ These same Crispella are to be seen on the Rio Grande during Christmas week.

In the Greek Church and throughout Russia there is to the present time a "pancake feast" at Shrovetide.⁷

¹ Voyage of Capt. Amasa Delano, Boston, 1847, p. 230. Compare with the ordeal of Scotch conspirators, who ate a fragment of barley bread together.

² Gauthier de la Peyronie, Voyages de Pallas, Paris, 1793, vol. 4, p. 75.

³ Teutonic Mythology, vol. 1, p. 63.

⁴ Macaulay quoted in Brand, Pop. Ant., vol. 1, p. 85.

⁵ Fosbrooke, British Monachism, p. 83.

⁶ Du Cange, Glossarium, articles "Crispella" and "Crespella."

⁷ Brand, Pop. Ant., vol. 1, p. 88.

At one time a custom prevailed of going about from one friend's house to another, masked, and committing every conceivable prank. "Then the people feasted on bliinnies—a pancake similar to the English crumpet."¹

In the pancake we have most probably the earliest form of farinaceous food known to the nations which derived their civilization from the basin of the Mediterranean. Among these nations wheat has been in use from a time far beyond the remotest historical period, and to account for its introduction myth has been invoked; but this wheat was cooked without leaven, or was fried in a pan, after the style of the *torquilla* still used in Spanish-speaking countries, or of the pancake common among ourselves. Pliny² says that there were no bakers known in Rome until nearly six hundred years after the foundation of the city, in the days of the war with Persia; but he perhaps meant the public bakers authorized by law. The use of wheat and the art of baking bread, as we understand it to-day, were practically unknown to the nations of northern Europe until within the recent historical period.³

¹ Heath, A Hoosier in Russia, p. 109.

² Nat. Hist., lib. 18, cap. 28.

³ Wheat, which is now the bread corn of twelve European nations and is fast supplanting maize in America and several inferior grains in India, was no doubt widely grown in the prehistoric world. The Chinese cultivated it 2700 B. C. as a gift direct from Heaven; the Egyptians attributed its origin to Isis and the Greeks to Ceres. A classic account of the distribution of wheat over the primeval world shows that Ceres, having taught her favorite Triptolemus agriculture and the art of bread-making, gave him her chariot, a celestial vehicle which he used in useful travels for the purpose of distributing corn to all nations.

Ancient monuments show that the cultivation of wheat had been established in Egypt before the invasion of the shepherds, and there is evidence that more productive varieties of wheat have taken the place of one, at least, of the ancient sorts. Innumerable varieties exist of common wheat. Colonel Le Couteur, of Jersey, cultivated 150 varieties; Mr. Darwin mentions a French gentleman who had collected 322 varieties, and the great firm of French seed merchants, Vilmorin-Andrieux et C^o, cultivate about twice as many in their trial ground near Paris. In their recent work on *Les meilleurs blés* M. Henry L. de Vilmorin has described sixty-eight varieties of best wheat, which he has classed into seven groups, though these groups can hardly be called distinct species, since M. Henry L. de Vilmorin has crossed three of them, *Triticum vulgare*, *Triticum turgidum* and *Triticum durum*, and has found the offspring fertile.

Three small-grained varieties of common wheat were cultivated by the first lake dwellers of Switzerland (time of Trojan war), as well as by the less ancient lake dwellers of western Switzerland and of Italy, by the people of Hungary in the stone age, and by the Egyptians, on evidence of a brick of a pyramid in which a grain was embedded and to which the date of 3359 B. C. has been assigned.

The existence of names for wheat in the most ancient languages confirms this evidence of the antiquity of its culture in all the more temperate parts of Europe, Asia, and Africa, but it seems improbable that wheat has ever been found growing persistently in a wild state, although the fact has often been asserted by poets, travelers, and historians. In the *Odyssey*, for example, we are told that wheat grew in Sicily without the aid of man, but a blind poet could not have seen this himself, and a botanical fact can hardly be accepted from a writer whose own existence has been contested. Diodorus repeats the tradition that Osiris found wheat and barley growing promiscuously in Palestine, but neither this nor other discoveries of persistent wild wheat seem to us to be credible, seeing that wheat does not appear to be endowed with a power of persistency except under culture.—*Edinburgh Review*.

The origin of baking precedes the period of history and is involved in the obscurity of the early ages of the human race. Excavations made in Switzerland gave evidence that the art of making bread was practiced by our prehistoric ancestors as early as the stone period. From the shape of loaves it is thought that no ovens were used at that time, but the dough was rolled into small round cakes and laid on hot stones, being covered with glowing ashes. Bread is mentioned in the book of Genesis, where Abraham, wishing to entertain three angels, offered to "fetch a morsel of bread." Baking is again referred to where Sarah has instructions to "make ready quickly three measures of fine meal, knead it and make cakes upon the hearth." Lot entertained two angels by giving them unleavened

Nothing would be more in consonance with the mode of reasoning of a primitive people than that, at certain designated festivals, there should be a recurrence to the earlier forms of food, a reversion to an earlier mode of life, as a sort of propitiation of the gods or goddesses who had cared for the nation in its infancy and to secure the continuance of their beneficent offices. Primitive man was never so certain of the power of the gods of the era of his own greatest development that he could rely upon it implicitly and exclusively and ignore the deities who had helped him to stand upon his feet. Hence, the recurrence to pancakes, to unleavened breads of all kinds, among various peoples. This view of the subject was made plain to me while among the Zuñi Indians. Mr. Frank H. Cushing showed me that the women, when baking the "loaves" of bread, were always careful to place in the adobe ovens a tortilla with each batch of the newer kind, and no doubt for the reason just given.

UNLEAVENED BREAD.

The unleavened bread of the earliest period of Jewish history has come down to our own times in the Feast of Unleavened Bread, still observed by the Hebrews in all parts of the world, in the bread used in the eucharistic sacrifice by so large a portion of the Christian world, and apparently in some of the usages connected with the half-understood fast known as the "Ember Days." Brand quotes from an old work in regard to the Ember Days: "They were so called 'because that our elder fathers wolde on these days ete no brede but cakes made under ashes.'" ¹

The sacred cake or "draona" of the Parsi "is a small round pancake or wafer of unleavened bread, about the size of the palm of the hand. It is made of wheaten flour and water, with a little clarified butter, and is flexible."² A variety of the "draona," called a "frasast," is marked with the finger nail and set aside for the guardian spirits of the departed.³

Cakes and salt were used in religious rites by the ancients. The Jews probably adopted their appropriation from the Egyptians.⁴ "Dur-

bread. The mere mention of unleavened bread shows that there were two kinds of bread made even at that time.

The art of baking was carried on to a high perfection among the Egyptians, who are said to have baked cakes in many fantastic shapes, using several kinds of flour. The Romans took up the art of baking, and public bakeries were numerous on the streets of Rome. In England the business of the baker was considered to be one so closely affecting the interests of the public that in 1266 an act of Parliament was passed regulating the price to be charged for bread. This regulation continued in operation until 1822 in London and until 1836 in the rest of the country. The art of making bread has not yet reached some countries in Europe and Asia. In the rural parts of Sweden no bread is made, but rye cakes are baked twice a year and are as hard as flint. It is less than a century ago that bread was used in Scotland, the Scotch people of every class living on barley bannocks and oat cakes.—Chicago News.

¹ Pop. Antiq., vol. 1, p. 96.

² Sháyast lá-Sháyast, par. 32, note 6, pp. 281, 284 (Max Müller's ed., Oxford, 1880).

³ Ibid., p. 315, note 3.

⁴ "And if thou bring an oblation of a meat offering baken in the oven, it shall be unleavened cakes of fine flour" (Levit., II, 4); "With all thine offerings thou shalt offer salt" (Ibid., 13)—Brand, Pop. Ant., vol. 2, p. 82.

ing all the Passover week—14th to 21st Nisan, i. e., during this week's moon—Shemites fast, only eating unleavened bread, and most diligently—not without reason—cleansing their houses." "And especially had all leavened matter to be removed, for the new leavener had now arisen, and prayers with curses were offered up against any portions which might have escaped observation. The law of their fierce Jahveh was that, whoever during all this festival tasted leavened bread, 'that soul should be cut off,' which Godwyn mollifies by urging that this only meant the offender should die without children; which was still a pretty considerable punishment for eating a piece of bread!"¹

"The great day of Pentecost is the 6th of Sivan, or, say, the 22d of May, 1874. From the first barley *two loaves* were then made, 'the offering of which was the distinguishing rite of the day of Pentecost.'²

On St. Bridget's Eve every farmer's wife in Ireland makes a cake, called *bairinbreac*; the neighbors are invited, the madder of ale and the pipe go round, and the evening concludes with mirth and festivity.³ Vallencey identifies this as the same kind of offering that was made to Ceres, and to "the queen of heaven, to whom the Jewish women burnt incense, poured out drink offerings, and made cakes for her with their own hands."⁴

THE HOT CROSS BUNS OF GOOD FRIDAY.

The belief prevailed that these would not mold like ordinary bread.⁵

"In several counties [in England] a small loaf of bread is annually baked on the morning of Good Friday and then put by till the same anniversary in the ensuing year. This bread is not intended to be eaten, but to be used as a medicine, and the mode of administering it is by grating a small portion of it into water and forming a sort of panada. It is believed to be good for many disorders, but particularly for a diarrhœa, for which it is considered a sovereign remedy. Some years ago a cottager lamented that her poor neighbour must certainly die of this complaint, because she had already given her two doses of Good Friday bread without any benefit. No information could be obtained from the doctress respecting her nostrum, but that she had heard old folks say that it was a good thing and that she always made it."⁶

Brand quotes a writer in the *Gentleman's Magazine* who shows that they were "formerly, at least, unleavened," p. 156. They "are constantly marked with the form of the cross." "It is an old belief that the observance of the custom of eating buns on Good Friday protects the house from fire, and several other virtues are attributed to these buns," p. 156. "Hutchinson, in his *History of Northumberland*, follow-

¹ Forlong, *Rivers of Life*, vol. 1, p. 441.

² *Ibid.*, p. 447.

³ Brand, *Pop. Antiq.*, vol. 1, pp. 345, 346, quoting Gen. Vallencey's *Essay on the Antiquity of the Irish Language*.

⁴ *Ibid.*, p. 345.

⁵ *Ibid.*, p. 154.

⁶ *Ibid.*, pp. 155, 156.

ing Bryant's Analysis, derives the Good Friday bun from the sacred cakes which were offered at the Arkite Temples, styled Boun, and presented every seventh day," p. 155. A very interesting dissertation upon these sacred cakes as used by the Greeks, Egyptians, and Jews in the time of their idolatry, is to be found in Brand's work, pp. 155-156.¹

Practices analogous to those referred to are to be noted among the Pueblo Indians. They offer not only the kunque, but bread also in their sacrifices.

In the sacred rabbit hunt of the Zuñi, which occurs four times a year and is carried on for the purpose of procuring meat for the sacred eagles confined in cages, a great fire was made on the crest of a hill, into which were thrown piles of bread crusts and in the smoke of which the boomerangs or rabbit sticks were held while the hunter recited in an audible tone and with downcast head the prayers prescribed for the occasion. One of the early Spanish writers informs us that the women of the pueblo of Santo Domingo, on the Rio Grande, offered bread on bended knees to their idols and then preserved it for the remainder of the year, and the house which did not have a supply of such blessed bread was regarded as unfortunate and exposed to danger.²

A prehistoric farinaceous food of the Romans survives in our bridecake or wedding cake. It is well understood that among the Romans there were three kinds of marriage: that called "coemptio," that called "concubitu" or "usu," and the highest form of all, known as "confaratio," from the fact that bride and groom ate together of a kind of cake or bread made of the prehistoric flour, the "far." We have preserved the custom of having bridecake, which is still served with many superstitious ceremonies: "it must be cut by the bride herself; it must be broken in pieces (formerly these pieces were cast over the heads of the bridesmaids), and, after being passed through a wedding ring a certain number of times, it must be placed under the pillow of the anxious maiden to serve as a basis for her dreams."³

Exactly what this prehistoric food was it is now an impossibility to determine with exactness. Torquemada shows that long after the Romans had obtained the use of wheat they persisted in the sacrificial use of the "nola isla," "farro," and "escanda," forms of wild grain once roasted and ground and made into bread by their forefathers.⁴ A similar usage prevailed among the Greeks. Pliny speaks of "the bearded red wheat, named in Latin 'far,'" and tells us that rye was called "secale" or "farrago."⁵ The radical "far" is still to be found all over

¹ See also "Buns" in Inman's Ancient Faiths.

² "Ofrecian el pan al idolo, hincados de rodillas. Bendeziaban los sacerdotes, y repartian como pan bendito, con lo qual se acababa la fiesta. Guardaban aquel pan todo el año, teniendo por desdichada, y augeta a muchos peligros la casa que sin el estava."—Padre Fray Alonso Fernandez (Dominican). *Historia Ecclesiastica de Nuestros Tiempos*, Toledo, 1611, p. 16.

³ Brand, *Popular Antiquities*, vol. 2, pp. 100 et seq., quoting Blount, Moffet, and Moresin.

⁴ Torquemada, *Monarchia Indiana*, vol. 2, lib. 7, cap. 9, p. 100.

⁵ *Nat. Hist.*, lib. xviii, caps 10 et seq. and 39.

Europe in the word for flour, "farina," "farine," or "harina," while it is also possible that it may be detected in the ever-to-be-honored name of Farragut.¹

In the eight marriage rites described by Baudhâyana, the initiatory oblation in the fourth (that in which the father gives his daughter away) consists of "parched grain." This rite is one of the four which are lawful for a Brahman. The parched grain to be used would seem to be either sesamum or barley, although this is not clear. Vasishtha says, chapter 27, concerning secret penances: "He who . . . uses barley (for his food) becomes pure."²

The pages of Brand³ are filled with references to various forms of cake which seem properly to be included under this chapter. In England there formerly prevailed the custom of preparing "soul cakes" for distribution among visitors to the family on that day and to bands of waifs or singers, who expected them as a dole for praying and singing in the interests of the souls of the dead friends and relatives of the family. On the island of St. Kilda the soul cake was "a large cake in the form of a triangle, furrowed round, and which was to be all eaten that night."⁴ In Lancashire and Hertfordshire the cake was made of oatmeal, but in many other parts it was a "seed cake"⁵ and in Warwickshire, "at the end of barley and bean seed time, there is a custom there to give the plowmen *froise*, a species of thick pancake."⁶ "All-soul cakes" were distributed at time of All Souls' Day.

In England and Scotland the old custom⁷ was to have a funeral feast, which all friends and relations were expected to attend. Wine, currant cake, meat, and other refreshments, varying according to the fortune of the family, were served liberally. The bread given out was called "arvil-bread." There is no special reason for believing that this could be called a hoddentin custom, except that the writer himself calls attention to the fact that in the earlier times the bread was in the form of "wafers."⁸

The Romans had a college of priests called the "Fratres Arvales," nine, or, as some say, twelve in number, to whose care were committed the sacrifices in honor of Ceres at the old limits of the city, to propitiate that goddess and induce her to bestow fertility upon the fields. These

¹ Var (from the Hebrew word *var, frumentum*) Grain. It not only means a particular kind of grain, between wheat and barley, less nourishing than the former, but more so than the latter, according to Vossius; but it means bread corn, grain of any kind. Ætius gives this application to any kind of frumentaceous grain, decorticated, cleansed from the husks, and afterwards bruised and dried." London Medical Dictionary, Bartholomew Parr. M. D., Philadelphia, 1820, article "Far".

² *Ador* or *Athor* was the most sacred wheat, without beard, offered at adoration of gods. In Latin *Adorea* was a present of such after a victory, and *Ad-oro* is 'I adore,' from *oro*, 'I pray to.'—Forlong, *Rivers of Life*, vol. 1, p. 473, footnote, speaking of both Greeks and Romans.

³ Sacred Books of the East, edition of Max Müller, vol. 14, pp. 131, 205.

⁴ Brand, *Popular Antiquities*, vol. 1, pp. 391 et seq., article "Allhallow even."

⁵ *Ibid.*, p. 391.

⁶ *Ibid.*, p. 392.

⁷ *Ibid.*, p. 393.

⁸ *Ibid.*, vol. 2, pp. 237 et seq.

⁹ *Ibid.*, p. 244.

ceremonies, which are believed by the editor of Bohn's Strabo to survive in the Rogation Day processions of the Roman Catholic Church, recall the notes already taken upon the subject of the Arval bread of the Scotch.¹ The sacrifices themselves were designated "Ambarva" and "Ambarvalia."

In Scotland and England it was customary for bands of singers to go from door to door on New Year's Eve, singing and receiving reward. In the latter country "cheese and oaten cakes, which are called *farls*, are distributed on this occasion among the cryers." In the former country "there was a custom of distributing sweet cakes and a particular kind of sugared bread."²

A fine kind of wheat bread called "wassail-bread" formed an important feature of the entertainment on New Year's Day in old England.³

Among love divinations may be reckoned the dumb cake, so called because it was to be made without speaking, and afterwards the parties were to go backward up the stairs to bed and put the cake under their pillows, when they were to dream of their lovers.⁴

References to the beal-tine ceremonies of Ireland and Scotland, in which oatmeal gruel figured as a dish, or cakes made of oatmeal and caraway seeds, may be found in Brand, Pop. Antiq., vol. 1, p. 226; in Blount, Tenures of Land and Customs of Manors, London, 1874, p. 131; and in Pennant's Tour in Scotland, in Pinkerton's Voyages, vol. 3, p. 49. In "A Charm for Bewitched Land" we find the mode of making a cake or loaf with holy water.

The mince pie and plum pudding of Christmas are evidently ancient preparations, and it is not unlikely that the shape of the former, which, prior to the Reformation, was that of a child's cradle, had a reminiscence of the sacrifice of babies at the time of the winter solstice. Grimm has taught that where human sacrifice had been abolished the figure of a coffin or a cradle was still used as a symbol.

There is a wide field of information to be gleaned in the investigation of the subject of bean foods at certain periods or festivals of the year, and upon this point I have some notes and memoranda, but, as my present remarks are limited to prehistoric *farinaceous* foods, I do not wish to add to the bulk of the present chapter.⁵

"Kostia—boiled rice and plums—is the only thing partaken of on Christmas Eve."⁶

¹ Strabo, Geography, Bohn's edition, London, 1854, vol. 1, pp. 341, 342. footnote.

² Brand, Popular Antiquities, vol. 1, p. 460.

³ Ibid., p. 7.

⁴ Strutt, Sports and Pastimes, pp. 3, 180. On the same page: "Dumb cake, a species of dreaming bread prepared by unmarried females with ingredients traditionally suggested in witching doggerel. When baked, it is cut into three divisions; a part of each to be eaten and the remainder put under the pillow. When the clock strikes twelve, each votary must go to bed backwards and keep a profound silence, whatever may appear."

⁵ A writer in the Gentleman's Magazine for July, 1783, inquires: "May not the *minced pye*, a compound of the choicest productions of the East, have in view the offerings made by the wise men who came from afar to worship, bringing *spices*, etc." Quoted in Brand, Pop. Ant., vol. 1, p. 526. The mince pie was before the Reformation made in the form of a crib, to represent the manger in which the holy child lay in the stable. Ibid., p. 178.

⁶ Heath, A Hoosier in Russia, p. 109.

GALENA.

At times one may find in the "medicine" of the more prominent and influential of the chiefs and medicine-men of the Apache little sacks which, when opened, are found to contain pounded galena; this they tell me is a "great medicine," fully equal to hoddentin, but more difficult to obtain. It is used precisely as hoddentin is used; that is, both as a face paint and as a powder to be thrown to the sun or other elements to be propitiated. The Apache are reluctant to part with it, and from living Apache I have never obtained more than one small sack of it.

No one seems to understand the reason for its employment. Mr. William M. Beebe has suggested that perhaps the fact that galena always crystallizes in cubes, and that it would thus seem to have a mysterious connection with the cardinal points to which all nomadic peoples pay great attention as being invested with the power of keeping wanderers from going astray, would not be without influence upon the minds of the medicine-men, who are quick to detect and to profit by all false analogies. The conjecture appears to me to be a most plausible one, but I can submit it only as a conjecture, for no explanation of the kind was received from any of the Indians. All that I can say is that whenever procurable it was always used by the Apache on occasions of unusual importance and solemnity and presented as a round disk painted in the center of the forehead.

The significance of all these markings of the face among savage and half-civilized nations is a subject deserving of the most careful research; like the sectarian marks of the Hindus, all, or nearly all, the marks made upon the faces of American Indians have a meaning beyond the ornamental or the grotesque.

Galena was observed in use among the tribes seen by Cabeza de Vaca. "Ils nous donnèrent beaucoup de bourses, contenant des sachets de marcassites et d'antimoine en poudre." ("Taleguillas de margaxita y de alcohol molido.")¹ This word "margaxita" means iron pyrites. The *Encyclopædia Britannica* says that the Peruvians used it for "amulets;" so also did the Apache. What Vaca took for antimony was pounded galena no doubt. He was by this time in or near the Rocky Mountains.²

On the northwest coast of America we read of the natives: "One, however, as he came near, took out from his bosom some iron or lead-colored micaceous earth and drew marks with it across his cheeks in the shape of two pears, stuffed his nostrils with grass, and thrust thin pieces of bone through the cartilage of his nose."³

It is more than probable that some of the face-painting with "black earth," "ground charcoal," etc., to which reference is made by the early writers, may have been galena, which substance makes a deep-black

¹ Alvar Nuñez Cabeça de Vaca, in Ternaux-Compans, *Voy.*, vol. 7, p. 220.

² See also Davis, *Conquest of New Mexico*, p. 90.

³ William Coxe, *Russian Discoveries between Asia and America*, London, 1803, p. 57, quoting Steller.

mark. The natives would be likely to make use of their most sacred powder upon first meeting with mysterious strangers like Vaca and his companions. So, when the expedition of La Salle reached the mouth of the Ohio, in 1680, the Indians are described as fasting and making superstitious sacrifices; among other things, they marked themselves with "black earth" and with "ground charcoal." "Se daban con Tierra Negra o Carbon molido."¹

From an expression in Burton, I am led to suspect that the application of kohl or antimony to the eyes of Arabian beauty is not altogether for ornament. "There are many kinds of kohl used in medicine and magic."²

Corbusier says of the Apache-Yuma: "Galena and burnt mescal are used on their faces, the former to denote anger or as war paint, being spread all over the face, except the chin and nose, which are painted red."³

In Coleman's *Mythology of the Hindus*, London, 1832, page 165, may be found a brief chapter upon the subject of the sectarial marks of the Hindus. With these we may fairly compare the marks which the Apache, on ceremonial occasions, make upon cheeks and forehead. The adherents of the Brahminical sects, before entering a temple, must mark themselves upon the forehead with the tiluk. Among the Vishnuites, this is a longitudinal vermilion line. The Seevites use several parallel lines in saffron.⁴ Maurice adds that the Hindus place the tiluk upon their idols in twelve places.⁵ "Among the Kaffir the warriors are rendered invulnerable by means of a black cross on their foreheads and black stripes on the cheeks, both painted by the Inyanga, or fetich priest."⁶

A piece of galena weighing $7\frac{1}{2}$ pounds was found in a mound near Naples, Illinois.⁷ Occasionally with the bones of the dead are noticed small cubes of galena; and in our collection is a ball of this ore, weighing a pound and two ounces, which was taken from a mound, and which probably did service, enveloped in raw hide, as some form of weapon.⁸ Galena was much prized by the former inhabitants of North America. "The frequent occurrence of galena on the altars of the sacrificial mounds proves, at any rate, that the ancient inhabitants attributed a peculiar value to it, deeming it worthy to be offered as a sacrificial gift."⁹ See also Squier and Davis.¹⁰

¹ Barcia, *Ensayo Cronologico*, Madrid, 1723.

² *Arabian Nights*, Burton's edition, vol. 8, p. 10, footnote.

³ *American Antiquarian*, September, 1886, p. 281.

⁴ Maurice, *Indian Antiquities*, London, 1801, vol. 5, pp. 82 and 83.

⁵ *Ibid.*, vol. 5, p. 85.

⁶ Schultze, *Fetichism*, N. Y., 1885, p. 32.

⁷ Paper by Dr. John G. Henderson on "Aboriginal remains near Naples, Ill.," *Smith. Rept.*, 1882.

⁸ J. F. Snyder, "Indian remains in Cass County, Illinois," *Smith. Rept.*, 1881, p. 575.

⁹ Rau, in *Sm. Rept.*, 1872, p. 356.

¹⁰ "Ancient monuments of the Mississippi Valley," in *Smithsonian Contributions*, vol. 1, p. 160.

cipal medicine-men of the Chiricahua Apache, made me the same promise concerning the cord which he wore and which figures in these plates. It was, unfortunately, sent me by mail, and, although the best in the series and really one of the best I have ever been fortunate enough to see on either living or dead, it was not accompanied by a description of the symbolism of the different articles attached. Ramon also gave me the head-dress which he wore in the spirit or ghost dance, and explained everything thereon, and I am satisfied that he would also, while in the same frame of mind, have given me all the information in his power in regard to the sacred or medicine cord as well, had I been near him.

There are some things belonging to these cords which I understand from having had them explained at other times, but there are others about which I am in extreme doubt and ignorance. There are four specimens of medicine cords represented and it is worth while to observe that they were used as one, two, three, and four strand cords, but whether this fact means that they belonged to medicine-men or to warriors of different degrees I did not learn nor do I venture to conjecture.

The single-strand medicine cord with the thirteen olivella shells belonged to a Zuñi chief, one of the priests of the sacred order of the bow, upon whose wrist it was worn as a sign of his exalted rank in the tribe. I obtained it as a proof of his sincerest friendship and with injunctions to say nothing about it to his own people, but no explanation was made at the moment of the signification of the wristlet or cord itself or of the reason for using the olivella shells of that particular number or for placing them as they were placed.

One of the four-strand cords was obtained from Ramon and is the most beautiful and the most valuable of the lot. Ramon called my attention to the important fact that it was composed of four strands and that originally each had been stained a different color. These colors were probably yellow, blue, white, and black, although the only ones still discernible at this time are the yellow and the blue.



FIG. 436.—Four-strand medicine cord (Apache).

There are certain cords with medicine bags attached to be seen in the figures of medicine-men in the drawings of the sacred altars given by Matthews in his account of the Navajo medicine-men.

Cushing also has noted the existence of such cords in Zuñi, and there is no doubt that some at least of the so-called "fishing lines" found in the Rio Verde cliff dwellings in Arizona were used for the same purposes.

Describing the tribes met on the Rio Colorado, in 1540-1541, Alarcon says: "Likewise on the brawne of their armes they weare a streit string, which they wind so often about that it becommeth as broad as one's hand."¹ It must be remembered that the Indians thought that Alarcon was a god, that they offered sacrifice to him, and that they wore all the "medicine" they possessed.

In 1680, the Pueblos, under the leadership of Popé, of the pueblo of San Juan, were successful in their attempt to throw off the Spanish yoke. He made them believe that he was in league with the spirits, and "that they directed him to make a rope of the palm leaf and tie in it a number of knots to represent the number of days before the rebellion was to take place; that he must send this rope to all the Pueblos in the kingdom, when each should signify its approval of, and union with, the conspiracy by untying one of the knots."²

I suspect that this may have been an izze-kloth. We know nothing about this rebellion excepting what has been derived through Spanish sources; the conquerors despised the natives, and, with a very few notable exceptions among the Franciscans, made no effort to study their peculiarities. The discontent of the natives was aggravated by this fact; they saw their idols pulled down, their ceremonial chambers closed, their dances prohibited, and numbers of their people tried and executed for witchcraft.³ Fray Geronimo de Zarate Salmeron was a striking example of the good to be effected by missionaries who are not above studying their people; he acquired a complete mastery of the language of the pueblo of Jemez, "and preached to the inhabitants in their native tongue." He is represented as exercising great influence over the people of Jemez, Sia, Santa Ana, and Acoma. In this rebellion of 1680 the Pueblos expected to be joined by the Apache.⁴

The izze-kloth of the Apache seems to have had its prototype in the sacred string of beans with which Tecumseh's brother, the Shawnee prophet, traveled among the Indian tribes, inciting them to war. Every young warrior who agreed to go upon the warpath touched this "sacred string of beans" in token of his solemn pledge.⁵

Tanner says in the narrative of his captivity among the Ojibwa: "He [the medicine-man] then gave me a small hoop of wood to wear on my

¹ Relation of the Voyage of Don Fernando Alarcon, in Hakluyt's Voyages, vol. 3, p. 508.

² Davis, Conquest of New Mexico, p. 288.

³ Davis, *ibid.*, pp. 280, 284, 285.

⁴ *Ibid.*, pp. 277, 292.

⁵ Catlin, North American Indians. London, 1845, vol. 2, p. 117.

head like a cap. On one-half of this hoop was marked the figure of a snake, whose office, as the chief told me, was to take care of the water."¹ The "small hoop of wood" of which Tanner speaks, to be worn on the head, seems to be analogous to the small hoop attached to the izze-kloth, to be worn or applied in cases of headache (Fig. 436). Reference to something very much like the izze-kloth is made by Harmon as in use among the Carriers of British North America. He says: "The lads, as soon as they come to the age of puberty, tie cords, wound with swan's-down, around each leg a little below the knee, which they wear during one year, and then they are considered as men."² Catlin speaks of "mystery-beads" in use among the Mandan.³ "The negro suspends all about his person cords with most complicated knots."⁴

The female inhabitants of Alaska, Unalaska, and the Fox Islands were represented by the Russian explorers of 1768 (Captain Krenitzin) to "wear chequered strings around the arms and legs."⁵ These cords bear a striking resemblance to the "wresting cords" of the peasantry of Europe. Some of the Australians preserve the hair of a dead man. "It is spun into a cord and fastened around the head of a warrior."⁶ "A cord of opossum hair around the neck, the ends drooping down on the back and fastened to the belt," is one of the parts of the costume assumed by those attaining manhood in the initiation ceremonies of the Australians.⁷ Again, on pages 72 and 74, he calls it "the belt of manhood." "The use of amulets was common among the Greeks and Romans, whose amulets were principally formed of gems, crowns of pearls, necklaces of coral, shells, etc."⁸

When I first saw the medicine cords of the Apache, it occurred to me that perhaps in some way they might be an inheritance from the Franciscans, who, two centuries ago, had endeavored to plant missions among the Apache, and did succeed in doing something for the Navajo part of the tribe. I therefore examined the most convenient authorities and learned that the cord of S. François, like the cord of St. Augustine and the cord of St. Monica, was itself a medicine cord, representing a descent from a condition of thought perfectly parallel to that which has given birth to the izze-kloth. Thus Picart tells us: "On appelle Cordon de S. François la grosse corde qui sert de ceinture aux Religieux qui vivent sous la Regle de ce Saint. . . . Cette corde ceint le corps du Moine, & pend à peu près jusqu'aux pieds. Elle lui sert de discipline, & pour cet effet, elle est armée de distance en distance de fort gros nœuds. . . . La Corde de S. François a souvent guéri les malades, facilité les accouchemens, fortifié la santé, procuré lignée & fait

¹ Tanner's Narrative, p. 188.

² Journal, p. 289.

³ North American Indians, London, 1845, vol. 1, p. 135.

⁴ Schultze, Feticism, New York, 1885, p. 32, quoting Bastian.

⁵ Coxe, Russian Discoveries between America and Asia, London, 1803, p. 254.

⁶ Smyth, Aborigines of Victoria, vol. 1, pp. xxix, 112.

⁷ Ibid., vol. 1, p. 68.

⁸ Pettigrew, Medical Superstitions, Philadelphia, 1844, pp. 67, 72, 74.

une infinité d'autres miracles édifiants."¹ This author says of the girdle of St. Augustine "Elle est de cuir," and adds that the Augustinians have a book which treats of the origin of their order, in which occur these words: "Il est probable que nos premiers Peres, qui vivoient sous la Loi de nature, étant habillés de peau devoient porter une Ceinture de même étoffe."² This last assumption is perfectly plausible. For my part it has always seemed to me that monasticism is of very ancient origin, antedating Christianity and representing the most conservative element in the religious part of human nature. It clings obstinately to primitive ideas with which would naturally be associated primitive costume. The girdle of St. Monica had five knots. "The monks [of the Levant] use a girdle with twelve knots, to shew that they are followers of the twelve apostles."³ Among the "sovereign remedies for the headache" is mentioned "the belt of St. Guthlac."⁴ Buckle refers to the fact that English women in labor wore "blessed girdles." He thinks that they may have been Thomas Aquinas's girdles.⁵

And good Saynt Frances gyrdle,
With the hamlet of a hyrdle,
Are wholsom for the pyppe.⁶

Some older charms are to be found in Bale's Interlude concerning the Laws of Nature, Moses, and Christ, 4to, 1562. Idolatry says:

For lampes and for bottes
Take me Saynt Wilfride's knottes.⁷

The "girdle of St. Bridget," mentioned by Mooney⁸ and by other writers, through which the sick were passed by their friends, was simply a "survival" of the "Cunni Diaboli" still to be found in the East Indies. This "girdle of St. Bridget" was made of straw and in the form of a collar.

The custom prevailing in Catholic countries of being buried in the habits of the monastic orders, of which we know that the cord was a prominent feature, especially in those of St. Francis or St. Dominick, is alluded to by Brand.⁹ This custom seems to have been founded upon a prior superstitious use of magical cords which were, till a comparatively recent period, buried with the dead. The Roman Catholic church anathematized those "qui s'imaginent faire plaisir aux morts ou leur mettant entre les mains, ou en jettant sur leurs fosses, ou dans leurs tombeaux de petites cordes nouées de plusieurs nœuds, & d'autres

¹ Cérémonies of Coûtumes Religieuses, Amsterdam, 1739, vol. 2, pp. 28, 29.

² Ibid., p. 29.

³ Higgins, *Anacalypsis*, vol. 2, book 2, p. 77.

⁴ Pettigrew, *Medical Superstitions*, Philadelphia, 1844, p. 61. See also Black, *Folk-Medicine*, p. 93.

⁵ Citations, *Common place Book*, p. 395, London, 1872.

⁶ Brand, *Popular Antiquities*, vol. 3, pp. 310, 311.

⁷ Brand, *Popular Antiquities*, vol. 3, p. 310.

⁸ *Holiday Customs of Ireland*, pp. 381 et seq.

⁹ *Popular Antiquities*, vol. 3, p. 325.

semblables, ce qui est expressement condamné par le Synode de Ferrare en 1612."¹ Evidently the desire was to be buried with cords or amulets which in life they dared not wear.

We may infer that cords and other articles of monastic raiment can be traced back to a most remote ancestry by reading the views of Godfrey Higgins, in *Anacalypsis*, to the effect that there was a tradition maintained among the Carmelites that their order had been established by the prophet Elisha and that Jesus Christ himself had been one of its members. Massingberd, speaking of the first arrival of the Carmelites in England (about A. D. 1215), says: "They professed to be newly arrived in Italy, driven out by the Saracens from the Holy Land, where they had remained on Mount Carmel from the time of Elisha the prophet. They assert that 'the sons of the prophets' had continued on Mount Carmel as a poor brotherhood till the time of Christ, soon after which they were miraculously converted, and that the Virgin Mary joined their order and gave them a precious vestment called a scapular."²

ANALOGUES TO BE FOUND AMONG THE AZTECS, PERUVIANS, AND OTHERS.

According to the different authorities cited below, it will be seen that the Aztec priests were in the habit of consulting Fate by casting upon the ground a handful of cords tied together; if the cords remained bunched together, the sign was that the patient was to die, but if they stretched out, then it was apparent that the patient was soon to stretch out his legs and recover. Mendieta says: "Tenian unos cordeles, hecho de ellos un manojo como llavero donde las mujeres traen colgadas las llaves, lanzábanlos en el suelo, y si quedaban revueltos, decian que era señal de muerte. Y si alguno ó algunos salian extendidos, teníanlo por señal de vida, diciendo: que ya comenzaba el enfermo á extenderlos piés y las manos."³ Diego Duran speaks of the Mexican priests casting lots with knotted cords, "con nudillos de hilo echaban suertes."⁴ When the army of Cortes advanced into the interior of Mexico, his soldiers found a forest of pine in which the trees were interlaced with certain cords and papers which the wizards had placed there, telling the Tlascaltecs that they would restrain the advance of the strangers and deprive them of all strength:

Hallaron un Pinar mui espeso, lleno de hilos i papeles, que enredaban los Arboles, i atravesaban el camino, de que mucho se rieron los Castellanos; i dixeron *graciosos* donaires, quando luego supieron que los Hechiceros havian dado á entender á los Tlascaltecas que con aquellos hilos, i papeles havian de tener á los Castellanos, i quitarles sus fuerças.⁵

¹ Picart, *Cérémonies et Cōtumes*, etc., vol. 10, p. 56.

² Massingberd, *The English Reformation*. London, 1857, p. 105.

³ Mendieta, p. 110.

⁴ Vol. 3, cap. 5, p. 234.

⁵ Herrera, dec. 2. lib. 6, p. 141.

Padre Sahagun speaks of the Aztec priests who cast lots with little cords knotted together: "Que hechan suertes con unas cordezuelas que atan unas con otros que llaman Mecatlapouhque."¹ Some such method of divining by casting cords must have existed among the Lettons, as we are informed by Grimm.² "Among the Lettons, the bride on her way to church, must throw a bunch of colored threads and a coin into every ditch and pond she sees."³

In the religious ceremonies of the Peruvians vague mention is made of "a very long cable," "woven in four colours, black, white, red, and yellow."⁴ The Inca wore a "llautu." "This was a red fringe in the fashion of a border, which he wore across his forehead from one temple to the other. The prince, who was heir apparent, wore a yellow fringe, which was smaller than that of his father."⁵ In another place, Garcilaso says: "It was of many colours, about a finger in width and a little less in thickness. They twisted this fringe three or four times around the head and let it hang after the manner of a garland."⁶ "The Ynca made them believe that they were granted by order of the Sun, according to the merits of each tribe, and for this reason they valued them exceedingly."⁷ The investiture was attended with imposing ceremonies, "When the Grounds of the Sun were to be tilled [by the Peruvians], the principal men went about the task wearing white cords stretched across the shoulders after the manner of ministers of the altar"⁸ is the vague description to be gathered from Herrera.

Knotted cords were in use among the Carib; "ce qui revient aux Quipposdes Péruviens."⁹ The accompanying citation from Montfaucon would seem to show that among the Romans were to be found sacred baldrics in use by the war priests; such baldrics are to be seen also among the American aborigines, and correspond very closely to the medicine cords. Montfaucon describes the Saliens, who among the Romans were the priests of Mars, the god of war; these priests in the month of March had a festival which was probably nothing but a war dance, as that month would be most favorable in that climate for getting ready to attack their neighbors and enemies. He says that these Saliens "sont vêtus de robes de diverses couleurs, ceints de baudières d'airain." These would seem to have been a sort of medicine cord with plates of brass affixed which would rattle when shaken by the dancer.¹⁰

¹ Kingsborough, vol. 7, chap. 4.

² Teutonic Mythology, vol. 3, p. 1233.

³ Ibid.

⁴ Fables and Rites of the Incas, Padre Christoval de Molina (Cuzco, 1570-1584), transl. by Clements E. Markham, Hakluyt Society trans., vol. 48, London, 1873, p. 48.

⁵ The common people wore a black "llautu." See Garcilaso, Comentarios, Markham's transl., Hak. Soc., vol. 41, pp. 88, 89.

⁶ Ibid., p. 85.

⁷ Ibid., p. 89.

⁸ "Quando van à sembrar las Tierras del Sol, van solos los Principales à trabajar, i van con insignias blancas, i en las espaldas unos Cordones tendidos blancos, à modo de Ministros del Altar."—Herrera, dec. 5, lib. 4, cap. 6, pp. 94-95.

⁹ Picart, Cerémonies et Coûtumes, etc., Amsterdam, 1735, vol. 6, p. 92.

¹⁰ Montfaucon, L'antiquité expliquée, tome 2, pt. 1, p. 33.

Lappes, who sold wind contained in a cord with three knots. If the first were untied, the wind became favourable, if the second, still more so, but, if the third were loosed, a tempest was the inevitable consequence.¹ The selling of wind knots was ascribed not only to the Laps and Finns, but to the inhabitants of Greenland also.² "The northern shipmasters are such dupes to the delusions of these impostors that they often purchase of them a magic cord which contains a number of knots, by opening of which, according to the magician's directions, they expect to gain any wind they want."³ "They [Lapland witches] further confessed, that while they fastened three knots on a linen towel in the name of the devil, and had spit on them, &c., they called the name of him they doomed to destruction." They also claimed that, "by some fatal contrivance they could bring on men disorders," . . . as "by spitting three times on a knife and anointing the victims with that spittle."⁴

Scheffer describes the Laplanders as having a cord tied with knots for the raising of the wind; Brand says the same of the Finlanders, of Norway, of the priestesses of the island of Sena, on the coast of Gaul, in the time of the Emperor Claudius, the "witches" of the Isle of Man, etc.⁵

Macbeth, speaking to the witches, says:

Though you untie the winds, and let them fight
Against the churches; though the yesty waves
Confound and swallow navigation up.⁶

ROSARIES AND OTHER MNEMONIC CORDS.

The rosary being confessedly an aid to memory, it will be proper to include it in a chapter descriptive of the different forms of mnemonic cords which have been noticed in various parts of the world. The use of the rosary is not confined to Roman Catholics; it is in service among Mahometans, Tibetans, and Persians.⁷ Picart mentions "chaplets" among the Chinese and Japanese which very strongly suggest the izzekloth.⁸

Father Grébillon, in his account of Tartary, alludes several times to the importance attached by the Chinese and Tartars to the privilege of being allowed to touch the "string of beads" worn by certain Lamas met on the journey, which corresponds very closely to the rosaries of the Roman Catholics.⁹

¹ Malte-Brun, *Universal Geography*, vol. 4, p. 259, Phila., 1832.

² Grimm, *Teutonic Mythology*, vol. 2, p. 640.

³ Nightingale, quoted in Madden, *Shrines and Sepulchres*, vol. 1, pp. 557, 558.

⁴ Leems, *Account of Danish Lapland*, in Pinkerton, *Voyages*, London, 1808, vol. 1, p. 471.

⁵ Brand, *Popular Antiquities*, vol. 3, p. 5. See also John Scheffer, *Lapland*, Oxford, 1674, p. 58.

⁶ Act IV, scene 1.

⁷ Benjamin, *Persia*, London, 1877, p. 90.

⁸ *Cérémonies et Costumes*, vol. 7, p. 320.

⁹ Du Halde, *History of China*, London, 1736, vol. 4, pp. 244, 245, and elsewhere.

Parsis], showing their joint Aryan origin in high Asia, for the thread is of the very highest antiquity. The Parsi does not, however, wear his thread across the shoulder, and knows nothing of the all-but-forgotten origin of its required length. He wears it next to his skin, tied carefully round the waist, and used to tie it round his right arm, as is still the custom with some classes of Brahmans who have lost purity of caste by intermarriage with lower classes.¹

At the baptism or investiture of the thread, which takes the place of the Christian confirmation ceremony, but between the ages of 7 and 9, Fire and Water are the great sanctifying elements, and are the *essentials*. The fire is kindled from the droppings of the sacred cow, then sprinkled over with holy water and blessed; and when so consecrated by the priest it is called "Holy Fire."²

"The *Brahmans*, the *Rajas*, and the *Merchants*, distinguish themselves from the various casts of *Sudras* by a narrow belt of thread, which they always wear suspended from the left shoulder to the opposite haunch like a sash."³ But, as Dubois speaks of the division of all the tribes into "Right-hand and Left-hand," a distinction which Coleman⁴ explains as consisting in doing exactly contrariwise of each other, it is not a very violent assumption to imagine that both the present and a former method of wearing the *izze-kloth*, akin to that now followed by the Apache, may once have obtained in India. The sectaries of the two Hands are bitterly antagonistic and often indulge in fierce quarrels, ending in bloodshed.⁵

"All the Brahmans wear a Cord over the shoulder, consisting of three black twists of cotton, each of them formed of several smaller threads. . . . The three threads are not twisted together, but separate from one another, and hang from the left shoulder to the right haunch. When a Brahman marries, he mounts nine threads instead of three." Children were invested with these sacred cords at the age of from 7 to 9. The cords had to be made and put on with much ceremony, and only Brahmans could make them. According to Dubois, the material was cotton; he does not allude to buckskin.⁶

Coleman⁷ gives a detailed description of the manner in which the sacred thread of the Brahmans is made:

The sacred thread must be made by a Brahman. It consists of three strings, each ninety-six hands (forty-eight yards), which are twisted together: it is then folded into three and again twisted; these are a second time folded into the same number and tied at each end in knots. It is worn over the left shoulder (next the skin, extending half way down the right thigh), by the Brahmans, Ketrices and Vaisya castes. The first are usually invested with it at eight years of age, the second at eleven, and the Vaisya at twelve. . . . The Hindus of the Sutra caste do not receive the poita.

The ceremony of investiture comprehends prayer, sacrifice, fasting, etc., and the wearing of a preliminary poita "of three threads, made of the fibers of the *suru*, to which a piece of deer's skin is fastened."⁸ This piece of buckskin was added no doubt in order to let the neophyte

¹ Forlong, *Rivers of Life*, vol. 1, p. 328.

² *Ibid.*, p. 323.

³ Dubois, *People of India*, p. 9.

⁴ *Mythology of the Hindus*.

⁵ *Mythology of the Hindus*, pp. 9, 10, 11.

⁶ *Ibid.*, p. 92.

⁷ *Ibid.*, p. 155.

⁸ *Ibid.*, pp. 135, 154, 155.

Burton¹ alludes to the "enchanted girdle of Venus, in which, saith Natales Comes, . . . all witchcraft to enforce love was contained."

The first general council of Milan, in 1565, prohibited the use of what were called phylacteries, ligatures, and reliquaries (of heathen origin) which people all over Europe were in the habit of wearing at neck or on arms or knees.²

"King James³ enumerates thus: 'Such kinde of charmes as . . . staying married folkes to have naturally adoe with each other, by knitting so many knots upon a point at the time of their marriage.'"⁴

"Tying the point was another fascination, illustrations of which may be found in Reginald Scott's Discourse Concerning Devils and Spirits, p. 71; in the Fifteen Comforts of Marriage, p. 225; and in the British Apollo, vol. 2, No. 35, 1709. In the old play of The Witch of Edmonton, 1658 Young Banks says, 'Ungirt, unbles'd, says the proverb.'"⁵

Frommann speaks of the frequent appearance of knots in witchcraft, but, beyond alluding to the "Nodus Cassioticus" of a certain people near Pelusia, who seem, like the Laplanders, to have made a business of fabricating and selling magic knots, he adds nothing to our stock of information on the subject. He seems to regard the knot of Hercules and the Gordian knot as magical knots.⁶

Bogle mentions the adoration of the Grand Lama (Teshu Lama). The Lama's servants "put a bit of silk with a knot upon it, tied, or supposed to be tied, with the Lama's own hands, about the necks of the votaries."⁷

A girdle of Venus, "possessing qualities not to be described," was enumerated among the articles exhibited at a rustic wedding in England.⁸

In 1519, Torralva, the Spanish magician, was given by his guardian spirit, Zequiel, a "stick full of knots," with the injunction, "shut your eyes and fear nothing; take this in your hand, and no harm will happen to you."⁹ Here the idea evidently was that the power resided in the knots.

"Immediately before the celebration of the marriage ceremony [in Perthshire, Scotland] every knot about the bride and bridegroom (garters, shoe-strings, strings of petticoats, &c.), is carefully loosened."¹⁰

"The precaution of loosening every knot about the new-joined pair is strictly observed [in Scotland], for fear of the penalty denounced in the former volumes. It must be remarked that the custom is observed even in France, *nouer l'aiguillette* being a common phrase for disappointments of this nature."¹¹

¹ Burton, Anatomy of Melancholy, London, 1827, vol. 1, p. 91; vol. 2, p. 290.

² Picart, Cérémonies et Coûtumes, etc., vol. 10, pp. 69-73.

³ Dæmonology, p. 100.

⁴ Brand, Pop. Ant., vol. 3, p. 299.

⁵ Ibid., p. 170.

⁶ Frommann, Tractatus de Fascinatione, Nuremberg, 1675, p. 731.

⁷ Markham, Bogle's mission to Tibet, London, 1876, p. 85.

⁸ Brand, Pop. Ant., vol. 2, p. 149.

⁹ Thomas Wright, Sorcery and Magic, London, 1851, vol. 2, p. 10.

¹⁰ Brand, Pop. Ant., vol. 2, p. 143.

¹¹ Pennant, in Pinkerton, Voyages, vol. 3, p. 382.

In some parts of Germany "a bride will tie a string of flax around her left leg, in the belief that she will thereby enjoy the full blessing of the married state."¹

"There was formerly a custom in the north of England, which will be thought to have bordered very closely upon indecency . . . for the young men present at a wedding to strive, immediately after the ceremony, who could first pluck off the bride's garters from her legs. This was done before the very altar . . . I have sometimes thought this a fragment of the ancient ceremony of loosening the virgin zone, or girdle, a custom that needs no explanation." "It is the custom in Normandy for the bride to bestow her garter on some young man as a favour, or sometimes it is taken from her . . . I am of opinion that the origin of the Order of the Garter is to be traced to this nuptial custom, anciently common to both court and country."²

Grimm quotes from Hincmar of Rheims to show the antiquity of the use for both good and bad purposes of "ligatures," "cum filulis colorum multiplicium."³

To undo the effects of a "ligature," the following was in high repute: "Si quem vobis per noctem cum femina coire non posse, pistillum coronatum sub lecto illius pone."⁴ But a pestle crowned with flowers could be nothing more or less than a phallus, and, therefore, an offering to the god Priapus.

"Owing to a supposed connection which the witches knew between the relations of husband and wife and the mysterious knots, the bridegroom, formerly in Scotland and to the present day in Ireland, presents himself occasionally, and in rural districts, before the clergyman, with all knots and fastenings on his dress loosened, and the bride, immediately after the ceremony is performed, retires to be undressed, and so rid of her knots."⁵

USE OF CORDS AND KNOTS AND GIRDLES IN PARTURITION.

Folk medicine in all regions is still relying upon the potency of mystical cords and girdles to facilitate labor. The following are a few of the many examples which might be presented:

Delivery was facilitated if the man by whom the woman has conceived unties his girdle, and, after tying it round her, unties it, saying: "I have tied it and I will untie it," and then takes his departure.⁶

"Henry, in his History of Britain, vol. 1, p. 459, tells us that 'amongst the ancient Britons, when a birth was attended with any difficulty, they put certain girdles made for that purpose about the women in labour which they imagined gave immediate and effectual relief. Such girdles were kept with care till very lately in many families in the Highlands

¹Hoffman, quoting Friend, in Jour. Am. Folk Lore, 1888, p. 134.

²Brand, Pop. Ant., vol. 2, pp. 127 et seq.

³Grimm, Teutonic Mythology, vol. 3, p. 1174. He also speaks of the "nouer l'aiguillette, *ibid.*, p. 1175.

⁴Saxon Leechdoms, vol. 1, p. xliv.

⁵Black, Folk-Medicine, London, 1883, pp. 185, 186.

⁶Pliny, Nat. Hist., lib. 28, cap. 9.

of Scotland. They were impressed with several mystical figures; and the ceremony of binding them about the woman's waist was accompanied with words and gestures, which showed the custom to have been of great antiquity, and to have come originally from the Druids."¹

"But my girdle shall serve as a riding *knit*, and a fig for all the witches in Christendom."² The use of girdles in labor must be ancient.

"Ut mulier concipiat, homo vir si solvat semicinctum suum et eam præcingat."³ "Certum est quod partum mirabiliter facilius, sive instar cinguli circumdantur corpori." These girdles were believed to aid labor and cure dropsy and urinary troubles.⁴

"The following customs of childbirth are noticed in the *Traité des Superstitions* of M. Thiers, vol. 1, p. 320: 'Lors qu'une femme est prestee d'accoucher, prendre sa ceinture, aller à l'Eglise, *lier la cloche avec cette ceinture* et la faire sonner trois coups afin que cette femme accouche heureusement. Martin de Arles, Archidiaque de Pampelonne (*Tract. de Superstition*) assure que cette superstition est fort en usage dans tout son pays.'⁵

In the next two examples there is to be found corroboration of the views advanced by Forlong that these cords (granting that the principle upon which they all rest is the same) had originally some relation to ophic rites. Brand adds from Levinus Lemnius: "Let the woman that travels with her child (is in her labour) be girded with the skin that a serpent or a snake casts off, and then she will quickly be delivered."⁶ A serpent's skin was tied as a belt about a woman in childbirth." *Inde puerperæ circa collum aut corporem appposito, victoriam in puerperii conflictu habuerunt, citissimeque liberatæ fuerunt.*"⁷

The following examples, illustrative of the foregoing, are taken from Flemming: The skins of human corpses were drawn off, preferably by cobblers, tanned, and made into girdles, called "*Cingula*" or *Chirothecæ*, which were bound on the left thigh of a woman in labor to expedite delivery. The efficacy of these was highly extolled, although some writers recommended a recourse to tiger's skin for the purposes indicated. This "*caro humano*" was euphemistically styled "*mummy*" or "*mumia*" by Von Helmont and others of the early pharmacists, when treating of it as an internal medicament.

There was a "*Cingulum ex corio humano*" bound round patients during epileptic attacks, convulsions, childbirth, etc., and another kind of belt described as "*ex cute humana conficiunt*," and used in contraction of the nerves and rheumatism of the joints,⁸ also bound round the body in cramp.⁹

¹ Brand, *Pop. Ant.*, vol. 2, p. 67.

² *Ibid.*, p. 170.

³ Sextus Placitus, *De Medicamentis ex Animalibus*, Lyons, 1537, pages not numbered, article "*de Puella et Puellæ Virgine*."

⁴ Etmüller, *Opera Omnia*, Lyons, 1690, vol. 2, p. 279, *Schroderii Dilucidati Zoologia*.

⁵ Brand, *Pop. Ant.*, vol. 2, p. 68, footnote.

⁶ *Ibid.*, p. 67.

⁷ Paracelsus, *Chirurgia Minora*, in *Opera Omnia*, Geneva, 1662, vol. 2, p. 70.

⁸ *Ibid.*, p. 174.

⁹ Beckherius, *Medicus Microcosmus*, London, 1660, p. 174.

"The *girdle* was an essential article of dress, and early ages ascribe to it other magic influences: e. g., Thór's divine strength lay in his girdle."¹ In speaking of the belief in lycantrophy he says: "The common belief among us is that the transformation is effected by *tying a strap round the body*; this girth is only three fingers broad, and is cut out of human skin."² Scrofulous tumors were cured by tying them with a linen thread which had choked a viper to death.³ "Filum rubrum seraceum [silk] cum quo strangulata fuit vipera si circumdatur collo angina laborantes, eundem curare dicitur propter idem strangulationis et suffocationis."⁴

"Quidam commendant tanquam specificum, ad Anginam filum purpureum cum quo strangulata fuit vipera, si collo circumdetur."⁵

"MEDIDAS," "MEASURING CORDS," "WRESTING THREADS," ETC.

Black says:⁶ "On the banks of the Ale and the Teviot the women have still a custom of wearing round their necks blue woollen threads or cords till they wean their children, doing this for the purpose of averting ephemeral fevers. These cords are handed down from mother to daughter, and esteemed in proportion to their antiquity. Probably these cords had originally received some blessing."

Black's surmise is well founded. These cords were, no doubt, the same as the "medidas" or measurements of the holy images of Spain and other parts of Continental Europe. "The ribands or serpent symbols [of Our Lady of Montserrat] are of silk, and exactly the span of the Virgin's head, and on them is printed '*medida de la cabeza de Nuestra Señora Maria Santísima de Montserrat*,' i. e., exact head measurement of Our Lady of Montserrat."⁷

These same "medidas" may be found in full vogue in the outlying districts of Mexico to-day. Twenty years ago I saw them at the "funcion" of San Francisco, in the little town of Magdalena, in Sonora. I watched carefully to see exactly what the women did and observed that the statue of St. Francis (which, for greater convenience, was exposed outside of the church, where the devout could reach it without disturbing the congregation within) was measured from head to foot with pieces of ribbon, which were then wrapped up and packed away. In reply to my queries, I learned that the "medida" of the head was a specific for headache, that of the waist for all troubles in the abdominal region, those of the legs, arms, and other parts for the ailments peculiar to each of them respectively. This was in a community almost, if not absolutely, Roman Catholic; but in the thoroughly Protestant neighborhood of Carlisle, Pa., the same superstition exists

¹ Grimm, Teutonic Mythology, vol. 3, p. 1094, footnote.

² Ibid., p. 1096.

³ Pliny, Nat. Hist., lib. 30, cap. 12.

⁴ Etmüller, Opera Omnia, Lyons, 1690, vol. 2, pp. 282, 283, Schroderii Dilucidati Zoologia.

⁵ Ibid., p. 278a.

⁶ Black, Folk-Medicine, London, 1883, p. 113.

⁷ Forlong, Rivers of Life, London, 1883, vol. 2, p. 313.

in full vigor, as I know personally. Three years ago my second child was suffering from the troubles incident to retarded dentition and had to be taken to the mountains at Holly Springs, within sight of Carlisle. I was begged and implored by the women living in the place to have the child taken to "a wise woman" to be "measured," and was assured that some of the most intelligent people in that part of the country were firm believers in the superstition. When I declined to lend countenance to such nonsense I was looked upon as a brutal and unnatural parent, caring little for the welfare of his offspring.

"In John Bale's *Comedye concernynge thre Lawes*, 1538 . . . Hypocrysy is introduced, mentioning the following charms against barrenness:

And as for Lyons, there is the length of our Lorde
In a great pyller. She that will with a coorde
Be fast bound to it, and *take soche chaunce as fall*
Shall sure have chyilde, for within it is hollowe all."¹

When a person in Shetland has received a sprain "it is customary to apply to an individual practiced in casting the 'wrested thread.' This is a thread spun from black wool, on which are cast nine knots, and tied round a sprained leg or arm." It is applied by the medicine-man with the usual amount of gibberish and incantation.² These "wresting or wrested threads" are also to be found among Germans, Norwegians, Swedes, and Flemings.³

Grimm quotes from Chambers's *Fireside Stories*, Edinburgh, 1842, p. 37: "During the time the operator is putting the thread round the afflicted limb he says, but *in such a tone of voice as not to be heard by the bystanders*, nor even by the person operated upon: "The Lord rade, and the foal slade; he lighted, and he righted, set joint to joint, bone to bone, and sinew to sinew. Heal in the Holy Ghost's name!"⁴

"Eily McGarvey, a Donegal wise woman, employs a green thread in her work. She measures her patient three times round the waist with a ribbon, to the outer edge of which is fastened a green thread. . . . She next hands the patient nine leaves of 'heart fever grass,' or dandelion, gathered by herself, directing him to eat three leaves on successive mornings."⁵

Miss Edna Dean Proctor, the poet, told me, June 9, 1887, that some years ago, while visiting relations in Illinois, she met a woman who, having been ill for a long time, had despaired of recovery, and in hope of amelioration had consulted a man pretending to occult powers, who prescribed that she wear next the skin a certain knotted red cord which he gave her.

On a previous page the views of Forlong have been presented, showing that there were reasons for believing that the sacred cords of the

¹ Brand, *Pop. Ant.*, vol. 2, p. 69.

² *Notes and Queries*, 1st series, vol. 4, p. 500.

³ See also Black, *Folk-Medicine*, London, 1883, p. 79.

⁴ Grimm, *Teutonic Mythology*, vol. 3, p. 1233.

⁵ Black, *Folk-Medicine*, London, 1883, p. 114.

Irish of hair cords as we have already seen has been made by the Australians.

The Jewish garment with knots at the corners would appear to have been a prehistoric garment preserved in religious ceremonial; it would seem to be very much like the short blanket cloak, with tufts or knots at the four corners, still made by and in use among the Zuñi, Navajo, Tusayan, and Rio Grande Pueblos. But magic knots were by no means unknown to Jews, Assyrians, or other nations of Syria and Mesopotamia.

"In Memorable Things noted in the Description of the World, we read: About children's necks the wild Irish hung the beginning of St. John's Gospel, a crooked nail of a horseshoe, or a piece of a wolve's skin, and both the sucking child and nurse were girt with girdles finely plaited with woman's hair."¹

Gainsford, in his *Glory of England*, speaking of the Irish, p. 150, says: "They use *incantations* and *spells*, wearing *girdles of woman's hair*, and *locks of their lover's*."

Camden, in his *Ancient and Modern Manners of the Irish*, says that "they are observed to present their lovers with bracelets of women's hair, whether in reference to Venus' cestus or not, I know not."² This idea of a resemblance between the girdle of Venus and the use of the maiden's hair may be worth consideration; on the same page Brand quotes from Beaumont and Fletcher:

Bracelets of our lovers' hair,
Which they on our arms shall twist,

and garters of the women were generally worn by lovers.³

"Chaque habit qu'ils [the Jews] portent doit avoir quatre pands, & à chacun un cordon pendant en forme de houpe, qu'ils nomment Zizit. Ce cordon est ordinairement de huit fils de laine filée exprès pour cela, avec cinq nœuds chacun, qui occupent la moitié de la longueur. Ce qui n'est pas noué étant éfilé acheve de faire une espece de houpe, qu'ils se fassent, dit la Loi, des cordons aux pands de leurs habits."⁴

The following is from Black:⁵

When Marduk [Assyrian god] wishes to comfort a dying man his father Hea says: "Go—

Take a woman's linen kerchief!
Bind it round thy left hand: loose it from the left hand!
Knot it with seven knots: do so twice:
Sprinkle it with bright wine:
Bind it round the head of the sick man:
Bind it round his hands and feet, like manacles and fetters.
Sit round on his bed:
Sprinkle holy water over him.
He shall hear the voice of Hea.
Davkina shall protect him!
And Marduk, Eldest Son of heaven, shall find him a happy habitation."

¹ Brand, *Pop. Ant.*, vol. 2, p. 78.

² *Ibid.*, p. 91.

³ *Ibid.*, p. 93.

⁴ Picart, *Cerémonies et Coûtumes*, etc., vol. 1, p. 41.

⁵ *Folk-Medicine*, London, 1883, pp. 185, 186.

A variant of the same formula is to be found in François Lenormant's *Chaldean Magic*.¹ Lenormant speaks of the Chaldean use of "magic knots, the efficacy of which was so firmly believed in even up to the middle ages."

Again, he says that magic cords, with knots, were "still very common among the Nabathean sorcerers of the Lower Euphrates," in the fourteenth century, and in his opinion the use of these was derived from the ancient Chaldeans. In still another place he speaks of the "magic knots" used by Finnish conjurers in curing diseases.

"The Jewish phylactery was tied in a knot, but more generally knots are found in use to bring about some enchantment or disenchantment. Thus in an ancient Babylonian charm we have—

‘Merodach, the son of Hea, the prince, with his holy hands cuts the knots.

That is to say, he takes off the evil influence of the knots. So, too, witches sought in Scotland to compass evil by tying knots. Witches, it was thought, could supply themselves with the milk of any neighbor's cows if they had a small quantity of hair from the tail of each of the animals. The hair they would twist into a rope and then a knot would be tied on the rope for every cow which had contributed hair. Under the clothes of a witch who was burned at St. Andrews, in 1572, was discovered 'a white claith, like a collore craig, with stringis, wheron was mony knottis vpon the stringis of the said collore craig.' When this was taken from her, with a prescience then wrongly interpreted, she said: 'Now I have no hope of myself.' 'Belyke scho thought,' runs the cotemporary account, 'scho suld not have died, that being vpon her,' but probably she meant that to be discovered with such an article in her possession was equivalent to the sentence of death. So lately as the beginning of the last century, two persons were sentenced to capital punishment for stealing a charm of knots, made by a woman as a device against the welfare of Spalding of Ashintilly."²

"Charmed belts are commonly worn in Lancashire for the cure of rheumatism. Elsewhere, a cord round the loins is worn to ward off toothache. Is it possible that there is any connection between this belt and the cord which in Burmah is hung round the neck of a possessed person while he is being thrashed to drive out the spirit which troubles him? Theoretically the thrashing is given to the spirit, and not to the man, but to prevent the spirit escaping too soon a charmed cord is hung round the possessed person's neck. When the spirit has been sufficiently humbled and has declared its name it may be allowed to escape, if the doctor does not prefer to trample on the patient's stomach till he fancies he has killed the demon."³

"The numerous notices in the folklore of all countries of magic stones, holy girdles, and other nurses' specials, attest the common sympathy of the human race."⁴

¹ P. 41.

² Black, *Folk-Medicine*, p. 186.

³ *Ibid.*, (after Tylor) pp. 176, 177.

⁴ *Ibid.*, p. 178.

This is from Brand:¹ "Devonshire cure for warts. Take a piece of twine, tie in it as many knots as you have warts, touch each wart with a knot, and then throw the twine behind your back into some place where it may soon decay—a pond or a hole in the earth; but tell no one what you have done. When the twine is decayed your warts will disappear without any pain or trouble, being in fact charmed away."

"In our time, the anodyne necklace, which consists of beads turned out of the root of the white Bryony, and which is hung round the necks of infants, in order to assist their teething, and to ward off the convulsions sometimes incident to that process, is an amulet."²

"Rowan, ash, and red thread," a Scotch rhyme goes, "keep the devils frae their speed."³

For the cure of scrofula, grass was selected. From one, two, or three stems, as many as nine joints must be removed, which must then be wrapped in black wool, with the grease in it. The person who gathers them must do so fasting, and must then go, in the same state, to the patient's house while he is from home. When the patient comes in, the other must say to him three times, "I come fasting to bring a remedy to a fasting man," and must then attach the amulet to his person, repeating the same ceremony three consecutive days.⁴

Forlong says: "On the 2d [of May], fearing evil spirits and witches, Scotch farmers used to tie red thread upon their wives as well as their cows, saying these prevented miscarriages and preserved the milk."⁵

In Scotland "they hope to preserve the milk of their cows, and their wives from miscarriage, by tying threads about them."⁶

Brand gives a remedy for epilepsy: "If, in the month of October, a little before the full moon, you pluck a twig of the elder, and cut the cane that is betwixt two of its knees, or knots, in nine pieces, and these pieces, being bound in a piece of linnen, be in a thread so hung about the neck that they touch the spoon of the heart, or the sword-formed cartilage."⁷

Black says:⁸ "To cure warts a common remedy is to tie as many knots on a hair as there are warts and throw the hair away. Six knots of elderwood are used in a Yorkshire incantation to ascertain if beasts are dying from witchcraft. Marcellus commended for sore eyes that a man should tie as many knots in unwrought flax as there are letters in his name, pronouncing each letter as he worked; this he was to tie round his neck. In the Orkneys, the blue thread was used for an evil purpose because such a colour savored of Popery and priests; in the northern counties it was used because a remembrance of its once pre-

¹ Pop. Ant., vol. 3, p. 276.

² Salverte, Philosophy of Magic, vol. 1, p. 195.

³ Black, Folk-Medicine, London, 1883, p. 197.

⁴ Pliny, Nat. Hist., lib. 24, cap. 118.

⁵ Forlong, Rivers of Life, vol. 1, p. 451.

⁶ Pennant, quoted by Brand, Popular Antiquities, vol. 3, p. 54.

⁷ Ibid., p. 285.

⁸ Folk-Medicine, London, 1883, pp. 185, 186.

eminent value still survived in the minds of those who wore it, unconsciously, though still actively, influencing their thoughts. In perhaps the same way we respect the virtue of red threads, because, as Conway puts it, 'red is sacred in one direction as symbolising the blood of Christ.'¹

"To cure ague [Hampshire, England] string nine or eleven snails on a thread, the patient saying, as each is threaded, 'Here I leave my ague.' When all are threaded they should be frizzled over a fire, and as the snails disappear so will the ague."²

Dr. Joseph Lanzoni scoffed at the idea that a red-silk thread could avail in erysipelas; "Neque filum sericum chermisinum parti affectæ circumligatum erysipelata fugat." The word "chermesinum" is not given in Ainsworth's Latin-English Dictionary, but it so closely resembles the Spanish "carnesi" that I have made bold to render it as "red" or "scarlet."³

"Red thread is symbolical of lightning," and is consequently laid on churns in Ireland "to prevent the milk from being bewitched and yielding no butter." "In Aberdeenshire it is a common practice with the housewife to tie a piece of red worsted thread round the cows' tails before turning them out for the first time in the season to grass. It secured the cattle from the evil-eye, elf-shots, and other dangers."⁴ "It [blue] is the sky color and the Druid's sacred colour."⁵ "In 1635, a man in the Orkney Islands was, we are led to believe, utterly ruined by nine knots cast on a blue thread and given to his sister."

"In a curious old book, 12mo., 1554, entitled A Short Description of Antichrist, is this passage: 'I note all their Popishe traditions of confirmation of yonge children with oynting of oyle and creame, and with a ragge knitte about the necke of the younge babe.'⁶

A New England charm for an obstinate ague. "The patient in this case is to take a string made of woollen yarn, of three colors, and to go by himself to an apple-tree; there he is to tie his left hand loosely with the right to the tree by the tri-colored string, then to slip his hand out of the knot and run into the house without looking behind him."⁷

The dust "in which a hawk has bathed itself, tied up in a linen cloth with a red string, and attached to the body,"⁸ was one of the remedies for fevers. Another cure for fever: "Some inclose a caterpillar in a piece of linen, with a thread passed three times round it, and tie as many knots, repeating at each knot why it is that the patient performs that operation."⁹

"To prevent nose-bleeding people are told to this day to wear a skein of scarlet silk thread round the neck, tied with nine knots down the front; if the patient is a man, the silk being put on and the knots tied

¹ Folk-Medicine, London, 1883, p. 113.

² Ibid., p. 57.

³ Ephemeridum Physico-medicearum, Leipzig, 1694, vol. 1, p. 49.

⁴ Black, Folk-Medicine, p. 112.

⁵ Black, Folk-Medicine, p. 112.

⁶ Brand, Pop. Ant., vol. 2, p. 86.

⁷ Black, Folk-Medicine, p. 38.

⁸ Pliny, Nat. Hist., lib. 30, cap. 22.

⁹ Ibid.

by a woman; and if the patient is a woman, then these good services being rendered by a man."¹

A cord with nine knots in it, tied round the neck of a child suffering from whooping cough, was esteemed a sovereign remedy in Worcester, England, half a century ago.

Again, references will be found to the superstitious use of "ligatures" down to a comparatively recent period, and "I remember it was a custom in the north of England for boys that swam to wear an eel's skin about their naked leg to prevent the cramp."²

THE MEDICINE HAT.

The medicine hat of the old and blind Apache medicine-man, Nanta-do-tash, was an antique affair of buckskin, much begrimed with soot and soiled by long use. Nevertheless, it gave life and strength to him who wore it, enabled the owner to peer into the future, to tell who had stolen ponies from other people, to foresee the approach of an enemy, and to aid in the cure of the sick. This was its owner's own statement in conversation with me, but it would seem that the power residing in the helmet or hat was not very permanent, because when the old man discovered from his wife that I had made a rude drawing of it he became extremely excited and said that such a delineation would destroy all the life of the hat. His fears were allayed by presents of money and tobacco, as well as by some cakes and other food. As a measure of precaution, he insisted upon sprinkling pinches of hoddentin over myself, the hat, and the drawing of it, at the same time muttering various half-articulate prayers. He returned a month afterwards and demanded the sum of \$30 for damage done to the hat by the drawing, since which time it has ceased to "work" when needed.

This same old man gave me an explanation of all the symbolism depicted upon the hat and a great deal of valuable information in regard to the profession of medicine-men, their specialization, the prayers they recited, etc. The material of the hat, as already stated, was buckskin. How that was obtained I can not assert positively, but from an incident occurring under my personal observation in the Sierra Madre in Mexico in 1883, where our Indian scouts and the medicine-men with them surrounded a nearly grown fawn and tried to capture it alive, as well as from other circumstances too long to be here inserted, I am of the opinion that the buckskin to be used for sacred purposes among the Apache must, whenever possible, be that of a strangled animal, as is the case, according to Dr. Matthews, among the Navajo.

The body of Nanta-do-tash's cap (Fig. 434, p. 503) was unpainted, but the figures upon it were in two colors, a brownish yellow and an earthy blue, resembling a dirty Prussian blue. The ornamentation was of the downy feathers and black-tipped plumes of the eagle, pieces of abalone shell, and chahchihuitl, and a snake's rattle on the apex.

¹ Black, Folk-Medicine, p. 111.

² Brand, Pop. Ant., vol. 3, pp. 288, 324.

Nan-ta-do-tash explained that the characters on the medicine hat meant: A, clouds; B, rainbow; C, hail; E, morning star; F, the God of Wind, with his lungs; G, the black "kan"; H, great stars or suns.

"Kan" is the name given to their principal gods. The appearance of the kan himself and of the tail of the hat suggest the centipede, an important animal god of the Apache. The old man said that the figures represented the powers to which he appealed for aid in his "medicine" and the kan upon whom he called for help. There were other doctors with other medicines, but he used none but those of which he was going to speak to me.

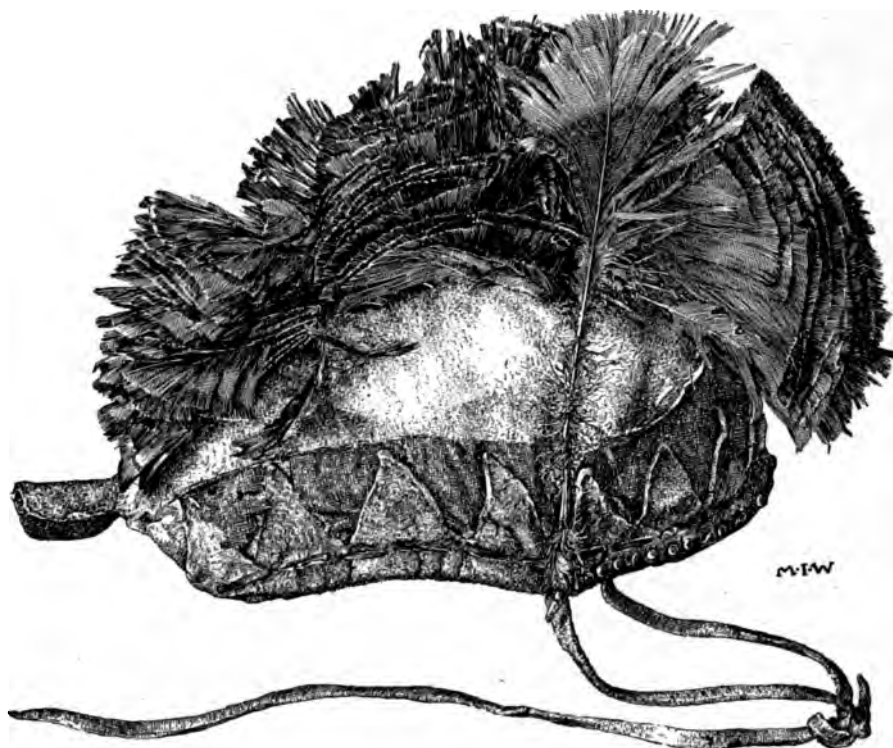


FIG. 440.—Apache war bonnet.

When an Apache or other medicine-man is in full regalia he ceases to be a man, but becomes, or tries to make his followers believe that he has become, the power he represents. I once heard this asserted in a very striking way while I was with a party of Apache young men who had led me to one of the sacred caves of their people, in which we came across a great quantity of ritualistic paraphernalia of all sorts.

"We used to stand down here," they said, "and look up to the top of the mountain and see the kan come down." This is precisely what the people living farther to the south told the early Spanish missionaries.

The Mexicans were wont to cry out "Here come our gods!" upon seeing their priests masked and disguised, and especially when they had donned the skins of the women offered up in sacrifice.¹

The headdresses worn by the gods of the American Indians and the priests or medicine-men who served them were persistently called "miters" by the early Spanish writers. Thus Quetzalcoatl wore "en la cabeza una Mitra de papel puntiaguda."² When Father Felician Lopez went to preach to the Indians of Florida, in 1697, among other matters of record is one to the effect that "the chief medicine man called himself bishop."³ Possibly this title was assumed because the medicine-men wore "miters."

Duran goes further than his fellows. In the headdress used at the spirit dances he recognizes the tiara. He says that the Mexican priests at the feast of Tezcatlipoca wore "en las cabezas tiaras hechas de barrillas."⁴ The ghost dance headdress illustrated in this paper (Fig. 441) is known to the Chiricahua Apache as the "ich-te," a contraction from "chas-a-i-wit-te," according to Ramon, the old medicine-man from whom



FIG. 441.—Ghost-dance headdress.

I obtained it. He explained all the symbolism connected with it. The round piece of tin in the center is the sun; the irregular arch underneath it is the rainbow. Stars and lightning are depicted on the side slats and under them; the parallelograms with serrated edges are clouds; the pendant green sticks are rain drops; there are snakes and snake heads on both horizontal and vertical slats, the heads in the former case being representative of hail.

There are feathers of the eagle to conciliate that powerful bird, turkey feathers to appeal to the mountain spirits, and white gull feathers for the spirits of the water. There are also small pieces of nacreous shells and one or two fragments of the "duklij," or chalehivuitl, without which no medicine-man would feel competent to discharge his functions.

The spirit dance itself is called "cha-ja-la." I have seen this dance a number of times, but will confine my description to one seen at Fort

¹ This fact is stated by Torquemada, *Monarchia Indiana*, lib. 10, cap. 33, and by Gomara, *Hist. of the Conq. of Mexico*, p. 446; see also Diego Duran, lib. 1, cap. 20, p. 226.

² Herrera, dec. 3, lib. 2, p. 67.

³ John Gilmary Shea, *The Catholic Church in Colonial Days*, p. 472.

⁴ Diego Duran, vol. 3, cap. 4, p. 217.

Marion (St. Augustine, Fla.), in 1887, when the Chiricahua Apache were confined there as prisoners; although the accompanying figure represents a ghost dance headdress seen among the Apache in the winter of 1885. A great many of the band had been suffering from sickness of one kind or another and twenty-three of the children had died; as a consequence, the medicine-men were having the *Cha-ja-la*, which is entered into only upon the most solemn occasions, such as the setting out of a war party, the appearance of an epidemic, or something else of like portent. On the terreplein of the northwest bastion, Ramon, the old medicine-man, was violently beating upon a drum, which, as usual, had been improvised of a soaped rag drawn tightly over the mouth of an iron kettle holding a little water.

Although acting as master of ceremonies, Ramon was not painted or decorated in any way. Three other medicine-men were having the finishing touches put to their bodily decoration. They had an under-coating of greenish brown, and on each arm a yellow snake, the head toward the shoulder blade. The snake on the arm of one of the party was double-headed, or rather had a head at each extremity.

Each had insignia in yellow on back and breast, but no two were exactly alike. One had on his breast a yellow bear, 4 inches long by 3 inches high, and on his back a kan of the same color and dimensions. A second had the same pattern of bear on his breast, but a zigzag for lightning on his back. The third had the zigzag on both back and breast. All wore kilts and moccasins.

While the painting was going on Ramon thumped and sang with vigor to insure the medicinal potency of the pigments and the designs to which they were applied. Each held, one in each hand, two wands or swords of lathlike proportions, ornamented with snake-lightning in blue.

The medicine-men emitted a peculiar whistling noise and bent slowly to the right, then to the left, then frontward, then backward, until the head in each case was level with the waist. Quickly they spun round in full circle on the left foot; back again in a reverse circle to the right; then they charged around the little group of tents in that bastion, making cuts and thrusts with their wands to drive the maleficent spirits away.

It recalled to my mind the old myths of the angel with the flaming sword guarding the entrance to Eden, or of St. Michael chasing the discomfited Lucifer down into the depths of Hell.

These preliminaries occupied a few moments only; at the end of that time the medicine-men advanced to where a squaw was holding up to them a little baby sick in its cradle. The mother remained kneeling while the medicine-men frantically struck at, upon, around, and over the cradle with their wooden weapons.

The baby was held so as successively to occupy each of the cardinal points and face each point directly opposite; first on the east side, facing the west; then the north side, facing the south; then the west side,

facing the east; then the south side, facing the north, and back to the original position. While at each position, each of the medicine-men in succession, after making all the passes and gestures described, seized the cradle in his hands, pressed it to his breast, and afterwards lifted it up to the sky, next to the earth, and lastly to the four cardinal points, all the time prancing, whistling, and snorting, the mother and her squaw friends adding to the dismal din by piercing shrieks and ululations.

That ended the ceremonies for that night so far as the baby personally was concerned, but the medicine-men retired down to the parade and resumed their saltation, swinging, bending, and spinning with such violence that they resembled, in a faint way perhaps, the Dervishes of the East. The understanding was that the dance had to be kept up as long as there was any fuel unconsumed of the large pile provided; any other course would entail bad luck. It was continued for four nights, the colors and the symbols upon the bodies varying from night to night. Among the modes of exorcism enumerated by Burton, we find "cutting the air with swords."¹ Picart speaks of the "*flèches ou les baguettes dont les Arabes Idolâtres se servoient pour deviner par le sort.*" He says that the diviner "*tenoit à la main*" these arrows, which certainly suggest the swords or wands of the Apache medicine-men in the spirit dance.²

There were four medicine-men, three of whom were dancing and in conference with the spirits, and the fourth of whom was general superintendent of the whole dance, and the authority to whom the first three reported the result of their interviews with the ghostly powers.

The mask and headdress of the first of the dancers, who seemed to be the leading one, was so elaborate that in the hurry and meager light supplied by the flickering fires it could not be portrayed. It was very much like that of number three, but so fully covered with the plumage of the eagle, hawk, and, apparently, the owl, that it was difficult to assert this positively. Each of these medicine-men had pieces of red flannel tied to his elbows and a stick about four feet long in each hand. Number one's mask was spotted black and white and shaped in front like the snout of a mountain lion. His back was painted with large arrowheads in brown and white, which recalled the protecting arrows tightly bound to the backs of Zuñi fetiches. Number two had on his back a figure in white ending between the shoulders in a cross. Number three's back was simply whitened with clay.

All these headdresses were made of slats of the Spanish bayonet, unpainted, excepting that on number two was a figure in black, which could not be made out, and that the horizontal crosspieces on number three were painted blue.

The dominos or masks were of blackened buckskin, for the two fastened around the neck by garters or sashes; the neckpiece of number three was painted red; the eyes seemed to be glass knobs or brass

¹ Anatomy of Melancholy, London, 1827, vol. 1, p. 337.

² Picart, Cérémonies et Coûtumes, etc., Amsterdam, 1729, vol. 5, p. 50.

buttons. These three dancers were naked to the waist, and wore beautiful kilts of fringed buckskin bound on with sashes, and moccasins reaching to the knees. In this guise they jumped into the center of the great circle of spectators and singers and began running about the fire shrieking and muttering, encouraged by the shouts and the singing, and by the drumming and incantation of the chorus which now swelled forth at full lung power.

THE SPIRIT OR GHOST DANCE HEADDRESS.

As the volume of music swelled and the cries of the on-lookers became fiercer, the dancers were encouraged to the enthusiasm of frenzy. They darted about the circle, going through the motions of looking for an enemy, all the while muttering, mumbling, and singing, jumping, swaying, and whirling like the dancing Dervishes of Arabia.

Their actions, at times, bore a very considerable resemblance to the movements of the Zuñi Shálako at the Feast of Fire. Klashidn told me that the orchestra was singing to the four willow branches planted near them. This would indicate a vestige of tree worship, such as is to be noticed also at the sun dance of the Sioux.

At intervals, the three dancers would dart out of the ring and disappear in the darkness, to consult with the spirits or with other medicine-men seated a considerable distance from the throng. Three several times they appeared and disappeared, always dancing, running, and whirling about with increased energy. Having attained the degree of mental or spiritual exaltation necessary for communion with the spirits, they took their departure and kept away for at least half an hour, the orchestra during their absence rendering a mournful refrain, monotonous as a funeral dirge. My patience became exhausted and I turned to go to my quarters. A thrill of excited expectancy ran through the throng of Indians, and I saw that they were looking anxiously at the returning medicine-men. All the orchestra now stood up, their leader (the principal medicine-man) slightly in advance, holding a branch of cedar in his left hand. The first advanced and bending low his head murmured some words of unknown import with which the chief seemed to be greatly pleased. Then the chief, taking his stand in front of the orchestra on the east side of the grove or cluster of trees, awaited the final ceremony, which was as follows: The three dancers in file and in proper order advanced and receded three times; then they embraced the chief in such a manner that the sticks or wands held in their hands came behind his neck, after which they mumbled and muttered a jumble of sounds which I can not reproduce, but which sounded for all the world like the chant of the "hooter" at the Zuñi Feast of Fire. They then pranced or danced through the grove three times. This was repeated for each point of the compass, the chief medicine-man, with the orchestra, taking a position successively on the east, south, west, and north and the three dancers advancing, receding, and embracing as at first.

This terminated the "medicine" ceremony of the evening, the glad shouts of the Apache testifying that the incantations of their spiritual leaders or their ceremony, whichever it was, promised a successful



FIG. 10.—MEDICINE-MEN OF THE APACHE.

rainfall. These dances were, I believe, danced up to sunset, their goals or ends not yet reached, with representing their aspect, or ends, taken for their.



AMULETS AND TALISMANS.

THE "TZI-DALTAI."

The Apache, both men and women, wear amulets, called tzi-daltai, made of lightning-riven wood, generally pine or cedar or fir from the mountain tops, which are highly valued and are not to be sold. These are shaved very thin and rudely cut in the semblance of the human form. They are in fact the duplicates, on a small scale, of the rhombus, already described. Like the rhombus, they are decorated with incised lines representing the lightning. Very often these are to be found attached to the necks of children or to their cradles. Generally these amulets are of small size.



FIG. 143.—Tzi-daltai amulet (Apache).

Below will be found figures of those which I was permitted to examine and depict in their actual size. They are all unpainted. The amulet represented was obtained from a Chiricahua Apache captive. Deguele, an Apache of the Klukaydakaydn clan, consented to exhibit a kan, or god, which he carried about his person. He said I could have it for three ponies. It was made of a flat piece of lath, unpainted, of the size here given, having drawn upon it this figure in yellow, with a narrow black band, excepting the three snake heads, *a*, *b*, and *c*, which were black with white eyes; *a* was a yellow line and *c* a black line; flat pearl buttons were fastened at *m* and *k* respectively and small eagle-down feathers at *k* on each side of the idol. The rear of the tablet, amulet, or idol, as one may be pleased to call it, was almost an exact reproduction of the front.

The owner of this inestimable treasure assured me that he prayed to it at all times when in trouble, that he could learn from it where his ponies were when stolen and which was the right direction to travel when lost, and that when drought had parched his crops this would never fail to bring rain in abundance to revive and strengthen them. The symbolism is the rain cloud and the serpent lightning, the rainbow, rain drops, and the cross of the four winds.

These small amulets are also to be found inclosed in the phylacteries (Fig. 447) which the medicine-men wear suspended from their necks or waists.

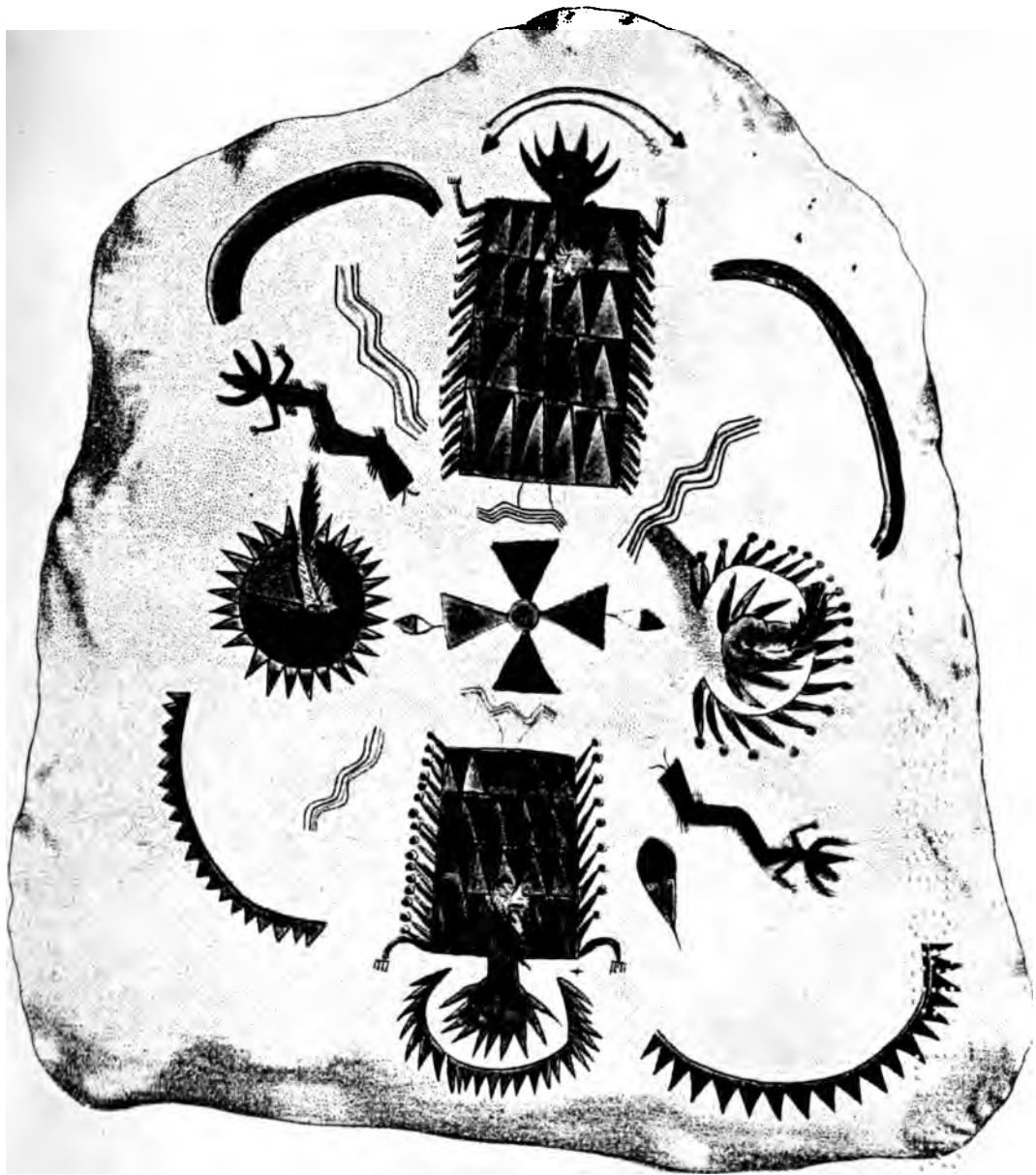
Sir Walter Scott, who was a very good witness in all that related to prehistoric customs and "survivals" among the Celtic Scots, may be introduced at this point:

A heap of wither'd boughs was piled
Of juniper and rowan wild,
Mingled with shivers from the oak,
Rent by the lightning's recent stroke.¹

¹Lady of the Lake, canto 3, stanza 4, Sir Rhoderick Dhu, summoning Clan Alpine against the king.

!

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APACHE MEDICINE SHIRT.





before he joined that of Cortes to Mexico.¹ Diaz says that Montezuma sent to Charles V, as a present "a few chalchihuis of such enormous value that I would not consent to give them to any one save to such a powerful emperor as yours."² These stones were put "in the mouth of the distinguished chiefs who died."³

Torquemada⁴ repeats the Aztec myth already given from Mendieta. He says that in 1537 Fray Antonio de Ciudad-Rodrigo, provincial of the Franciscans, sent friars of his order to various parts of the Indian country; in 1538 he sent them to the north, to a country where they heard of a tribe of people wearing clothes and having many turquoises.⁵ The Aztec priesthood adopted green as the sacred color. The ceremony of their consecration ended thus: "puis on l'habillait tout en vert."⁶

Maximilian, Prince of Wied, saw some of the Piegaus of northwestern Montana "hang round their necks a green stone, often of various shapes." He describes it as "a compact talc or steatite which is found in the Rocky Mountains."⁷

PHYLACTERIES.

The term phylactery, as herein employed, means any piece of buckskin or other material upon which are inscribed certain characters or symbols of a religious or "medicine" nature, which slip or phylactery is to be worn attached to the person seeking to be benefited by it, and this phylactery differs from the amulet or talisman in being concealed from the scrutiny of the profane and kept as secret as possible. This phylactery, itself "medicine," may be employed to enwrap other "medicine" and thus augment its own potentiality. Indians in general object to having their "medicine" scrutinized and touched; in this there is a wide margin of individual opinion; but in regard to phylacteries there is none that I have been able to discover, and the rule may be given as antagonistic to the display of these sacred "relics," as my Mexican captive interpreter persisted in calling them.

The first phylactery which it was my good fortune to be allowed to examine was one worn by Ta-ul-tzu-je, of the Kaytzentin gens. It was tightly rolled in at least half a mile of orange-colored saddlers' silk, obtained from some of the cavalry posts. After being duly uncovered, it was found to be a small piece of buckskin two inches square, upon which were drawn red and yellow crooked lines which the Apache said represented the red and yellow snake. Inside were a piece of green chalchihuitl and a small cross of lightning-riven twig (pine) and two very small perforated shells. The cross was called "intchi-dijin," the black wind.

A second phylactery which I was also allowed to untie and examine

¹ London, 1844, vol. 1, pp. 26, 29, 36, 93.

² *Ibid.*, p. 278.

³ *Ibid.*, vol. 2, p. 389.

⁴ *Monarchia Indiana*, lib. 6, cap. 45, p. 80.

⁵ *Ibid.*, lib. 19, cap. 22, pp. 357-358.

⁶ Ternaux-Compans, vol. 10, p. 240.

⁷ London, 1843, p. 248.

1. The first part of the document is a list of names and addresses, including "John Doe, 123 Main St, New York, NY 10001".

as was the case. I had obtained from cliff dwellings, sacred caves, and other places beads of talc, of chalchihuitl, and of shell, pieces of crystal and other things, sacred in the eyes of the Apache, and these I was compelled to barter for the information here given.

The medicine shirts of the Apaches, several of which are here represented, do not require an extended description. The symbolism is different for each one, but may be generalized as typical of the sun, moon, stars, rainbow, lightning, snake, clouds, rain, hail, tarantula, centipede, snake, and some one or more of the "kan" or gods.

The medicine sashes follow closely in pattern the medicine shirts, being smaller in size only, but with the same symbolic decoration. Similar ornamentation will be found upon the amulets (ditzi), made of lightning-struck pine or other wood. All of these are warranted, among other virtues, to screen the wearer from the arrows, lances, or bullets of the enemy. In this they strongly resemble the salves and other means by which people in Europe sought to obtain "magical impenetrability." The last writer to give receipts for making such salves, etc., that I can recall, was Etmüller, who wrote in the early years of the seventeenth century.

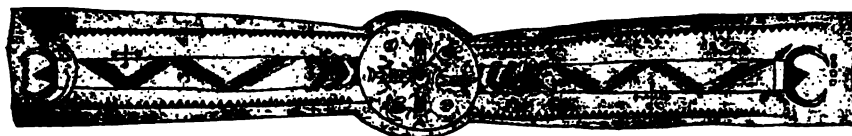


FIG. 448.—Apache medicine sash.

Such as the reader can imagine the medicine-man to be from this description of his paraphernalia, such he has been since the white man first landed in America. Never desirous of winning proselytes to his own ideas, he has held on to those ideas with a tenacity never suspected until purposely investigated. The first of the Spanish writers seem to have employed the native terms for the medicine-men, and we come across them as *cemis* or *zemis*, *bohiti*, *pachuaci*, and others; but soon they were recognized as the emissaries of Satan and the preachers of witchcraft, and henceforth they appear in the documents as "hechicheros" and "brujos" almost exclusively. "Tienan los Apaches profetas ó adivinos que gozan de la mas alta estimacion. Esos adivinos pratican la medicina lamas rudimental, la aplicacion de algunas yerbas y esto acompañado de ceremonias y cantos supersticiosos."¹ Pimentel seems to have derived his information from Cordero, a Spanish officer who had served against the Apache at various times between 1770 and 1795, and seemed to understand them well.

"There was no class of persons who so widely and deeply influenced the culture and shaped the destiny of the Indian tribes as their priests. In attempting to gain a true conception of the race's capacities and

¹ Pimentel, *Lenguas Indígenas de México*, vol. 3, pp. 498, 499.

ventriloquism, music, and then, when they return to their own people, each will despise the fraud of the medicine-men and be a focus of growing antagonism to their pretensions. Teach them to love their own people and not to despise them; but impress upon each one that he is to return as a missionary of civilization. Let them see that the world is free to the civilized, that law is liberty.

BIBLIOGRAPHY.

- Beaumont, Jean.**
Statistique naturelle et morale des Indes, tant Orientales qu'Occidentales. . . . Comparaison en Chiffres par Joseph Beaumont, & Traduction Française par Robert Esparbillon Gournay. Paris: 1801.
- Beale, James.**
History of the American Indians. London: 1775.
- Beaumont and Beagle.**
Narrative of the surveying voyage of his majesty's ships Adventure and Beagle. Vols. I-III. London: 1803.
- Beaumont, Francisco Javier.**
Historia de la compania de Jesus en Nueva-España. Vols. I-III. Mexico: 1842-52.
- Beaumont, José de.**
Relaciones de la Historia de los Indios del Peru. Lima: 1821.
- Beaumont Researches or transactions of the society instituted in Bengal, etc. Vols. VII and VIII.** Calcutta: 1801-36.
- Beckley, E.**
An account of the Natives of New Mexico. (In Schölerer's, *Indian Tribes*, IV, pp. 209-215. Philadelphia: 1854.)
- Beckert, Jacob.**
An account of the aboriginal inhabitants of the Californian peninsula. (In *Smithsonian Reports for 1850 and 1851.* Washington: 1854-55.)
- Beckley, Frank.**
Anthropological notes on the human race in America. (Anthropologist I, pp. 1-7. Washington: January 1899.)
- Beckley, Samuel W.**
The Iroquois Indians, their origin in the East and migration west of the Rocky mountains. Vol. I. III. Toronto: 1860.
 1861. New York: 1860.
- Beckley, Sigismund.**
Beaumont de Paris. (Festschrift XV of the Gesellschaft der Freunde.) Leipzig: 1846.
- Beckley, Robert H.**
Beaumont de Paris. (In *Journal of the American Anthropological Association*, Vol. I, pp. 1-12.)
- Beckley, Gabriel de La Roche de.**
Historia de la compania de Jesus en Nueva-España. (In *Historia de la Compania de Jesus en Nueva-España*, Vol. I, pp. 1-12.)
- Beckerley, Daniel.**
Beaumont de Paris. London: 1801.
- Benjamin, G. W.**
Peru. London: 1857.
- Benson, Christian.**
History of the New World. New York: translated and edited by Rear-Admiral W. H. Smyth. (Formerly Hakluyt Society's Works, vol. 21. London: 1857.)
- Bentley, William G.**
Palaestine: a chapter in the history of culture. London: 1897.
- Bentley, Thomas.**
Towns of land and customs of nations. London: 1854.
- Bentley, Carl.**
The land hunters of Borneo. London: 1897.
- Bentley, George.**
See Mackinnon, Clement E.
- Bentley, William.**
Antiquities, ethnological and other researches in New Granada, Ecuador, Peru, and Chile. London: 1860.
- Bentley, Germaine.**
Chimipitshik. (In Robinson, *Life in California*, New York: 1861.)
- Bentley, John G.**
Snake dance of the Moquis of Arizona. New York: 1894.
- Bentley, John G.**
Sentinel rites of all nations. Washington: 1891.
- Bentley, John.**
Observations on the popular antiquities of Great Britain. Vols. I-III. London: 1801, 02.
- Bentley de Bourbourg.**
Historie des nations civilisées de Mexique et de l'Amérique Centrale. Vols. I-IV. Paris: 1857-58.
- Bentley de Bourbourg.**
See Paper 14.
- Bentley, Daniel G.**
Myths of the New World. New York: 1896.
- Bentley, Thomas.**
Beaumont de Paris. (In *Vol. II of his works.*) London: 1857.
- Bentley, James.**
Beaumont de Paris. (In *Vol. III of his works.*) London: 1857.
- Bentley, Henry Thomas.**
Beaumont de Paris. (In *Vol. II of his works.*) London: 1857.



- Burton, Richard F.**
A mission to Gelele, king of Dahome. Vols. I-II. London: 1864.
- Burton, Richard F.**
A plain and literal translation of the Arabian nights' entertainments, now entitled the book of the thousand nights and a night. Vol. VIII. London: [1886.]
- Burton, Robert.**
The anatomy of melancholy. what it is, with all the kinds, causes, symptoms, prognostics, and several cures of it. By Democritus Junior. Vols. I-II. London: 1827.
- Cabeza de Vaca, Alvar Nuñez.**
Relation et naufrages; Valladolid, 1555. (In Vol. VII of Ternaux-Compans, Voyages. Paris: 1837.)
- Cabeza de Vaca, Alvar Nuñez.**
See Smith, Buckingham.
- Cameron, Verney L.**
Across Africa. Vols. I-II. London: 1877.
- Campbell, Archibald.**
A voyage round the world, from 1806 to 1812. Second American edition. New York: 1819.
- Catlin, George.**
Illustrations of the manners, customs, and condition of the North American Indians. Vols. I-II. London: 1845.
- Catlin, George.**
O-kee-pa: A religious ceremony, and other customs of the Mandans. Philadelphia: 1867.
- Charlevoix, Pierre F. X. de.**
History and general description of New France. Translated, with notes, by John Gilmery Shea. Vol. IV. New York: 1870.
- Clavigero, Francisco Saverio.**
History of Mexico. Translated by Charles Cullen. Vols. I-III. Philadelphia: 1817.
- Cockayne, Oswald.**
Leechdoms, wortounning, and starcraft of early England. Vol. I. London: 1864.
- Coleccion de documentos inéditos, relativos al descubrimiento, conquista y organizacion de las antiguas posesiones Españolas de América y Oceanía.** Vol. XIV. Madrid: 1870.
- Coleman, Charles.**
Mythology of the Hindus. London: 1832.
- Columbus, Christopher.**
Select letters of. Translated and edited by R. H. Major. (Forms Vol. II of Hakluyt Society's Works, London: 1847.)
- Corbushier, William F.**
The Apache-Yumas and Apache-Mohaves. (In American Antiquarian, Chicago: September and November, 1886.)
- Coxe, William.**
Account of Russian discoveries between Asia and America. London: 1803.
- Crantz, David.**
The history of Greenland: containing a description of the country, and its inhabitants. Vols. I-II. London: 1767.
- Crónica seráfica y apostólica.** Espinosa (Mexico): 1746.
- Cushing, Frank H.**
A study of Pueblo pottery as illustrative of Zuni culture growth. (In Ann. Rep. Bu. Ethnology, 1882-'83, pp. 467-521, Washington: 1886.)
- Dall, William H.**
Masks, labrets, and certain aboriginal customs. (In Ann. Rep. Bu. of Ethnology, 1881-'82, Washington: 1884.)
- Davis, T. W. Rhys.**
See Hibbert Lectures, 1881.
- Davis, W. W. H.**
Spanish conquest of New Mexico. Doylestown (Pa.): 1869.
- Deane, J. B.**
Serpent worship. London: 1833.
- Delano, Amasa.**
Voyage. Boston: 1847.
- Dennys, N. B.**
The folk-lore of China, and its affinities with that of the Aryan and Semitic races. London and Hongkong: 1876.
- Diaz del Castillo, Bernal.**
The memoirs of. Written by himself, containing a true and full account of the discovery and conquest of Mexico and New Spain. Translated by John I. Lockhart. Vols. I-II. London: 1844.
- Dillon, P.**
Narrative and successful result of a voyage in the south seas to ascertain the actual fate of La Perouse's expedition. Vols. I-II. London: 1829.
- Dobrizhoffer, Martin.**
An account of the Abipones, an equestrian people of Paraguay. Vol. I-III. London: 1822.
- Dodge, Richard I.**
Our wild Indians: thirty-three years' personal experience among the red men of the great West. Hartford (Conn.): 1882.
- Domenech, Em.**
Seven years' residence in the great deserts of North America. Vols. I-II. London: 1860.
- Dorman, Bushton M.**
Origin of primitive superstitions. Philadelphia: 1881.
- Dubois, J. A.**
Description of the character, manners, and customs of the people of India. London: 1817.
- Du Cange, Charles du F.**
Glossarium ad scriptores medie et infimæ Latinitatis. Vols. I-VI. Paris: 1733.
- Du Halde, P.**
The general history of China. Containing a geographical, historical, chronological, political, and physical description of the empire of China, Chinese-Tartary, Corea, and Thibet. Vols. I. II. IV. London: 1836.
- Dulaure, J. A.**
Histoire abrégée de différens cultes. Vols. I-II. Paris: 1825.

- Harmon, Daniel W.**
Journal of voyages and travels in the interior of North America. Andover: 1820.
- Harris, W. Cornwallis.**
The highlands of Æthiopia. Vols. I-III. London: 1844.
- Hatch, Edwin.**
See Hibbert Lectures, 1888.
- Hawkesworth, John.**
An account of the voyages undertaken by the order of his present majesty for making discoveries in the southern hemisphere. Vols. I-III. London: 1773.
- Heath, Perry S.**
A Hoosier in Russia. New York: 1888.
- Henderson, John G.**
Aboriginal remains near Naples, Illinois. (In Smithsonian Institution Ann. Rep. for 1882, Washington: 1884.)
- Hennepin, Louis.**
See French, B. F.
- Herrera, Antonio de.**
Historia general de los hechos de los Castellanos en las islas i tierra firme del mar Oceano. Vols. I-V. Madrid: 1726-30.
- Hibbert Lectures, 1879.**
On the origin and growth of religion as illustrated by the religion of ancient Egypt. by P. Le Page Renouf. London: 1880.
- Hibbert Lectures, 1881.**
On the origin and growth of religion as illustrated by some points in the history of Indian Buddhism. by T. W. Rhys Davis. New York: 1882.
- Hibbert Lectures, 1888.**
The influence of Greek ideas and usages upon the Christian church. by Edwin Hatch. London: 1890.
- Higgins, Godfrey.**
Anacalypsis, an attempt to draw aside the veil of the Saitic Isis. Vol. I-II. London: 1836.
- Hind, Henry Youle.**
Narrative of the Canadian Red River exploring expedition of 1857 and of the Assiniboine and Saskatchewan exploring expedition of 1858. Vols. I-II. London: 1860.
- Hoffman, Walter J.**
Folk-lore of the Pennsylvania Germans. (In Jour. of Am. Folk-Lore, vol. I, No. 2, Boston: 1888.)
- Hone, William.**
Every-day book and table book. Vol. II. London: 1838.
- Humboldt, Alexander de.**
Researches concerning the institutions and monuments of the ancient inhabitants of America. Translated by Helen Maria Williams. Vol. I. London: 1814.
- Icazabalceca, Joaquin G.**
See Mendieta, Gerónimo de.
- Iconographic Encyclopædia.**
Prehistoric archeology by Daniel G. Brinton. History of culture translated from the German of Dr. J. L. August von Eye. Vol. II. Philadelphia: 1886.
- Inman, Thomas.**
Ancient faiths embodied in ancient names: or an attempt to trace the religious belief, sacred rites, and holy emblems of certain nations. Vols. I-II. London and Liverpool: 1868-69.
- James, Edwin.**
See Tanner, John.
- Jarvis, Samuel F.**
Discourse on the religion of the Indian tribes of North America. (In Collections of N. Y. Hist. Soc. for 1821, vol. III, New York: 1821.)
- Joutel.**
See French, B. F.
- Kaue, Paul.**
Wanderings of an artist among the Indians of North America. London: 1859.
- Kelly, Fanny.**
Narrative of my captivity among the Sioux Indians. Cincinnati: 1871.
- Kenson, George.**
Tent life in Siberia. New York and London: 1848.
- King, Edward (Lord Kingsborough).**
Antiquities of Mexico: comprising facsimiles of ancient Mexican paintings and hieroglyphics. Vols. I-IX. London: 1831-48.
- King, P. P. (and others).**
Narrative of the surveying voyages of the *Adventure* and *Beagle*, between the years 1826 and 1836. Vols. I-III. London: 1839.
- Kingsborough.**
See King, Edward.
- Knox, J.**
A new collection of voyages, discoveries, and travels. Printed for J. Knox. Vol. II. London: 1767.
- Kohl, J. G.**
Kitchi-gami. Wanderings around Lake Superior. London: 1860.
- Kotzebue, Otto von.**
A voyage of discovery into the South Sea and Beering's Straits. Vols. I-III. London: 1821.
- Kraskenninikoff, S.**
History of Kamtschatka, and the Kurilski islands, with the countries adjacent. Translated by James Grieve. Gloucester: 1764.
- Laet, Joannes de.**
L'histoire du nouveau monde ou description des Indes Occidentales. Leyde: 1640.
- Laftau, Joseph François.**
Mœurs des sauvages Américains, comparées aux mœurs des premiers temps. Vols. I-II. Paris: 1724.
- Landa, Diego de.**
Relation des choses de Yucatan. (Translated and edited by Brasseur de Bourbourg.) Forms vol. III of Collection de documents dans les langues indigènes, pour servir à l'étude de l'histoire et de la philologie de l'Amérique ancienne. Paris: 1864.

- Dupuis.**
Origine de tous les cultes, ou religion universelle. Vols. I-II. Paris: [s. d.].
- Duran, Diego.**
Historia antigua de la Nueva España con noticias de los ritos y costumbres de los Yndios y explicacion del calendario Mexicano. Escrita en el año de 1585. Vols. I-III. Manuscript in the Library of Congress at Washington.
- Eastman, Mary H.**
Daotah; or, life and legends of the Sioux around Fort Snelling. New York: 1849.
- Emerson, Ellen R.**
Indian myths or legends, traditions, and symbols of the aborigines of America. Boston: 1884.
- Emory, William H.**
Notes of a military reconnaissance from Fort Leavenworth, in Missouri, to San Diego, in California. (Senate ex. doc. 7; 30th cong., 1st sess.) Washington: 1848.
- Etmüller, Michael.**
Opera omnia. Lyons: 1690.
- Eye, J. L. August von.**
See Iconographic Encyclopedia.
- Fernandez, Alonso.**
Historia eclesiastica de nuestros tiempos. Toledo: 1611.
- Flemming, Samuel Augustus.**
De remediis ex corpore humano desumptis. Erfurt: 1738.
- Fletcher, Robert.**
On prehistoric trephining and cranial amulets. (In Contributions to North American Ethnology. Vol. V, Washington: 1882.)
- Forlong, J. G. R.**
Rivers of life, or the sources and streams of the faiths of man in all lands. Vols. I-II and chart. London: 1883.
- Forster, George.**
A voyage round the world, in his Britannic majesty's sloop *Resolution*. Vols. I-II. London: 1777.
- Fosbrooke, Thomas Dudley.**
British monachism; or, manners and customs of the monks and nuns of England. London: 1817.
- Franklin, John.**
Narrative of a second expedition to the shores of the Polar sea, in the years 1825, 1826, and 1827. London: 1828.
- Fraser, John.**
The aborigines of Australia: their ethnic position and relations. (In Jour. of Trans. of Victoria Institute, vol. XXII, pp. 154-186, London: 1889.)
- Frazer, J. G.**
Totemism. Edinburg: 1887.
- French, B. F.**
Historical collections of Louisiana. Compiled with historical and biographical notes by B. F. French, part I—Historical documents from 1678 to 1691. New York: 1846.
- Freycinet, Louis C. D. de.**
Voyage round the world. London: 1823.
- Frommann, Johannes Christianus.**
Tractatus de fascino. Nuremberg: 1675.
- Gabb, William M.**
On the Indian tribes and languages of Costa Rica. (In Proc. Am. Philos. Soc., vol. XIV, pp. 483-602, Philadelphia: 1876.)
- Gage, Thomas.**
The English-American, his travail by sea and land: or, a new survey of the West-Indies. London: 1648.
- Gallatin, Albert.**
Notes on the semicivilized nations of Mexico, Yucatan, and Central America. (In Trans. Am. Ethnological Soc., vol. I, New York: 1845.)
- Gatschet, Albert S.**
Migration legend of the Creek Indians. Vol. I, Philadelphia: 1884. Vol. II, St. Louis: 1888.
- Gayarre, Charles.**
Louisiana: its colonial history and romance. New York: 1851.
- Gilmour, James.**
Among the Mongols. London: 1883.
- Gomara, Francisco L. de.**
Historia general de las Indias. (In Vedia, Historiadores primitivos de Indias, vol. I, pp. 157-294, Madrid: 1832.)
- Gomara, Francisco L. de.**
Conquista de Méjico. Segunda parte de la crónica general de las Indias. (In *ibid.*, pp. 235-455.)
- Gore, J. Howard.**
Tuckahoe, or Indian bread. (In Smithsonian Institution Ann. Rep. for 1881, Washington: 1883.)
- Gregg, Josiah.**
Commerce of the prairies. Vols. I-II. New York and London: 1844.
- Grimm, Jacob.**
Teutonic mythology. Translated from the fourth edition, with notes and appendix by James Steven Sullybrass. Vols. I-IV. London: 1880-'88.
- Grinnell, Fordyce.**
The healing art as practiced by the Indians of the plains.
- Grossman, F. E.**
The Pima Indians of Arizona. (In Smithsonian Institution Ann. Rep. for 1871, pp. 407-419, Washington: 1873.)
- Gubernatis, Angelo de.**
Zoological mythology or the legends of animals. Vols. I-II. London: 1872.
- Gumilla, Joseph.**
El Orinoco ilustrado, historianatural, civil, y geographica, de este gran rio. Madrid: 1741.
- Hakluyt, Richard.**
Collection of the early voyages, travels, and discoveries of the English nation. Vols. III and V. London: 1810-'12.
- Hakluyt Society.**
Works. London: Vol. II, 1847; vol. XVI, 1854; vol. XXI, 1857; vol. XLI, 1869; vol. XLVIII, 1873.

- Harmon, Daniel W.**
Journal of voyages and travels in the interior of North America. Andover: 1820.
- Harris, W. Cornwallis.**
The highlands of Æthiopia. Vols. I-III. London: 1844.
- Hatch, Edwin.**
See Hibbert Lectures, 1889.
- Hawkesworth, John.**
An account of the voyages undertaken by the order of his present majesty for making discoveries in the southern hemisphere. Vols. I-III. London: 1773.
- Heath, Perry S.**
A Hoosier in Russia. New York: 1898.
- Henderson, John G.**
Aboriginal remains near Naples, Illinois. (In Smithsonian Institution Ann. Rep. for 1882, Washington: 1884.)
- Hennepla, Louis.**
See French, B. F.
- Herrera, Antonio de.**
Historia general de los hechos de los Castellanos en las Islas i tierra firme del mar Oceano. Vols. I-V. Madrid: 1726-30.
- Hibbert Lectures, 1879.**
On the origin and growth of religion as illustrated by the religion of ancient Egypt. by P. Le Page Renouf. London: 1880.
- Hibbert Lectures, 1881.**
On the origin and growth of religion as illustrated by some points in the history of Indian Buddhism, by T. W. Rhys Davis. New York: 1882.
- Hibbert Lectures, 1888.**
The influence of Greek ideas and usages upon the Christian church, by Edwin Hatch. London: 1890.
- Higgins, Godfrey.**
Anacalypsis, an attempt to draw aside the veil of the Saitie Isis. Vol. I II. London: 1836.
- Hind, Henry Youle.**
Narrative of the Canadian Red River exploring expedition of 1857 and of the Assiniboine and Saskatchewan exploring expedition of 1858. Vols. I-II. London: 1860.
- Hoffman, Walter J.**
Folk-lore of the Pennsylvania Germans. (In Jour. of Am. Folk-Lore, vol. I, No. 2, Boston: 1888.)
- Hone, William.**
Every-day book and table book. Vol. II. London: 1838.
- Humboldt, Alexander de.**
Researches concerning the institutions and monuments of the ancient inhabitants of America. Translated by Helen Maria Williams. Vol. I. London: 1814.
- Icazbalceta, Joaquin G.**
See Mendieta, Gerónimo de.
- Iconographic Encyclopædia.**
Prehistoric archeology by Daniel G. Brinton. History of culture translated from the German of Dr. J. L. August von Eye. Vol. II. Philadelphia: 1886.
- Inman, Thomas.**
Ancient faiths embodied in ancient names: or an attempt to trace the religious belief, sacred rites, and holy emblems of certain nations. Vols. I-II. London and Liverpool: 1868-'69.
- James, Edwin.**
See Tanner, John.
- Jarvis, Samuel F.**
Discourse on the religion of the Indian tribes of North America. (In Collections of N. Y. Hist. Soc. for 1821, vol. III, New York: 1821.)
- Joutel.**
See French, B. F.
- Kane, Paul.**
Wanderings of an artist among the Indians of North America. London: 1859.
- Kelly, Fanny.**
Narrative of my captivity among the Sioux Indians. Cincinnati: 1871.
- Kennon, George.**
Tent life in Siberia. New York and London: 1888.
- King, Edward (Lord Kingsborough).**
Antiquities of Mexico: comprising facsimiles of ancient Mexican paintings and hieroglyphics. Vols. I-IX. London: 1831-48.
- King, P. P. (and others).**
Narrative of the surveying voyages of the *Adventure* and *Beaagle*, between the years 1826 and 1836. Vols. I-III. London: 1839.
- Kingsborough.**
See King, Edward.
- Knox, J.**
A new collection of voyages, discoveries, and travels. Printed for J. Knox. Vol. II. London: 1767.
- Kohl, J. G.**
Kitchi-gami. Wanderings around Lake Superior. London: 1800.
- Kotzebue, Otto von.**
A voyage of discovery into the South Sea and Beering's Straits. Vols. I-III. London: 1821.
- Kraskenninikoff, S.**
History of Kamtschatka, and the Kurilski islands, with the countries adjacent. Translated by James Grieve. Gloucester: 1764.
- Laet, Joannes de.**
L'histoire du nouveau monde ou description des Indes Occidentales. Leyde: 1640.
- Laftau, Joseph François.**
Mœurs des sauvages Américains, comparées aux mœurs des premiers temps. Vols. I-II. Paris: 1724.
- Landa, Diego de.**
Relation des choses de Yucatan. (Translated and edited by Brasseur de Bourbourg.) Forms vol. III of Collection de documents dans les langues indigènes, pour servir à l'étude de l'histoire et de la philologie de l'Amérique ancienne. Paris: 1864.

Notes and Queries.

First series, London: Vol. IV, July-December, 1851. Fourth series, vol. V, January-June, 1870; *Ibid.*, Vol. VIII, July-December, 1871.

Pane, Roman.

Des antiquités des Indiens. Translation of Brasseur de Bourbourg. Paris: 1864.

Parkman, Francis.

The Jesuits in North America in the seventeenth century. Boston: 1867.

Parr, Bartholomew.

London medical dictionary. Vol. I. Philadelphia 820.

Pennant, Thomas.

A tour in Scotland, 1769. (In Pinkerton, Collection of voyages and travels, vol. III, pp. 1-569, London: 1809.)

Perrot, Nicholas.

Memoire sur les mœurs, coutumes et religion des sauvages de l'Amérique septentrionale. Leipzig and Paris: 1864.

Pettigrew, Thomas J.

On superstitions connected with the history and practice of medicine and surgery. Philadelphia: 1844.

Pettit, James S.

Apache campaign notes—'86. (In Jour. Military Service Institution, vol. VII, pp. 331-338, New York: 1886.)

Peyronie, Gauthier de la.

Voyages de M. P. S. Pallas. Tome 4. Paris: 1793.

Picart, Bernard.

Ceremonies et coutumes religieuses de tous les peuples du monde. Vols. I-IX. Amsterdam 1733-'39.

Pimentel Francisco.

Cuadro descriptivo y comparativo de las lenguas indigenas de México. Vol. III. México: 1875.

Pinkerton, John.

A general collection of the best and most interesting voyages and travels in all parts of the world. London: Vol. I, 1808; vol. III, 1809; vol. VII, 1811; vol. X, 1811; vol. XI, 1812; vol. XVI, 1814.

Pliny.

Natural history. Translation of Bostock and Riley. Vols. I-VI. London: 1855-'57, 1887.

Popol Vuh.

Popol Vuh. Le livre sacré et les mythes de l'antiquité américaine. (Translation of Brasseur de Bourbourg.) Paris: 1861.

Powers, Stephen.

Tribes of California. (Contributions to North American Ethnology, vol. III, Washington: 1877.)

Purchas, Samuel.

Hakluytus posthumus or Purchas his pilgrimage. Vols. I-V. London: 1625-'26.

Rau, Charles.

Ancient aboriginal trade in North America. (In Smithsonian Institution Ann. Rep. for 1872, pp. 348-394, Washington: 1873.)

Relations des Jésuites.

Relations des Jésuites contenant ce qui s'est passé de plus remarquable dans les missions des pères de la compagnie de Jésus dans la Nouvelle-France. Vol. I. Québec: 1858.

Renouf, P. Le Page.

See Hibbert Lectures, 1879.

Richardson, John.

Arctic searching expedition. Vols. I-II. London: 1851.

Robinson, A.

Life in California. New York: 1846.

Ross, Alexander.

The fur hunters of the far West. Vols. I-II. London: 1855.

Salverte, Eusebe.

Philosophy of magic, prodigies, and apparent miracles. With notes, etc., by Anthony Todd Thomson. Vols. I-II. London: 1846.

Saxon Leechdoms.

See Cockayne, Oswald.

Scheffer, John.

The history of Lapland wherein are shewed the original manners, habits, marriages, conjurations, etc., of that people. Oxford: 1674.

Schoolcraft, Henry R.

Information respecting the history, condition and prospects of the Indian tribes of the United States. Part IV. Philadelphia: 1854.

Schultze, Fritz.

Fetichism: a contribution to anthropology and the history of religion. Translated by J. Fitzgerald. (Forms No. 69 of Humboldt library of popular science literature.) New York: 1885.

Schweinfurth, Georg.

The heart of Africa. Translated by Ellen E. Frewer. Vols. I-II. London: 1873.

Scott, Walter.

Letters on demonology and witchcraft. Addressed to J. G. Lockhart, esq. New York: 1842.

Scott, Walter.

Lady of the lake.

Sextus Plactus.

De medicamentis ex animalibus. Lyons: 1537.

Shakespeare, William.

Macbeth. Collated with the old and modern editions [by Charles Jennens]. London: 1773.

Sháyant lá-Sháyant.

See Müller, Max.

Shea, John G.

The Catholic church in colonial days. New York: 1886.

Simpson, J. H.

Report of an expedition into the Navajo country in 1849. (Forms part of senate ex. doc. 64, 31st cong., 1st sess.). Washington: 1850.

Smart, Charles.

Notes on the "Tonto" Apaches. (In Smithsonian Institution Ann. Rep. for 1867, Washington: 1868.)

the mouths of the dying to receive their souls: "que era par recibiese su ánima."¹

One of the Mexican myths of the birth of Quetzalcoatl narrates his mother, Chimalma, while sweeping, found a chalchihuitl, swallow it, and became pregnant: "Andando barriendo la dicha Chin halló un chalchihuitl, (que es una pedrezuela verde) y que la tra de esto se empuñó, y que así parió al dicho Quetzalcoatl."² The author tells us that the chalchihuitl (which he calls "pedre verde") are mentioned in the earliest myths of the Mexicans.³

In South America the emerald seems to have taken the place of chalchihuitl. Bollaert⁴ makes frequent mention of the use of the emerald by the natives of Ecuador and Peru, "a drilled emerald, such as the Incas wore;" "large emeralds, emblematic of their [the Incas] sovereignty."

From Torquemada we learn that the Mexicans adorned their bodies with the chalchihuitl, and also that they buried a chalchihuitl with the dead, saying that it was the dead man's heart.⁵

"Whenever rain comes the Indians [Pima and Maricopa] ransack these old houses [ruins] to look for trinkets of shells, and a peacock green stone."⁶ The idols which the people of Yucatan gave to Juan Grijalva in 1518 were covered with these stones, "cubierta de pedrecas."⁷ Among the first presents made to Cortes in Tabasco were "unas turquesas de poco valor."⁸ The fact that the Mexicans buried a "gem" with the bodies of their dead is mentioned by Squier, he says it was when the body was cremated.⁹

The people of Cibola are said to have offered in sacrifice to the fountains "algunas turquesas que las tienen, aunque ruines."¹⁰

"Turquesas" were given to the Spaniards under Coronado by the people of the pueblo of Acoma.¹¹

"The Mexicans were accustomed to say that at one time all men were stones, and that at last they would all return to stones; and acting literally on this conviction, they interred with the bones of the dead a small green stone, which was called the principle of life."¹²

The great value set upon the chalchihuitl by the Aztecs is shown to by Bernal Diaz, who was with the expedition of Grijalva in 1519.

¹ Ximenes, *Historia de los Indios*, p. 17.

² Mendoza, p. 81.

³ *Ibid.*, p. 78.

⁴ *Relaciones de San Juan de los Rios*.

⁵ *Monarquia Indiana*, p. 100, and *Historia de los Mexicanos*.

⁶ *Emery's* *Reconnaissance*, p. 188.

⁷ *Historia de España*, tomo 10, p. 100, and *Historia de los Mexicanos*.

⁸ *Ibid.*, p. 100.

⁹ *Smithsonian Contributions to Knowledge*, p. 10, and *Smithsonian Report*, p. 10.

¹⁰ *Historia de San Juan de los Rios*, p. 100, and *Historia de los Mexicanos*, p. 100, and *Historia de España*, tomo 10, p. 100, and *Historia de los Mexicanos*, p. 100.

¹¹ *Ibid.*, p. 100.

¹² *Smithsonian Report*, p. 10, and *Smithsonian Contributions to Knowledge*, p. 10.

- Wallace, Alfred R.**
A narrative of travels on the Amazon and Rio Negro, with an account of the native tribes. London: 1853.
- Whipple, A. W.**
Reports of explorations and surveys to ascertain the most practicable and economical route for a railroad from the Mississippi river to the Pacific ocean. Vol. III. Washington: 1856.
- Whitney, W. Norton.**
Notes from the history of medical progress in Japan. Yokohama: 1885.
- Williams, Monier.**
Modern India and the Indians. London: 1878.
- Winstanley, W.**
A visit to Abyssinia: an account of travel in modern Ethiopia. Vols. I-II. London: 1881.
- Wrangell, Ferdinand P. von.**
Narrative of an expedition to the Polar Sea. New York: 1841.
- Wright, Thomas.**
Narratives of sorcery and magic, from the most authentic sources. Vols. I-II. London: 1851.
- Ximenez, Francisco.**
Las historias del origen de los Indios de esta provincia de Guatemala. Translated by C. Scherzer. Vienna: 1857.

