Forty-sixth Annual Report

of the

BUREAU OF AMERICAN ETHNOLOGY

1928–1929

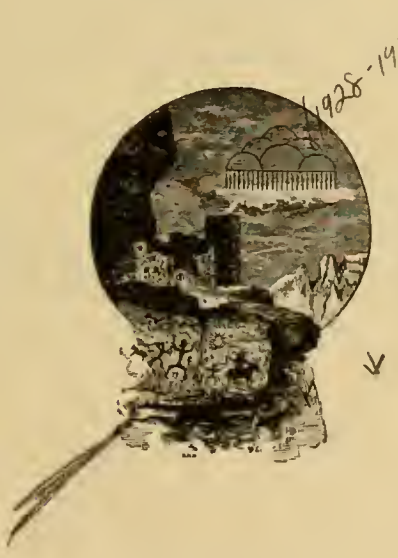
SMITHSONIAN INSTITUTION
WASHINGTON
D. C.

FORTY-SIXTH
ANNUAL REPORT OF THE

BUREAU OF AMERICAN ETHNOLOGY

TO THE SECRETARY OF THE
SMITHSONIAN INSTITUTION

1928-1929



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LETTER OF TRANSMITTAL

SMITHSONIAN INSTITUTION,
BUREAU OF AMERICAN ETHNOLOGY,
Washington, D. C., September 15, 1929.

SIR: I have the honor to submit herewith the Forty-sixth Annual Report of the Bureau of American Ethnology for the fiscal year ended June 30, 1929.

With appreciation of your aid in the work under my charge, I am

Very respectfully yours,

M. W. STIRLING,
Chief.

Dr. C. G. ABBOT,
Secretary of the Smithsonian Institution.

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REPORT OF THE CHIEF

FORTY-SIXTH ANNUAL REPORT

OF THE

BUREAU OF AMERICAN ETHNOLOGY

M. W. Stirling, Chief

The operations of the Bureau of American Ethnology during the fiscal year ended June 30, 1929, were conducted in accordance with the act of Congress approved May 16, 1928, making appropriations for sundry civil expenses of the Government, which act contains the following item:

American ethnology: For continuing ethnological researches among the American Indians and the natives of Hawaii, the excavation and preservation of archæologic remains under the direction of the Smithsonian Institution, including necessary employees, the preparation of manuscripts, drawings, and illustrations, the purchase of books and periodicals, and traveling expenses, $60,300.

Mr. M. W. Stirling entered upon his duties as chief of the bureau August 1, 1928, succeeding Dr. J. Walter Fewkes, who retired January 15, 1928.

SYSTEMATIC RESEARCHES

During the months of September and October Mr. Stirling worked with a group of Acoma Indians who were visiting Washington and secured from them in as complete form as possible the origin and migration myth of that very conservative tribe. This myth not only describes the emergence of the first human beings from the underworld but also explains the origin and functions of the pantheon of demigods and heroes connected with the legend. The myth likewise explains the origin and function of the clans and the medicine societies and the

reason for the many ceremonies practiced. In connection with this work phonographic records were made of 66 songs, many of which have been transcribed by Miss Frances Densmore, as described in her report. This information fills an important gap in our knowledge of the oldest inhabited pueblo in the United States.

Mr. Stirling spent the months of March and April in Florida, where a survey was made of the mounds in the vicinity of Tampa Bay. An interesting discovery was made of a series of mounds composed of mixed sand and shell, constructed at a distance of about 4 miles inland, parallel to the shore, and in each instance directly back of a large shell mound located on the salt water. Preliminary excavations were made at Cockroach Point, Palma Sola, and Safety Harbor. The shell mound at Cockroach Point is the largest on the west coast of Florida and is composed entirely of shell and bone, refuse from the meals of the Indians who formerly occupied the site. Collections of shells and bones were made in the different levels of the mound, together with human artifacts associated with them, with a view to establishing a culture sequence.

The site at Safety Harbor was determined to be of the same culture as that excavated at Weeden Island during the winters of 1923 and 1924.

The large sand mound at Palma Sola proved to be of exceptional interest and was selected as a site for intensive excavation next winter.

During the latter part of April Mr. Stirling visited Chicago for the purpose of delivering lectures before the Geographic Society of Chicago and the anthropologists of Chicago and vicinity. From Chicago he went to Memphis, Tenn., where he attended the meeting of the Tennessee Academy of Sciences and addressed the society at their annual banquet. Proceeding from Memphis to Macon, Ga., he visited the large mounds on the site of Old Ocmulgee Town, traditional founding place of the Creek Confederacy.

During the third week in May Mr. Stirling attended the conference of Mid-Western Archeologists, which was held at St. Louis under the auspices of the National Research Council, and as representative of this body went to Montgomery, Ala., to deliver an address at the unveiling of a monument by the Alabama Anthropological Society on the site of old Tukabatchi.

He also attended the meeting of the American Association for the Advancement of Science in New York in December, 1928, as representative of the United States Government.

Dr. John R. Swanton, ethnologist, was engaged during the year in completing the proof reading of his bulletin on the Myths and Tales of the Southeast, which has been released for publication.

Considerable material was added to his manuscript paper entitled "Source Material for Choctaw Ethnology." Part of this was collected from the archives of the State Department of Archives and History at Jackson, Miss., and some from the eastern Choctaw at Philadelphia, Miss., in July, 1928. Also, a great deal more work was devoted to the projected tribal map of aboriginal North Ameriea north of Mexico and to the accompanying text, including the incorporation of some valuable notes furnished by Mr. Diamond Jenness, chief of the division of anthropology of the Geological Survey of Canada.

Work was continued throughout the year on the Timucua dictionary which, in spite of the elimination of a large number of cards on account of closer classification and the correction of errors, still fills 14 trays.

Shortly after July, 1928, Dr. Truman Michelson, ethnologist, left Washington to renew his research among the Algonquian tribes of Oklahoma. He first studied the linguistics, sociology, and physical anthropology of the Kickapoo. Kickapoo in certain respects is very important linguistically. While working on Arapaho he was able to formulate many phonetic shifts of complexity. Even so, the amount of vocabulary that can be proved to

be Algonquian is very small. The grammatical structure is, however, fundamentally Algonquian. It is also true that there are a few traits which are distinctly un-Algonquian; for example, the order of words.

The first week in August Doctor Michelson went to Tama, Iowa, to renew his work among the Foxes. He there restored phonetically some texts previously obtained in the current syllabic script and worked out some translations. He also obtained some grammatical notes on these texts. Some new Fox syllabic texts were collected and new and important ethnological data were obtained.

Doctor Michelson returned to Washington in September. He corrected proofs of Bulletin 89, Observations on the Thunder Dance of the Bear Gens of the Fox Indians, and prepared for publication by the bureau a memoir entitled "Notes on the Great Sacred Pack of the Thunder Gens of the Fox Indians." Early in June Doctor Michelson left for Oklahoma, where he obtained more Kickapoo linguistic notes, further elucidating the relation of Kickapoo to Fox. From this it appears that Kickapoo diverges more widely in idiom than hithereto suspected. He also secured some Kickapoo texts in the current syllabic script and obtained new data on social organization. Some brief Shawnee linguistic notes were collected. These show that while Shawnee is in certain respects very important for a correct understanding of Fox phonology, as a whole it is not as archaic. It is also now clear that Shawnee is further removed from Sauk and Kickapoo than he had previously surmised. Doctor Michelson witnessed several Kickapoo dances and attended a Shawnee ball game.

In June, 1929, Mr. John P. Harrington, ethnologist, completed his report on the Taos Indians, who inhabit a large pueblo on an eastern affluent of the Rio Grande in north-central New Mexico. These are the northernmost of the New Mexico Pueblo Indians and are peculiarly interesting because of the long intimate relations they have had with the Jicarilla Apaches, Utes, Comanches, and other tribes of Great Plains culture. During the period

of Spanish domination in New Mexico the Taos had to play the double and difficult rôle, because of their frontier position, of persuading the Spanish that they were really on their side, and the Plains Indians that they were really on theirs. The relations with the Plains Indians existed far back in Taos history and amounted at times to the incorporation of large bodies of these Indians in the blood which went to make up the present-day Taos. And there is still more remote and fundamental connection with one group of Plains Indians, namely the Kiowa. The Taos language, which was the language of one of the ancient groups which contributed to the composition of Taos, has been determined to be a dialect of Kiowa, which seems to indicate that this contingent of the Taos population at least, like the Kiowas themselves, once lived in the northern region of the Rocky Mountains, probably in what is now Canada.

Grasping still another opportunity to check the old and new information on this region, studies on the related Karuk Indians of the central Klamath River region of California were resumed during field work on the coast and were continued throughout the year, resulting in an accumulation of carefully analyzed material, a large part of which is now ready for publication. The work consists of many divisions of information, including the grammar of the language, its sounds, its peculiar musical intonations, and the system of long and short consonants and vowels; the history of the tribe, which remained intact and unspoiled up to 1850; the census, with the peculiar old personal names; the villages, which were strung out along the river and its tributary creeks; the construction of the living houses and sweat houses, and the description of all the manufactures, and the process of making the objects, all in Indian; the social life, an organization without chiefs; the great festivals and the various dances; feuds, wars, and peace making; sucking and herb doctors, and the sources of their power; medicine formulas and myths, all in the language, for any other record of them would be

inadequate. This information is accompanied by photographs and phonograph records and is rapidly approaching completion for publication as a report of the bureau.

Early in June Mr. Harrington went to Chaco Canyon, N. Mex., for the purpose of making further study of the Pueblo Indian languages, notably the relation of Zuñi and Keresan to the newly discovered Kiowan family. Cooperating with students at the University of New Mexico attending the university summer school being held at Chaco Canyon under the joint auspices of the State University and the School of American Research, a minute comparison was made of the Taos and Zuñi languages, resulting in the discovery of the genetic relationship of these two languages, a relationship which can be traced through hundreds of words of similar sound and identical construction, which was long ago hinted at by the discovery of such words as *lana,* big, and *papa,* older brother, which are the same in sound and meaning in both languages. About 200 kymograph tracings were made. Similar genetically related words and features were also discovered in the Keresan language. Cooperating in this work were Miss Sara Godard, Miss Clara Leibold, Miss Anna Risser, Miss Janet Tietjens, Miss Winifred Stamm, Mr. Reginald Fisher, and several other students. The results are ready for publication, including the kymographic alphabet, which is mounted and ready for the engraver.

The months of July and August, 1928, were spent by Dr. F. H. H. Roberts, jr., archeologist, in completing archeological investigations along the Piedra River in southwestern Colorado. During that time the remains of 50 houses belonging to the first period of the prehistoric Pueblo peoples were excavated and examined. As a result of these researches it was possible to determine a three-stage chronological development of the house types in the district as well as to postulate very definite reconstructions of the dwellings. An additional discovery was that in the arrangement of the structures the builders had developed the prototype of the unit house which was the

characteristic building of the following stage, the Pueblo II period. Besides the work in house remains, a number of burial mounds were explored and many skeletons and objects of the material culture of the people were obtained. The latter include a large number and variety of pottery specimens, many of which represent an entirely new feature in the ceramic industry, bone and stone implements, and ornaments. The work as a whole gives a clear-cut picture of the life and conditions prevailing at a time of instability and disturbance due to an influx of new peoples, with its attendant cultural transition.

On the completion of the work along the Piedra River one week was spent in a reconnaissance of the Governador district in northern New Mexico. The Governador region includes the Governador, Burns, La Jara, and Frances Canyons. The latter are of special archeological and ethnological interest, because it was to that section that a large group of the Pueblo Indians from the Jemez villages fled after they had been disastrously defeated in the Battle of San Diego Canyon during the month of June, 1696, by Spanish forces engaged in the reconquest of the Southwest. The ruins of the dwellings built by the refugees are in a good state of preservation and furnish excellent information on the methods and styles of house building prevalent at that time. At the close of the Governador explorations Doctor Roberts returned to Washington, reaching there the middle of September.

During the autumn illustrations were prepared to accompany a manuscript entitled "Recent Archeological Developments in the Vicinity of El Paso, Tex.," which was published in January, 1929, as volume 81, No. 7, of the Smithsonian Miscellaneous Collections. Proof of another paper entitled "Shabik'eshchee Village, a Late Basket Maker Site in the Chaco Canyon, New Mexico," was corrected, and this appeared in June, 1929, as Bulletin 92 of the Bureau of American Ethnology.

Considerable time was spent in the laboratory of the division of American archeology of the United States Na-

tional Museum in working over the collection made during the excavations along the Piedra River. A portion of this work included the restoration, from fragments found in the various houses, of a number of unusually fine culinary and storage jars and a series of decorated bowls.

From January to June a 545-page manuscript on the work in southwestern Colorado was prepared. Accompanying this report are 40 text figures drawn by Doctor Roberts. The figures include 64 drawings, consisting of maps of the San Juan archeological area and the Piedra district, outlines of the various village and house groups, restorations of the different forms of dwellings, details in building construction, outline groups of pottery forms, and designs from decorated ceramic containers.

On May 11, 1929, Doctor Roberts left Washington for Denver, Colo., where one week was spent in studying museum specimens. From Denver he proceeded to Gallup, N. Mex., where he outfitted for work in the region of the Long H Ranch, eastern Arizona, 45 miles from the Pueblo of Zuñi. After conducting a reconnaissance a site was chosen on the Long H Ranch, 1 mile northwest of the ranch buildings, and a series of excavations started. As work progressed it was found that the site was one which had been occupied by Basket Maker III and Pueblo I peoples and that it showed the transition from the one period to the other. At the end of June, eight fine examples of pit houses had been uncovered. Excellent data on the type and character of this form of structure were obtained and several new features in the method of house groupings were observed. The burial mounds of three house clusters were examined and 30 interments exhumed. The latter were accompanied by mortuary offerings of pottery; bone and shell implements; shell beads, bracelets, and pendants; and turquoise ornaments. With the various objects found in the houses the total number of specimens reaches 300. The work has furnished valuable information on a little-known phase of the prehistoric sedentary cultures of the Southwest.

During the year Mr. J. N. B. Hewitt, ethnologist, continued his studies on the Iroquois. In 1900 and immediately subsequent years Mr. Hewitt undertook seriously to record in native texts the extant rituals, ordinances, and laws pertaining to the institutions and structure of the League or Confederation of the Five (later Six) Tribes or Nations of the Iroquois of New York State. At that time there were still living two or three men among the Iroquois of Canada who grasped more or less fully the intent and purpose of the various institutions of this league, and Mr. Hewitt had then acquired a conversational knowledge of the two languages in which these rituals, ordinances, and laws were chiefly expressed, to wit, the Mohawk and the Onondaga. The use of the Cayuga, Oneida, and Seneca was exceptional.

From these men Mr. Hewitt obtained standard texts in the native tongues of the informants. The death of two of these informants made a study of the material furnished by them difficult. Resort was had then to other less noted informants in these matters, and there was obtained a large number of versions of portions of the standard texts already mentioned, which disclosed views and statements which it seemed impossible to harmonize with those appearing in the standard texts. It was imperative that the value of these discordant statements should be ascertained where possible and that palpable omissions from the standard texts should be utilized. The task was to ascertain in these analytical studies what was transmitted tradition and what was the personal opinion of the informant, unwittingly expressed.

This work of comparison was undertaken to secure the best possible translations, interlinear and free, of the several native texts thus studied. The texts of the Installation Chant, the Eulogy of the Founders, of the Traditional Biography of Deganawida which describes in great detail the years of difficult work which had to be done to establish the League of the Five Tribes of the Iroquois in the Stone Age of America, and also the native text of the

Requickening Address of Installation, were subjected to this kind of study.

Mr. Hewitt represented the Smithsonian Institution on the United States Geographic Board. In addition to attending the meetings, he spent about three days in researches for the executive committee.

As custodian of manuscripts of the bureau, Mr. Hewitt did some classificatory linguistic work on new items acquired.

Mr. Hewitt left Washington on May 6, 1929, to continue his studies among the Iroquoian tribes dwelling in Canada and in the State of New York. His work consisted chiefly in literal and free translation of formal native diction embodying legislative, ritualistic, and forensic thought; and also in the coordination of divergent traditional statements of traditionally historical events, in eliminating the incongruous, and in conserving the congruous. He secured 15 parcels of wampum strings, severally bearing the name of one of the burdens of the ritual, the Requickening Address of Installation.

Dr. Francis La Flesche, ethnologist, during the last fiscal year completed Wa-sha'-be A-thi^{n}, an Osage war ceremony, composed of 270 pages of manuscript, with diagrams and illustrations; also the Wa'wa-tho^{n}, a ceremony pertaining to the peace pipes, composed of 129 pages of manuscript, with illustrations. In this paper is a full and detailed description of the discoidal pipes, ancient and modern, found in the Eastern States, many of which may be found in the various museums.

With the assistance of Mrs. Grace D. Woodburn, he has revised the work on the Osage Dictionary. There are approximately 19,000 words of the Osage language in common use among the tribe, with English equivalent; about 17,000 English words with Osage transcriptions are given. The words, with their meanings, can not be given positively, but a clear idea of usage has been given. About 35 illustrations have been completed for this work.

SPECIAL RESEARCHES

The study of Indian music has been continued during the past year by Miss Frances Densmore, a collaborator of the bureau. Material has been submitted on the songs of the Menominee, Winnebago, Pawnee, Yuma, Acoma, and the Indians living on the Fraser, Thompson, and Squamish Rivers in British Columbia; also on a small group of songs recorded at Anvik, Alaska, and obtained through the courtesy of Rev. John W. Chapman. A comparison of the songs in this wide territory has been important in the development of the research.

Eight manuscripts have been submitted with the following titles: "Menominee Songs of Pleasure, Dances, and Manabus Legends"; "Songs of Indians Living on the Fraser, Thompson, and Squamish Rivers in British Columbia"; "Origin Song of the Dice Game and Other Winnebago Songs"; "Winnebago Songs Connected with the Recent War"; and 17 analytical tables comparing Pawnee with songs previously analyzed; "Winnebago Songs Connected with Legends, Games, and Dances"; "Acoma Songs of the Flower Dance and Corn Dance"; "Acoma Songs Used in Treating the Sick and Other Acoma Songs"; and "A Comparison Between Yuma, Acoma, and Alaskan Indian Songs," with 18 tables of analysis of Yuma songs. The number of songs transcribed and analyzed is 117, and a large number of dictaphone song records were studied without transcription. Miss Densmore corrected the proof of her book on Papago Music and the galleys of Pawnee Music; the final work of preparing the Pawnee material for publication was also done during this year. A large amount of work was done upon the preparation of Menominee and Yuma material for publication. Catalogue numbers have been assigned to all transcribed songs, except the Acoma, the highest catalogue number in her series being 1848.

During August and September, 1928, a field trip was made to the Winnebago and Menominee tribes in Wisconsin. A large dance, continuing three days, was held

by the Winnebago near Black River Falls. This dance was witnessed, as well as numerous incidents of life in the camp, and about 50 photographs were taken.

At the conclusion of this gathering Miss Densmore went to Keshena, Wis., for further work among the Menominee. The manuscript already prepared was read to reliable members of the tribe and details were added. An interesting oportunity for seeing Menominee dances was afforded by the annual Indian fair which continued four days. Among the old dances presented were those in imitation of the fish, frog, crawfish, rabbit, partridge, and owl. The songs of these dances, together with their action and origin, were recorded. The Manabus legend concerning the first death was obtained, together with its songs, and the work included the recording of other old material.

A drum-presentation ceremonial dance, commonly called a dream dance, was held at the native village of Zoar on September 2 to 5. This was attended each day and closely observed, Miss Densmore remaining 10 hours beside the dance circle on the third day of the ceremony. Many photographs were taken.

On September 14 Miss Densmore proceeded to Tomah, Wis., and resumed her study of Winnebago music. Additional songs of the war-bundle feast, also called the winter feast, were recorded, together with several old legends and their songs, and the origin of the bowl-and-dice game, with its song. The legend of this game origin had previously been obtained among the Menominee. Numerous photographs were taken, and two drumming sticks were obtained, one being decorated with otter fur and used a generation ago by the leader at the drum.

During October, 1928, Miss Densmore went to Washington, D. C., and recorded 27 Acoma songs from Philip Sanche, who, with several Acoma Indians, was engaged in work for the chief of the Bureau of American Ethnology. A larger number of Acoma songs had previously been recorded for the chief of the bureau and these records

were studied, 16 being transcribed as representative examples.

EDITORIAL WORK AND PUBLICATIONS

The editing of the publications of the bureau was continued through the year by Mr. Stanley Searles, editor, assisted by Mrs. Frances S. Nichols, editorial assistant. The status of the publications is presented in the following summary.

PUBLICATIONS ISSUED

Forty-first Annual Report. Accompanying papers: Coiled Basketry in British Columbia and Surrounding Region (Boas, assisted by Haeberlin, Teit, and Roberts); Two Prehistoric Villages in Middle Tennessee (Myer). 626 pp., 137 pls., 200 figs., 1 pocket map.

Forty-third Annual Report. Accompanying papers: The Osage Tribe: Two Versions of the Child-naming Rite (La Flesche); Wawenock Myth Texts from Maine (Speck); Native Tribes and Dialects of Connecticut, a Mohegan-Pequot Diary (Speck); Picurís Children's Stories (Harrington and Roberts); Iroquoian Cosmology—Second Part (Hewitt). 828 pp., 44 pls., 9 figs.

Forty-fourth Annual Report. Accompanying papers: Exploration of the Burton Mound at Santa Barbara, Calif. (Harrington); Social and Religious Beliefs and Usages of the Chickasaw Indians (Swanton); Uses of Plants by the Chippewa Indians (Densmore); Archeological Investigations—II (Fowke). 555 pp., 98 pls., 16 figs.

Bulletin 84. Vocabulary of the Kiowa Language (Harrington). 255 pp., 1 fig.

Bulletin 86. Chippewa Customs (Densmore). 204 pp., 90 pls., 27 figs.

Bulletin 87. Notes on the Buffalo-head Dance of the Thunder Gens of the Fox Indians (Michelson). 94 pp., 1 fig.

Bulletin 89. Observations on the Thunder Dance of the Bear Gens of the Fox Indians (Michelson). 73 pp., 1 fig.

Bulletin 92. Shabik'eshchee Village: A Late Basket Maker Site in the Chaco Canyon, New Mexico (Roberts). 164 pp., 31 pls., 32 figs.

PUBLICATIONS IN PRESS

Forty-fifth Annual Report. Accompanying papers: The Salishan Tribes of the Western Plateaus (Teit, edited by Boas); Tattooing and Face and Body Painting of the Thompson Indians, British Columbia (Teit, edited by Boas); The Ethnobotany of the Thompson Indians of British Columbia (Teit, edited by Steedman); The Osage Tribe: Rite of the Wa-xo'-be (La Flesche).

Bulletin 88. Myths and Tales of the Southeastern Indians (Swanton).
Bulletin 90. Papago Music (Densmore).
Bulletin 91. Additional Studies of the Arts, Crafts, and Customs of the Guiana Indians, with special reference to those of Southeastern British Guiana (Roth).
Bulletin 93. Pawnee Music (Densmore).

DISTRIBUTION OF PUBLICATIONS

The distribution of the publications of the bureau has been continued under the charge of Miss Helen Munroe, assisted by Miss Emma B. Powers. Publications were distributed as follows:

Report volumes and separates	7,605
Bulletins and separates	11,890
Contributions to North American Ethnology	34
Miscellaneous publications	583
Total	20,112

This is an increase of 10,986 publications distributed, due to the fact that 5 more publications were distributed to the mailing list than in the previous year. The mailing list, after revision during the year, stands at 1,642.

ILLUSTRATIONS

Following is a summary of work accomplished in the illustration branch of the bureau under the supervision of Mr. De Lancey Gill, illustrator:

Photographs retouched and lettered and drawings made ready for engraving	874
Drawings prepared, including maps, diagrams, etc	53
Engravers' proofs criticized	690
Printed editions of colored plates examined at Government Printing Office	23,000
Correspondence attended to	125
Photographic laboratory work by Dr. A. J. Olmsted, National Museum, in cooperation with the Bureau of American Ethnology:	
Negatives	143
Prints	275
Films developed from field exposures	12

LIBRARY

The reference library has continued under the care of Miss Ella Leary, librarian, assisted by Mr. Thomas Blackwell. The library consists of 28,512 volumes, about 16,377 pamphlets, and several thousand unbound periodicals. During the year 591 books were accessioned, of which 112 were acquired by purchase and 479 by gift and exchange; also 200 pamphlets and 4,100 serials, chiefly the publications of learned societies, were received and recorded, of which only 112 were obtained by purchase, the remainder being received through exchange. The catalogue was increased by the addition of 1,400 cards. Many books were loaned to other libraries in Washington. In addition to the constant drafts on the library of the bureau, requisition was made on the Library of Congress during the year for an aggregate of 200 volumes for official use, and in turn the bureau library was frequently consulted by officers of other Government establishments, as well as by students not connected with the Smithsonian Institution.

While many volumes are still without binding, the condition of the library in this respect has greatly improved during the last few years; 431 volumes were bound during the year.

COLLECTIONS

100,592. Several thousand anthropological specimens and small collections of mammals, plants, mollusks, and minerals from various localities in Alaska, secured by Henry B. Collins, jr., during 1928. (3,730 specimens.)

102,768. Small collection of archeological objects gathered by Charles T. Earle at an aboriginal camp site at Shaws Point, Fla. (26 specimens.)

102,769. Two textile fragments collected in the Canyon de Chelly, Ariz., by Dr. W. H. Spinks. (2 specimens.)

102,896. Collection of 61 ethnological specimens secured from the Hupa Indians of California by E. G. Johnson. (61 specimens.)

103,344. Two specimens of sheet mica collected from unidentified mounds in Ohio by the late Dr. E. H. Davis and presented to the bureau by Miss Betsey B. Davis. (2 specimens.)

103,964. Pair of charms used by the Karuk Indians of northern California to ward off pains and bewitchments. Made by Mrs. Phoebe Maddux, of the Karuk tribe. (2 specimens.)

105,865. Collection of ethnological objects gathered from the Hupa Indians of California by E. G. Johnson and purchased from him by the bureau. (27 specimens.)

PROPERTY

Office equipment was purchased to the amount of $292.70.

MISCELLANEOUS

The correspondence and other clerical work of the office has been conducted by Miss May S. Clark, clerk to the chief, assisted by Mr. Anthony W. Wilding, assistant clerk. Miss Mae W. Tucker, stenographer, assisted Dr. John R. Swanton in his work of compiling a dictionary of the Atakapa and compiled two catalogues of the manuscripts in the archives of the bureau—one arranged according to author and the other numerically. Mrs. Frances S. Nichols assisted the editor.

During the course of the year information was furnished by members of the staff in reply to numerous inquiries concerning the North American Indian peoples, both past and present, and the Mexican peoples of the prehistoric and early historic periods to the south. Various specimens sent to the bureau were identified and data on them furnished for their owners.

Personnel.—Mr. M. W. Stirling was appointed chief of the bureau August 1, 1928. Dr. J. Walter Fewkes retired as associate anthropologist of the bureau November 14, 1928.

Respectfully submitted.

M. W. Stirling, *Chief.*

Dr. C. G. Abbot,
Secretary of the Smithsonian Institution.

ACCOMPANYING PAPERS

ANTHROPOLOGICAL SURVEY IN ALASKA

By ALEŠ HRDLIČKA

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ANTHROPOLOGICAL SURVEY IN ALASKA

By Aleš Hrdlička

INTRODUCTION

Alaska and the opposite parts of Asia hold, in all probability, the key to the problem of the peopling of America. It is here, and here alone, where a land of another continent approaches so near to America that a passage of man with primitive means of navigation and provisioning was possible. All the affinities of the American native point toward the more eastern parts of Asia. In Siberia, Mongolia, Tibet, Manchuria, Formosa, and in some of the islands off southeastern Asia, living remnants of the same type of man as the American aborigines are to this day encountered, and it is here in the farthest northwest where actual passings of parties of natives between the Asiatic coast and the Bering Sea islands and between the latter and the American coasts have always, since these parts were known, been observed and are still of common occurrence.

With these facts before them, the students of the peopling of this continent were always drawn strongly to Alaska and the opposite parts of Asia; but the distances, the difficulties of communication, and the high costs of exploration in these far-off regions have proven a serious hindrance to actual investigation. As a result, but little direct, systematic, archeological or anthropological (somatological) research has ever been carried out in these regions; though since Bering's, Cook's, and Vancouver's opening voyages to these parts a large amount of general, cultural, and linguistic observations on the natives has accumulated.

For these observations, which are much in need of a compilation and critical analysis, science is indebted to the above-named captains; to the subsequent Russian explorers, and especially to the Russian clerics who were sent to Alaska as missionaries or priests to the natives; to various captains, traders, agents, miners, soldiers, and men in collateral branches of science, who came in contact with the aborigines; to special United States Government exploratory expeditions, with an occasional participation of the Biological Survey and the Smithsonian Institution, such as resulted in the fine "Corwin" reports and the highly valuable accounts of Leffingwell, Dall,

Nelson, and Murdoch; to the separate pieces of scientific work by men such as Gordon and Jennes; and to Jochelson and Bogoras of the Jesup exploring expedition of the American Museum.

As a result of all these contributions, it may be said that there has been established a fair cultural and linguistic knowledge of the Aleut, the Eskimo, and the Chukchee, not to speak of the Tlingit, consideration of which seems more naturally to fall with that of the Indians of the northwest coast.

There are also numerous though often very imperfect and occasionally rather contradictory notes on the physical status of these peoples, and some valuable cultural and even skeletal collections were made. Since 1912 we possess also a good series of measurements on the St. Lawrence Island natives, together with valuable cranial material from that locality, made, under the direction of the writer, by Riley D. Moore, at that time aide in the Division of Physical Anthropology in the United States National Museum.

The need of a further systematic archeological and somatological research in this important part of the world was long since felt, and several propositions were made in this line to the National Research Council (Hrdlička) and to the Smithsonian Institution (Hough, Hrdlička); but nothing came of these until the early part of 1926, when, a little money becoming available, the writer was intrusted by the Bureau of American Ethnology with the making of an extensive preliminary survey of Alaska. The objects of the trip were, in brief, to ascertain as much as possible about the surviving Indians and Eskimos; to trace all indications of old settlements and migrations; and to collect such skeletal and archeological material as might be of importance.

The trip occupied approximately four months, from the latter part of May to the latter part of September, affording a full season in Alaska. It began with the inside trip from Vancouver to Juneau, where at several of the stopping places groups of the northwest coast Indians were observed. At Juneau examination was made of the valuable archeological collections in the local museum. After this followed a trip with several stops along the gulf, a railroad trip with some stops to Fairbanks, a return trip to Nenana, a boat trip on the Tanana to the Yukon, and then, with little boats of various sorts, a trip with many stops for about 900 miles down the Yukon. This in turn was followed by a side trip in Norton Sound, after which transportation was secured to the island of St. Michael and to Nome. From Nome, after some work in the vicinity, the revenue cutter *Bear* took the writer to the St. Lawrence and Diomede Islands, to Cape Wales, and thence from place to place of scientific interest up to Barrow. On the return a number of the more important places,

besides some new ones, were touched upon, while the visit to others was prevented by the increasing storms, and the trip ended at Unalaska.

Throughout the journey, the writer received help from the Governor, officials, missionaries, traders, and people of Alaska; from the captain, officers, and crew of the *Bear;* and from many individuals; for all of which cordial thanks are hereby once more rendered. Grateful acknowledgments are especially due to the following gentlemen: Governor George A. Parks, of Alaska; Mr. Harry G. Watson, his secretary; Mr. Karl Thiele, Secretary for Alaska; Judge James Wickersham, formerly Delegate from Alaska; Father A. P. Kashevaroff, curator of the Territorial Museum and Library of Juneau; Dr. William Chase, of Cordova; Mr. Noel W. Smith, general manager Government railroad of Alaska; Mr. B. B. Mozee, Indian supervisor, and Dr. J. A. Romig, of Anchorage; Prof. C. E. Bunnell, president Alaska Agriculture College, at Fairbanks; Mr. and Mrs. Fullerton, missionaries, at Tanana; Rev. J. W. Chapman and Mr. Harry Lawrence, at Anvik; Father Jetté and Jim Walker, at Holy Cross; Mr. C. Betsch, at the Russian Mission; Messrs. Frank Tucker and E. C. Gurtler, near the mission; Mr. Frank P. Williams, of St. Michael; Judge G. J. Lomen and his sons and daughter, at Nome; Rev. Dr. Baldwin, Fathers La Fortune and Post, Captain Ross, United States Coast Guard, and Mr. Elmer Rydeem, merchant, at Nome; C. S. Cochran, captain of the *Bear*, and his officers, particularly Mr. H. Berg, the boatswain; Rev. F. W. Goodman and Mr. LaVoy, at Point Hope; the American teachers at Wales, Shishmareff, Kotzebue, Point Hope, and elsewhere; Messrs. Tom Berryman, Jim Allen, and Charles Brower, traders, respectively, at Kotzebue, Wainright, and Barrow; Mr. Sylvester Chance, superintendent of education, Kotzebue, Alaska; the United States marshals, deputy marshals, and postmasters along the route; and the numerous traders, miners, settlers, and others who were helpful with specimens, advice, guidance, and in other matters.

General Remarks

The account of the survey will be limited in the main to anthropological and archeological observations; but it is thought best to give it largely in the form of the original notes made on the spot or within a few hours after an event. These notes often contain collateral observations or thoughts which could be excluded, but the presence of which adds freshness, reliability, and some local atmosphere to what otherwise would be a rather dry narrative. A preliminary account of the trip and its results was published in the

Smithsonian exploration volume for 1926 (Washington, 1927, pp. 137–158).

Not much reference is possible to previous work of the nature here dealt with in the parts visited, except in the Aleutian Islands, where good archeological work was done in the late sixties by William H. Dall,[1] and in 1909–10 by Waldemar Jochelson.[2]

The archeology and anthropology of the Gulf of Alaska, the inland, the Yukon Basin, the Bering Sea coasts and islands, and those of the Arctic coasts up to Point Barrow are but little known. The archeology is in reality known only from the stone and old ivory implements that have been incidentally collected and have reached various institutions where they have been studied; from the excavations about Barrow, conducted by an expedition of the University Museum, Philadelphia, in charge of W. B. Van Valin, and by the trader, Mr. Charles Brower, the results of which have not yet been published; and from the recent diggings at Wales and on the smaller Diomede Island by Doctor Jenness.[3] Neither Dall, Nelson, Rau, nor Murdoch conducted any excavations outside the already mentioned work in the Aleutians.

Northwest Coast—Juneau

THE COAST INDIANS

Passage was taken on a small steamer from Vancouver. The boat stopped at a number of settlements on the scenic "inside" route—which impresses one as a much enlarged and varied trip through the Catskills—permitting some observations on the Indians of these parts.

The main opportunity was had at Aleut Bay. Here many British Columbia Indians were seen on the dock, belonging to several tribes. Names of these, as pronounced to me, were unfamiliar. They have a large agency here; engage in salmon industry. A minority, only,

[1] Dall, Wm. H.: Alaska as it Was and Is; 1865–1895. Bull. Phil. Soc. Wash., 1900, vol. XIII, 141. On Prehistoric Remains in the Aleutian Islands. Proc. Cal. Acad. Sci., November, 1872, vol. IV, 283–287. Explorations on the Western Coast of North America. Smiths. Rept. for 1873, Wash., 1874, 417–418. On Further Examinations of the Amaknak Cave. Proc. Cal. Acad. Sci., 1873, vol. V, 196–200. Notes on Some Aleut Mummies. Proc. Cal. Acad. Sci., October, 1874, vol. V. 399–400. Deserted Hearths. The Overland Monthly, 1874, vol. XIII, 25–30. Alaskan Mummies. Am. Naturalist, 1875, vol. IX, 433–440. Tribes of the Extreme Northwest. Contrib. N. Am. Ethnol., vol. I, Wash., 1877. On the Remains of Later Prehistoric Man Obtained from Caves in the Catharina Archipelago, Alaska Territory, etc. Smiths. Contr. to Knowledge, No. 318, Wash., 1878.

[2] Jochelson, W., Archæological Investigations in the Aleutian Islands. Carnegie Inst. of Wash. Publ. No. 367, Wash., D. C., 1925.

[3] Rau, Chas., North American Stone Implements. Smiths. Rept. for 1872, Wash., 1873. Prehistoric Fishing in Europe and North America. Smiths. Contr. to Knowledge, Wash., 1884, vol. XXV. Thomas, Cyrus, Introduction to the Study of North American Archæology. Cincinnati, 1898. Jennes, D. Archæological Investigations in Bering Strait. Ann. Rep. Nat. Mus. Canada for 1926 (Ottawa 1928), pp. 71–80.

full bloods—of the younger a large majority mixed (white blood). The full bloods all show one marked type, of short to moderate stature, rather short legs, huge chest and head, i. e., face. Color near onion-brown, without luster. Indians, but modified locally. Remind one (chest, stature, stockiness, shortness of neck and legs) of Peruvian Indians.

Indians at Prince Rupert same type; color pale brown; eyes and nose rather small for the faces in some, in others good size. Look good deal like some Chinese or rather some hand-laboring Chinese and Japanese look like them.

Indians at Juneau (the Auk tribe) very similar, but most mixed with whites.

Juneau.—A week was spent at Juneau, gathering information, obtaining letters of introduction, and making a few excursions. The city has an excellent museum devoted to Alaskan history and archeology, under the able curatorship of Father Andrew P. Kashevaroff, himself a part of the history of the Territory. The archeological collections of Alaska Indians and Eskimos are in some respects—e. g., pottery—more comprehensive than those of any other of our museums; but they, together with the valuable library, are housed in a frail frame building, under great risks from both fire and thieves. Fortunately the latter are still scarce in Alaska, but the fire risk is great and ever present. The museum is a decided cultural asset to Juneau.

NOTES OF ARCHEOLOGICAL INTEREST

Auk Point.—Thanks to Father Kashevaroff and Mr. Charles H. Flory, the district forester, an excursion was arranged one day to Auk Point, approximately 15 miles distant, a picturesque wooded little promontory near which there used to be a settlement of the Auk Indians. On the point were several burials of shamans and a chief of the tribe (all other dead being cremated), and near the graves stood until a short time ago a moderate-sized totem pole. Of all this we found but bare remnants. The burials of three shamans and one chief had been in huge boxes above ground; but they had all been broken into and most of the contents belonging to the dead were taken away, including the skulls. The skeletal parts of two of the bodies and a few bones of the chief remained, however, with a few objects the vandals had overlooked. The latter were placed in the Juneau Museum while the bones, showing some features of interest, were collected and sent to Washington. A large painted board near the graves of the shamans remained, though damaged. The totem pole, however, had been cut down the year before by a young man from Juneau, who then severed the head, which he carried home,

and left the rest on the beach, from where it was soon washed away. Thus a group of burials, the only ones known of the once good-sized Auk tribe, have been despoiled and their record lost to science. And such a fate is, according to all accounts, rapidly overtaking similar remains everywhere in southeastern Alaska.

Rare stone lamp (?).—At the museum one of the first and most interesting objects shown the writer by Father Kashevaroff was a large, heavy, finely sculptured oblong bowl, made of hard, dark crystalline stone, decorated in relief on the rim and with a squatting stone figure, cut from the same piece, near one of the ends. The bowl looks like a ceremonial lamp, though showing no trace of oil or carbon. Subsequently four other bowls of this same remarkable type and workmanship were learned of, two, the best of the lot, in the University Museum at Philadelphia; one in the Museum of the American Indian, New York; and one, somewhat inferior and of reddish stone, in the possession of Mr. Müller, the trader at Kaltag, on the Yukon (later in that of Mr. Lynn Smith, marshal at Fairbanks). The localities where the five remarkable and high-grade specimens have been found range from the Kenai Peninsula in southwestern Alaska to the lower Yukon. The Juneau specimen comes from Fish Creek, near Knik, Cook Inlet (see Descriptive Booklet Alaska Hist. Mus., Juneau, 1922, pp. 26, 27); that in the Heye Museum is from the same locality; the one in Philadelphia was found in the Kenai Peninsula; while that at Kaltag came from an old Indian site on the Kainh slough of the Yukon. Locally, there is much inclination to regard these specimens as Asiatic, especially Japanese, and a bronze Japanese Temple medal has been found near that now at Juneau. On the other hand, a strong suggestion of similarity to these dishes is presented by some undecorated large stone lamps from Alaska, and by a class of pottery bowls with a human figure perched on the rim at one end from some of the Arkansas mounds, Mexico, and farther southward. (See Mason, J. A. A remarkable stone lamp from Alaska. The Museum Jour., Phila., 1928, 170–194.)

Copper mask.—Shortly before leaving Juneau I became acquainted with Mr. Robert Simpson, manager of the "Nugget" curio shop, and found in his possession a number of interesting specimens made in the past by the Tlingit Indians. An outstanding piece was an old copper mask, which was purchased for the the National Musuem. Mr. Simpson obtained it years ago from a native of Yakutat and stored it with native furs and other articles of value. It originally belonged to a shaman of the Yakutat tribe and was said to have been worn by him in sacrificial slave killings, the shaman with the mask representing some mythical being. It is an exceedingly good and rare piece of native workmanship.

Copper "shield."—Another interesting article secured from Mr. Simpson is a large old shieldlike plate of beaten copper, decorated on one side with a characteristic Tlingit engraved design. Mr. Simpson, in a letter to Doctor Hough, dated June 26, 1926, says: "The shield, or to speak more correctly the copper plate—for it was not used as a shield—was the most valuable possession of the Tlingits. They were usually valued in slaves, this one, at the last known exchange, having been traded for three slaves. The possessor of four or five such plates was a man of the utmost wealth. Some claim that they got these copper plates from the early New England traders and others that they came from the Copper River. Either is possible. Lots of the Copper River nuggets were very large and flat and could have readily been hammered into plate form. I bought this in the village of Klawak on the west coast of Prince of Wales Island. I do not know of another one around here. All of the local elderly natives are familiar with its previous value, and when they have wandered into my shop to sell things they always made deep obeisance to this plate."

Talks.—While in Juneau the writer spoke before the Rotarians, who honored him with a lunch; and later, in the auditorium of the fine new high school, gave a public lecture on "The Peopling of America," etc. The object of these and the many subsequent talks in Alaska was, on the one hand, to reciprocate as far as possible the kindness and help received on all sides, and on the other to leave wholesome information and stimulus in things anthropological. The audience was invariably all that a lecturer could desire, and many were left everywhere eager for help and cooperation. The aid of some of these men, including prospectors, miners, settlers, engineers, foresters, and various officials, may some day prove of much value in the search for Alaskan antiquities.

Juneau—Seward.—June 8, leave Juneau. It has been raining every day, with one exception, and is misting now, depriving us of a view of most of the coast. Wherever there is a glimpse of it, however, it is seen to be mountainous, wooded below, snowy and icy higher up, inhospitable, forbidding.

June 10, arrive at Cordova, a former native and Russian settlement of some importance. Will stay here large part of the day and go to see about Indians, old sites, burials, and specimens, the main hotel keeper, the assistant superintendent of the local railway, the postmaster, the supervisor of the forests, and Dr. William Chase, who has been connected with the work of the Biological Survey in these regions. Mr. W. J. McDonald, the forester, takes me out some miles into the very rugged country, where there are still plenty of bear and mountain goat. After which Doctor Chase takes me to the old Russian and Indian cemetery. There are many graves, mostly

Indian, but also a few whites, and even a Chinaman. Russian crosses are still common. The older Indian part could be easily excavated. Learn of skulls and bones on "mummy" island in Prince William Sound.

Indians.—See quite a few. Nearly all appear more or less mixed; color in these more or less pronounced tan with red in cheeks and some tendency to paleness. Heads still all brachycephalic and of only moderate height; faces broad, noses not prominent, in males tend to large.

Two adult men, evidently full-bloods—pure Indian type of the brachycephalic form, head moderate in size, medium short, face not very large, nose slightly or moderately convex, not prominent, but all Indian. Color of skin submedium to near medium brown, no trace of whitish or pink. Stature and build medium; feet rather small; hair typical Indian, black, straight; beard sparse and short; mustache sparse, no hair on sides of the face.

The boat makes two or three more commercial and passenger stops before reaching Seward, the main one at Valdez, the terminal of the Richardson Trail to the interior. These stops permit us to see some fish canneries, which are of both general and anthropological interest. These establishments employ Japanese, Philippine, and Chinese labor, and it was found to be quite a task to distinguish these, and to tell them from the coast Indians. The Chinamen can be distinguished most often, though not always, the Japanese less so, while the Filipino usually can not be told from the Indian, even by an expert. Here was a striking practical lesson in relationships.

Seward—Anchorage.—Seward found to be a fine little town, full of the same good brand of people that one finds everywhere in Alaska and who go so far to restore one's faith in humanity. It is the terminus of the Government railroad to Fairbanks and a port of some importance.

Indian basketry.—No Indians were seen here, though some come occasionally. But several of the stores, including that of the Seward Drug Co. (Mr. Elwyn Swestmann), have an unexpectedly good supply of decorated Alaska Indian baskets. It was found later, in fact, that the Alaskan Indians, with the Alentians, compare well in basketry with those of Arizona and California.

Anchorage.—June 12–13. Anchorage, on Cook's Inlet, is a good-sized town for Alaska and the headquarters of the railroad. Here were met some very good friends, particularly Mr. Noel W. Smith, general manager of the railroad; Dr. J. H. Romig, formerly of the Kuskokwim; and Mr. B. B. Mozee, the Indian supervisor. Here, at Ellis Hall, I lectured on "The Origin and Racial Affiliations of the Indians," and the large audience included seven male (some full

blood) and two female (mix blood) Indians—of the latter, one very pretty, approaching a Spanish type of beauty. Near town I also visited with a launch two small Indian fishing camps. From Doctor Romig information was obtained about the Indians and some old sites of the Kuskokwim; and through the kindness of Messrs. Smith and Mozee I was enabled to visit the Indian school at Eklutna. Here at Anchorage I also was given the first and rather rare old Indian stone implement.

The Indians at the camps included 6 full bloods—4 men, 2 women. One of the men tested on chest. Typical full-blood results.

Type of full bloods: Color slightly submedium to medium brown, never darker; heads, subbrachycephalic to full brachycephalic, rather small; forehead in men more or less sloping in two; face, not large, Indian; nose tends to convex but not high. Indian in features and behavior, but features not as pronounced as general in the States tribes.

The full bloods in town: Medium to short stature, not massive frames, moderate-sized faces, Indian type, but not the pronounced form; head brachycephalic; hair all black; mustache and beard scarce, as in Indians in general; color of skin submedium brown. Children in camp (up to about 5 years) were striking by a relatively considerable interorbital breadth, otherwise typical Indian.

Birch-bark dishes.—At Anchorage, in several of the stores, but particularly at one small store, were seen many nicely decorated birch-bark dishes or receptacles. They are made by inland Indians, are prettily decorated with colored porcupine quills, and evidently take the place of the baskets of other tribes. It was difficult to learn just what Indians made the best or most, though the Tananá people were mentioned. No such fine assortment of these dishes was seen after leaving Anchorage.

Eklutna.—Sixteen miles from Anchorage, along the railroad, is the Indian village and school Eklutna. Mr. Smith made it possible for me to reach this place on a freight and to be picked up later the same day by the passenger train.

At Eklutna was found an isolated but prettily located and well-kept Indian school, with about fifty children from many parts of southwestern Alaska. More than half of these children showed more or less admixture of white blood, but there was a minority of unquestionable full bloods. There were two children from Kodiak Island and two or three southern Eskimo. The main impression after a detailed look at the children was that, while they all showed clear Indian affinities and some were typically Indian, yet on the whole there was a prevalent trace of something Eskimoid in the physiognomies—an observation that was to be repeated more than once in other parts of Indian Alaska.

Burials.—At a few minutes' walk from the school at Eklutna there is in a clearing of the forest a small Indian village, with a late graveyard showing Russian influence. A short distance farther, however, according to the Indians, there is an old burial place of some magnitude, with traces of graves, although quite obliterated.

Eklutna—Fairbanks.—Since reaching Seward the almost incessant drizzles have ceased and the weather has been fine and pleasantly warm. Everything is green, grass is luxuriant, and there are many flowers.

The railroad journey is a regular scenic tour, with its crowning point a glorious view of Mount McKinley. The trains run only in the daytime. For the night a stop is made at a railroad hotel, in a quiet, picturesque location, at the edge of a good-sized river. They have foxes in cages here and a tame reindeer. There are no natives in this vicinity.

There are two interesting passengers on the train, with both of whom I became well acquainted. One is Joe Bernard, an explorer and collector (besides his other occupations) in Alaska and Siberia. He furnishes me with some valuable pictures and much information. The other man is Captain Wilkins, the flier of Point Barrow fame, who strikes me as an able and modest man.

The next day, as the train stops at Nenana, I am met, thanks to a word sent by Mr. Noel W. Smith, by Chief Thomas and a group of his people. These behave kindly and tell me of a potlatch to be held at Tanana "after some days," where they will visit. The chief impresses me with his rather refined though thoroughly Indian countenance.

Fairbanks.—Before reaching Fairbanks, the inland capital of Alaska, I am met by Prof. C. E. Bunnell, head of the Alaska Agricultural College. This college, located on an elevation about 4 miles out of the city, I visit with Professor Bunnell soon after arrival, to find there some interesting paleontological and archeological collections. Here are fair beginnings which well deserve the good will of the Alaskans. Unfortunately the college has not yet the means for any substantial progress or research in these lines, and the collections are housed in a frame building where they are in serious danger from fire. But their presence will aid, doubtless, in the saving of other material of similar nature from the Tanana region, and specimens of special scientific importance will doubtless be referred to scientific institutions outside.

Fairbanks is a good-sized town, built on the wide flats of the Tanana River. Its population, now reduced, includes some civilized natives, most of whom, however, are mix breeds. A large petrified mammoth tusk on the porch of one of the semi-log houses shows

that these are regions of more than ordinary biological interest. And there is soon an occurrence which demonstrates this further. Mr. John Buckley, the deputy marshal, takes me to an old Japanese resident, now a rooming-house keeper, who has had a hobby of collecting fossils, and who in the end is happy to donate to the National Museum a fine skull of a fossil Alaskan horse, together with some other specimens, refusing all payment. Such is the human Alaska, or at least the most of it.

Here, too, to a full hall in the library, a lecture is given on "The Peopling of Alaska and America," after which follows a return to Nenana to catch a steamer to the Yukon.

THE WRITER'S TRIP ON THE YUKON

TANANA—YUKON

June 17. Nenana: This is a small town on the Tanana, mostly railroad buildings, with a hospital; there is one street of stores (three short blocks), most of them now empty. About half a mile off a small Indian settlement about an Episcopalian mission.

Country flat on both sides of the rather large river, except for some hills back of the right shore beyond the railroad bridge, for a short distance. The river flats seem scarcely 3 or 4 feet above water, overgrown with brush and a few scrubby trees, later spruce thickets. Purple flowers (fireweed) strike the eye.

No relics found at Nenana; no information concerning old sites or abandoned villages along the stream.

Physically, the Indians seen at Nenana were submedium brown, good many still full-blood, pure Indian type, brachycephalic, faces (nose, etc.), however, of but medium prominence. Moderate to good stature.

They are all fairly "civilized," wear white men's clothing, to which on gala occasions are added bands or collars of beadwork, and speak more or less English. The younger men are evidently good workers.

The distance from Nenana to Tanana is given as about 190 miles by the river.

The government boat *Jacobs*, on which we shall go down the Tanana, is a moderate-sized, shallow-bottomed stern-wheeler, and, like all such boats on these rivers, will push a heavily laden freight barge before it. There are about a dozen passengers, the boat labor, a trader or two. All kindly, open. A few women—most of both sexes of the Scandinavian type. On barge some horses, a cow, pigs, chickens.

Leave after lunch—very good, generous, and pleasant meal in a local restaurant that would do credit to a large city; only the people

are better, more human. Meals $1, the almost universal price in Alaska.

Some quaint expressions: When anyone has been away, especially to the States, they say he was "outside." I am an "outsider;" show it "by my collar." Underdone bacon is "easy." To assent they say "you bet." In a restaurant, to a decent, cheerful girl: "May I have a little hot coffee?" "You bet!" Which bright answer is heard so often that one finishes by being shy to ask.

Dogs, of course, do not pull, but "mush." This is from the Canadian French "marche." Dogs do not understand "go" or "go on," only "mush."

Extensive flats. Below Nenana these flats, plainly recent alluvial, are said to extend up to 60 miles to the left (southwestward) and to 20 miles to the right. As one passes nearer they are seen to range from 3 up to about 8 feet above the level of the river at this stage of water.

Cabins and fishing camps along the river, mostly flimsy structures, with a few tents. Indians in some. The Indians are said by the whites to be pretty lazy, living from day to day; yet they seem industrious enough in their own camps and in their own way.

Storage or caches, little houses on stilts. Dog houses in rows. Curious wheel fish traps, revolving like hay or wheat lifting machines, run by the current. They scoop out the fish and let them fall into a box, from which the fisherman collects them twice a day. It is the laziest fishing that could be devised. The contraption is said to come from the northwest coast, but has become one of the characteristic parts of the scenery along the Tanana and the Yukon. An Indian camp—stacks of cordwood—canoes.

The day is sunny, moderately warm and rather dry—about as a warm, dry, fall day with us. The river shows bars, with caught driftwood; also considerable floating wood. There are seagulls, said to destroy young ducks and geese and water birds' eggs. Shores now wooded, mainly poplar, not large. Farther back and farther down, spruce.

The river averages about 200 to 300 yards but differs much in places and there are numerous side channels (sloughs). It is crooked; many bends. The current is quite marked, stated to run 4 to 6 miles an hour. The water is charged with grayish-brown silt, part from glaciers higher above, part from banks that are being "cut." The banks are entirely silt, no trace of gravel or stone. Indian camps getting very scarce. Boat making good time, but now and then requires careful manipulation, with its big, heavy barge in front. Once driven to shore, but no damage, and after some effort gets away again. No trouble yet from mosquitoes, but there are some horseflies.

Pass a large camp—a Finn married to a squaw, and three or four Indian families—all snug in a clearing of the fresh-looking woods on the bank of the river.

Bend after bend in the stream, and boat has to follow them all, and more, for the current and deeper water are now near this bank and again at the opposite bank.

The water in many places is undermining the bank, exposing frozen strata of silt. The top often falls in without breaking, with trees and all, and it then looks like heavy, ragged mats hanging over the bank, with green trees or bushes dipping into the water, and perhaps a clump of wild roses projecting from the sward. There are many low bushes of wild roses in this country, pink and red kinds, now blooming. Also many small bushes of wild berries—cranberries (low and high), raspberries, dewberries or blueberries.

Meat is imported even to here from Seattle, and carried far down the Yukon. When received they place it in a "cellar" or hole dug down to the frozen ground and place the meat there—a natural and thoroughly efficient refrigerator.

Past Old Minto, a little Indian village, a few little log houses in a row facing the river, with a wheel fish trap in front (pl. 1, *a*). Later a few Indian houses and a "road house" with a store at Tolovana. Most Indians there (and elsewhere here) died of the "flu" in 1918, the bodies being left and later buried by the Government. A few isolated little Indian camps.

The boat ties to trees along the banks. No docks or anything of that nature. Not many mosquitoes yet, more horseflies, which, however, do not bother man very much.

After reaching Hot Springs (right bank), there is seen a long range of more or less forested, fairly steep-sloped hills along the right bank, coming right down to the water's edge for miles, with bush and forested flats opposite. At the end of one of the ravines with a little stream, right on the bank, remnants of a little glacier melting very slowly in the sun. Strange contrast, ice and green touching. Boat making good time along the hills.

June 18. Hardly any sleep. Sun set after 10 and rose about 2.30, with no more than dusk between. Then heat in the cabin, and above all the noises. The boat stuck five hours on a bar and there were all sorts of jerks and shudders and calls.

Flats again on both sides, but hills beyond, with just one little spot of snow. Will be warm day again.

ANCIENT MAN

Prospects of old remains of man all along the river are slight if any. Old silt flats have doubtless been mostly washed away (as now) and rebuilt. Only on the older parts, now often far from water,

could anything remain and there it is all a jungle of forest with undergrowth, with all surface traces absent (no stone, no shell), and no one here to find things accidentally. As to the hills that approach the river, the slopes (shales, overlain by what looks like stratified mud and silt rock) are mostly of recent exposure, and have doubtless been receding slowly through erosion, so that the bank line along them is not old; and their valleys are few, narrow, and were higher formerly as well as more extended toward where the river flowed then. The only hopeful spot is about Hot Springs, where fossil animal remains are said to exist, but here nothing as yet has been noted suggesting ancient man.

June 18, 4 p. m. River getting broader. Some low dunes. In distance a range of bluish hills before us—the hills along the Yukon. Boat meandering from side to side. Every now and then a necessary steam blow-out of mud, or a short whistle, hurry of a man over the top of the barge and of two half-breeds along its side to the prow to test, with long pointed and graduated poles, the depth of the water, calling it out to the captain. The calls range from "no bottom" to "4 feet," at the latter of which the boat begins to touch and back water.

5 p. m. Arrived at Tanana, a cheerful looking town, extending over about half a mile along the right bank of the Yukon, here about 20 feet high; but now, with the gold rush over, rather "slack" on both business and population, as are all other Yukon towns. Somewhat disappointed with the Yukon—not as majestic here as expected. See storekeeper—introduced by captain. Hear good news. The Indians have a big potlatch at the mission, 2 miles above. Tanana Indians expected. And there will be many in attendance. Rumors of this potlatch were heard before, but this was the first definite information. Get on a little motor boat with Indians who were making some purchases, and go to the St. Thomas Episcopal Mission, Mr. Fullerton in charge.

THE INDIANS AT TANANA

The mission above Tanana is beautifully located on the elevated right Yukon bank, facing Nuklukhayet island and point, the latter, according to old reports, an old trading and meeting spot of the Kuchin tribes, and the confluence of the Tanana with the Yukon. The mission house, located on rising ground, the wooden church lower down, the cemetery a bit farther up, and the Indian village a bit farther downstream, with their colors and that of the luxuriant vegetation, form a picturesque cluster.

I am kindly received by Mr. Fullerton and his wife and given accommodation in their house. On the part of the good-sized In-

dian village everything is life and bustle and we soon are over. Motor launches owned and operated by the Indians in the river; dogs, scores of the big, half-wild, noisy sled dogs tied to stakes along the slope of the bank, fighting stray ones, barking in whole outbursts, feeding on smelly fish, or digging cooling holes into the bank in which they hide most of the body from the warm rays of the sun; and many Indians, about 400 in all, in whole families, in houses, large canvas tents, cooking, eating, visiting—a busy multitude, but with white man's clothes, utensils, etc., not nearly so interesting as a group of more primitive Indians would be.

Walk, visit, talk, and observe. Note many mix-bloods, especially among the younger ones and the children. Among the full bloods, many, about one-half, with features reminding more or less of Eskimoid; but a few typically Indian, i. e., like most of the States Indians.

Medium stature, substantial but not massive build, quite a few of the older women stout. Color of full bloods generally near medium brown, features regular Indian but not exaggerated, noses rather low especially in upper half, eyes and hair Indian. Epicanthus not excessive in children, absent in adults (traces in younger women), eyes not markedly oblique. Behavior, Indian.

The more pronounced Eskimoids have flatter and longer faces, more oblique eyes, and more marked epicanthus. They should come, it would seem, from Eskimo admixture. The Tanana Indians (Nenana) did not, so far as seen, show such physiognomies.

Toward evening, and especially after supper, natives sing and dance. Songs of Indian characteristics, and yet different from those in south; some more expressive. A song "for dead mother," very sad, affects some to crying aloud (a woman, a man). A wash song—a row of women and even some men imitating, standing in a row, the movements in washing, while others sing; humorous. A dance in a line, curving to a circle, of a more typical Indian character. Late at night, a war dance, with much supple contortion. Also other songs and dances up to 2.30 a. m.—heard in bed.

June 19. With dogs barking and whining and Indians singing, got little rest. All Indians sleep until afternoon. No chance of doing anything, so go down to town to get instruments and blanks. Find that storekeeper has an old stone ax—sells it to me for $1. Also tells of a farmer who has one—go there with the boat and obtain it as a gift; told of another one—a Finn—has two, sells them for $1. Come from the gravelly bank of the river or are dug out in gardening. There may well have been old settlements in this favorable location. After return, visit some tents to see sick. Much sickness—eyes, tuberculosis—now and then probably syphilis.

Indians relatively civilized, more than expected, and most speak tolerable English. Have flags, guns, sleep in some cases on iron beds and under mosquito netting, smoke cigarettes and cigars; and even play fiddles. Of course some have also learned the white man's cupidity and vices.

This day I met with something unexpected, due to perversity of mix-breed nature. Seeing so many Indians present, and after a good reception by them the evening preceding, I thought of utilizing the occasion for taking some measurements. I therefore mentioned the thing to some of the head men shortly after my arrival and receiving what seemed assent, went to-day to Tanana to get my instruments. On coming back and finding a few of the old men, who were quite friendly, I invited them into the "kashim" (community house) and began to question them on old sites, etc., when in came, probably somewhat under the influence of liquor, a mix-breed to whom I had been introduced the night before and who at that time acted quite civilly, but now coming forward began rather loudly and offensively to question about what I wanted here and about authority, giving me to understand at last quite plainly that he wanted to "be paid" if I was to take any measurements. He claimed to be one of the "chiefs," and I would not be allowed to do anything without his help. His harangue quite disturbed the other Indians, who evidently were both ashamed and afraid of the fellow. And as I would not be coerced into employing and paying him, and there being no one, as I learned, of supreme authority, the "chief" of these Indians being little more than a figurehead, it was decided to give up the attempt at measurements. The rest of the visit was therefore given to further observations and to the witnessing of the potlatch. Chief Joseph (pl. 14), nominally the head of these Yukon Indians, expressed his sorrow and tried to make amends by offering himself.

The potlatch was evidently in the main a social gathering of the Yukon Indians, with the Tanana natives as visitors. It consisted mainly of eating, singing, and dancing, to be terminated by a big "give-away." This latter was witnessed. It proved a disappointing and rather senseless affair. The whole transaction consists in the buying and gathering, and on this occasion giving away, of all sorts of objects, by some one, or several, who have lost a husband, wife, mother, etc., during the preceding year. The possessions of the deceased are included in this and doubtless often transmit disease. All the color of the observance is now gone. The goods—blankets, clothing, fabrics, guns, and many other objects, even pieces of furniture, trunks, or stoves—are gathered in the open and when the time comes are one after another selected

by those dispensing and brought to this or that man or woman of those who have gathered around. No song, no ceremony, no talks, no thanking, no "wake" following. Just a poor shadow of something that formerly may have been a tragic, memorable, and meaning occasion.

Returned to Tanana near 10 p. m. and found lodging with a storekeeper who kept a "hotel." Got a big room, big bed, and when store closed was alone in the house, the storekeeper sleeping elsewhere.

June 20. But, Alaska was evidently not made for sleepers. Had not a wink until after 3 a. m.—daylight, people talking loud and walking on the board walk outside, and heard so clearly in my room—loud-laughing girls, the dogs, and at last another boat with its siren; and every now and then a singing mosquito trying to get at me through even the small opening left under the sheet for breathing—there being no netting. Finally doze off, to wake near 9 a. m., but everything closed, deadlike. However, go to a little frame house for breakfast, and in waiting until it is made find myself with two elderly men who go to-day down the river with their boats. One is a former store clerk, etc., and now an "optician"—peddles eyeglasses down the river; the other was a prospector, miner, and blacksmith, now an itinerant "jeweler" and a reputed "hootch" peddler. As the latter—otherwise a pretty good fellow—has a good-sized though old boat, arrange to go down with him. See the marshal, storekeeper, settle with my hotel man (had to go at 11 to awake him), and ready to start.

The outfit is largely homemade, not imposing, old, unpainted, and unfit for the rough—but it could be worse. It consists of a scow, a low, flat-bottomed boat, partly covered with canvas roof on birch hoops, in which Peake (the owner) carries fresh meat to some one, a stove, dishes, bedding, and many other things; and the motor boat proper, in which there is little room except for the machine and its tender. The latter sits on a soap box; I, on a seat extemporized from a cylindrical piece of firewood with a little board across it, with my two boxes and bedding within easy reach. Sit in front of the scow, except when driven back by spray. But our motor works and so we start quite well at some time after 11. The arrangement is to stop at every white man's camp or settlement down to Ruby. I could have gone on a better boat with its owner, but they charge here $15 a day, with "keep," and twice the amount for the return of the man and the boat, which is beyond my resources.

Tanana—Ruby. The river is clearer than the Tanana, and much broader. It is a great fine stream and its shores, while mostly still low on the left, on the right rise here and there into moderate loess

bluffs, far beyond which are seen higher elevations and bluish forested mountains. All covered with poplar and spruce.

2.15 p. m. Wind has so increased that the scow bumps and squeaks and there is danger of opening its seams. Therefore side to the beach and make lunch—a roast of fat pork, oversalted, canned spinach, dry bread, and black coffee. All on a simple, old, but efficient little stove in the boat. Our companion, the oculist, rides not with us but in a nice little green canoe with a plaything of a gasoline motor fastened to the backboard, but we all eat and sleep together.

But a few small Indian camps seen, and no white man's house. Soon after lunch, however, approach "The Old Station," where there are a few Indian houses, and later a white man's place (Burchell's). Stop at the latter. Learn that we are 20 miles from Tanana and on a 5-mile-long channel. There are here 15 to 40 feet high loesslike (silt) bluffs with a flat on the top, which latter was from far back one of the most important sites of the Indians of these regions. Mr. Burchell and his partner kindly take me back, with their better boat, to the main old site. Many old graves there, a few still marked. Traces of dugouts (birch-bark lined), houses, caches, etc., from Burchell's place to old main site. Important place that deserves to be thoroughly excavated, though this will entail no little work. Site was of the choicest, dominant, healthy. Connects by a trail, still traceable, with the Koyukuk region.

There are said to be no traces of pottery in any of these parts. But average to very large stone axes are washed out occasionally from the banks, and other articles are dug out (long ivory spear, bone scraper, etc.). Promise of bones, etc., by Mr. Burchell.

One hundred miles more to Ruby. Near 8 p. m. start again—sun still high, little wind—endeavor to get to the "bone yard," a great bank bearing fossils. Fine clean scenery, flat on left, flat to elevated with grey-blue mountainous beyond on right. Water now calm and we make good progress. Very few camps—dogs on the beach, fish-drying racks a little farther, then a little log cabin and perhaps a tent, with somewhere near by in the river the inevitable fish wheel, turning slowly with the current.

Had supper at Burchell's; white fish, boiled potato, coffee, some canned greens.

Scenery in spots precious, virginal, flat at the river, elevated behind, foreground covered by the lighter green of poplars and birches, with upright, somber, dark spruce behind. Sun on the right, half moon on the left, and river like a big glassy lake, just rippling a little here and there. Cooler—need a coat. On right, getting gradually nearer the mountains.

Near 10 p. m. Sun still above horizon. On left a long (several miles), mostly wooded, but here and there denuded, palisadelike bank, apparently 200–400 feet high—the "graveyard."

Monday, June 21. Just at sunset last night—after 10 o'clock—came to the "bone yard" bank—a long curving line of loess bluffs 100 to 300 feet high, steep right to water's edge, riven by many ravines. Lowest third (approximately) light compact loess; then a thick layer of river sand (stratified more or less) and small gravel, then from one-third to nearly two-fifths of darker loess. In spots quite dark, frozen, but on surface melting, "running," also tumbling in smaller or larger masses. Wherever darker there emanates from it and spreads far out over the river a decided mummylike smell. Too late to photograph from boat, and no other place available. Also impracticable to explore with any detail—would take several days and be a difficult work. The bluffs become gradually lower downstream. No bones seen from boat, but mostly were not near enough to discern. A remarkable formation, in many ways, and in need of masterly study as well as description.

Night on a low gravelly and pebbly beach. Many mosquitoes. Mosquito netting found bad—sides too short (gave directions, but they were disregarded) and mesh not small enough. In a short time impossible to stay under. Supplemented by old netting of Mr. Peake, who will sleep under his canvas in the boat; but the old dirty net has holes in it and the mosquitoes keep on coming through the two. Fighting them until some time after midnight, then under all my things—netting, blanket, clothes—find some rest, sleeping until 4.30 a. m. After that—full day, of course—sleep impossible. The "optician," who slept well under proper Alaska netting, gets up, wakes my man; we both get up, shake, roll up bedding, have a catwash, then breakfast, and at 6.30 off once more along the beautiful but not hospitable river.

Inquiry at a local white man's cabin about fossils and Indian things negative—has paid no attention, and fossil bones that he sometimes comes across generally not in good state of preservation.

Right bank now hilly, with greater hills and then mountains behind. Warm, river smooth, just a light breeze. How puny we are in all this greatness.

A lot of trouble develops with the engine to-day—bad pump. Will not get to Ruby until evening. Meat, on which I must sit occasionally, begins to smell, and there are numerous horseflies, probably attracted by the smell.

Four p. m. Visit Kokrines, on a high bank, native village, cemetery. Photograph some natives, are good natured, talk pidgin English. Clearly considerable old Eskimo admixture, but the substratum

and main portion is Indian. All kind and cheerful here, glad to have pictures taken. Only white man is a "road-house" keeper; i. e., storekeeper. Store, however, poorly stocked, probably in all not over $200 worth of goods. "Optician," who is hoggish, has headache, but eats and drinks all he can nevertheless. "Jeweler" repaired his pump, and so we are once more on the way—35 miles more to Ruby. No trace of any relics at Kokrines.

River now a mile wide, with many "slews" (side channels, sloughs), and many low, flat, forested islands. Mountains to right, higher, traces of snow. Smoke wall from forest fire advancing from the west—now also smell. Islands beautiful, fresh colors and clean—light grass on border, then green and grayish poplars, birches, and alder, from among which rise the blackish green spruces. Little native fishing camps a mile or two apart, right bank—on left wilderness of flats, as usual.

A few miles above Ruby conditions change—high bluffs (rocky) now on left, flat on right side. Ruby, from a distance and after the loneliness of the day, looks quite a little town on the left bank, at the base of the higher ground.

Ruby

June 22–23. Our approach to Ruby was very modest. With Mr. Peake paid off, we just sided against and tied to the bank, on which are the lowest houses of the village, and carried out my boxes and bedding on the bank. There two or three men were idly watching our arrival. I asked about the local marshal, to whom I had a note, and had my things carried to the combined post office and hotel. In almost no time I meet Mr. Thomas H. Long, the marshal, become acquainted with the people about, tell my mission, and begin to collect. It does not take long for one properly introduced to be thoroughly and warmly at home in Alaska. The first specimen I get is a fine fossilized mammoth molar. It is brought to me by Albert Verkinik, who was about to depart for some mines, but went back to get the tooth. And he asks no compensation.

The parts of two days spent at Ruby were quite profitable. Visiting, and in the jail, were several Indians who could be noted and photographed. At the old jail there were two skulls of Indians that were donated. The teacher had two of the characteristic Yukon two-grooved axes. The postmaster, Mr. H. E. Clarke, gave a collection of fresh animal skulls. Mr. Louis Pilback donated two mammoth molars, found 2 miles up the Yukon on Little Melozey Creek, about 8 feet deep, in the muck right over the gravel. Mrs. Monica Silas brought me a good old stone knife. Several of the men took me down to the beach to see a damaged fossil elephant skull, also to

see some fossiliferous workings above the town. Another party took me a few miles up and across the river to see an Indian camp and near by some old burials. The collections were sent through parcel post; and the evening before departure I gave a lecture to an attentive and respectful audience.

The town itself, however, is now a mere damaged and crumbling shell of what it was in the heyday of its glory, during the gold rush. Many of the frame dwellings and stores are empty; the board sidewalks are rickety and with big holes; and in the air is a general lack of impetus.

June 23. Failing to find another suitable boat, I once more made an arrangement to go farther down the river with Mr. Peake and his friend. Peake's boat and scow were not much to look at, and the troubles with the engine, and with its owner's raw swearing at times, were somewhat trying; but for my purpose the outfit did well enough, and I was treated very well and given all needed opportunity to examine what was of importance on the banks. I was quite sorry when eventually we had to part company, and I know Mr. Peake has not forgotten my quest, for I heard of his talking about it to parties, with whom I was very glad to come in contact, on the Kuskokwim.

June 23. The sunny evening of my second busy day at Ruby, near 10 p. m., Peake unexpectedly comes to the hotel to tell me he will be ready to start to-night, on account of quiet water. His wash "is being ironed" and will be ready soon. The marshal comes in, calls the prisoners to take down my baggage, and at 10.15, after true, hearty good-byes, I am once more in the old scow. Then Peake goes for his wash, with an Indian woman, and does not come until near 11. River peaceful, sun shortly set, sky somewhat cloudy, forest fire on opposite shore below still smoking a great deal. Leaving good people at Ruby, who promise to help in the future. It is getting much cooler after a pretty warm day. Will lie on the hard boxes and try to get a little sleep.

Thursday, June 24. We went long into the night, then stopped at a lone cabin. Up timely, but slow start—it is 10.10 a. m. before we go. The time gained at night lost now—bad habits. Breeze up the river, occasionally strong, but not severe.

The cabin was the "Dutchman's," or Meyer's. He came out at 1 a. m. to meet us, at the bark of his big dogs, a good-hearted, weather-seared prospector, fisherman, and trapper of about 40, alone with his huskies. Asked me into his little log hut, prepared a place for my bedding on a frame, burned powder against the mosquitoes, brought out from cool "cellar" a bottle of root beer he brews, and then we went to sleep. But dogs kept waking us and Meyer went

out several times to quiet them. Fall asleep at 3.20 and oblivions until near 7. Meyer forces on me six bottles of root beer. I leave him some prescriptions, and taking my bed roll we go down to the boat. My men still sleeping, as I expected. And then slow awakening, breakfast, and late starting.

Meyer never saw any Indian bones or stones, but promises cheerfully to watch for them hereafter and to make inquiries. Of course, he also, like so many in these lands, tells of a "prospect" of a gold find, and is quite confident he'll "make good." As usual, also, it is a "lead" that was "lost" and he believes he has found it. And all the time the gold is inside, not outside, of these hunters of the yellow star.

Hills on the right again; flat islands, banks, etc., on the left. Meyer's is 18 miles down from Ruby, right bank. About 5 miles farther down on the slopes of the right bank is a pretty little Indian graveyard (pl. 1, *b*), and a little lower down there are three now empty Indian huts.

Hills and mountains seen also now beyond the wide flats of the left bank. The hills on right, along which we pass, are more or less forested, but often just bushy and grassy. They rise to about 600 to 700 feet and the slopes are seldom steep. Along their base there are many elevated platforms, low swells, and nooks, that could have served of old—as they serve here and there now—for native habitation, though only few could have accommodated larger villages.

Pass an Indian camp—the inevitable staked dogs; a swimming boy—first being seen bathing in the open.

Whiskey Creek next. Sixty-two dogs, all along the bank, and each one-half or more in his own cooling hole; holes they dig down to near the frozen ground. A settler, and two Indians—a photograph. No relics or bones now, but will watch; promise also to save some animal skulls, etc.

Twelve o'clock. Off again. Day better now, less squally, warm.

Hills above and below lower and earthy—loess, at least much of it. The right shore is all along sunnier, higher, more beautiful, and more open to wind (less mosquitoes). These are the reasons, doubtless, why it was of old and is still the favored side for habitations by natives as well as whites.

Just before reaching "Old Lowden," overtaken by a rather crazily driven small motor boat with four young Indians, who hand us a crude message for the storekeeper at Galena, telling him that a baby in the camp is to die to-night. I offer to see the baby. Find a boy infant about one year or a little over, ill evidently with bronchitis. Father and mother, each about 30, sit over it brooding in dumb grief, each on one side. Respond not to my presence, and barely so to my questions. And when I begin to tell to the fellow who inter-

prets and is some relative that the baby need not die, and what to do—I note that he is somewhat under the influence of liquor and a little flushed—to my dismay he begins to rant against me as a doctor and against the Government, and wants me perforce, seemingly, to say that the child is going to die and die to-night. There are two guns around and I almost anticipate his catching hold of one. The gist of the piecemeal talk is that they believe I am a Government doctor, who ought to stay four or five days with them and take over the child's treatment, and yet the fellow insists that the child will die before next morning. I do not know what they would say or do to the doctor if he undertook to stay and the child died—or if it recovered. It is dismal. They have the idea that the "Government" is obliged to do all sorts of things for them, without being clear just what, and that it does not do them. They believe, and try to say so, that I am sent and paid by the Government to treat them. Probably they have heard about the Government medical party that is to examine conditions along the river this summer, and think that I do not want to do or give what is necessary. I give all the possible advice, but there is plainly no inclination to follow it. I offer some medicine; they sneer at medicine. Even the father says he does not understand it or want it. They are all surly and in a dangerous, stupid mood. So there is nothing left but to go away as well as one may.

On way down the bank a woman is seen cleaning and cutting fish—knife steel, with wood or ivory handle, of the Chinese and Eskimo type. A porcupine, bloated, and with flies and maggots on it already about the nose, mouth, and eyes, lies next to the woman, and its turn will probably come next after the fish.

Have modest lunch—canned pears, a bit of cold bacon left from morning, a bit of cheese, and coffee; and start once more onward. So much beauty here, and such human discord.

3.30 p. m. Passing on right bank a line of bluffs, wholly of loess, about 200 feet high and approximately 4 miles long, and as if shaven with knife from top to water's edge. After that flats only on both sides, with but one hill far ahead of us.

Motor trouble again—same old pump; but not for long; in half an hour on again. A steamer upward passes us—like a stranger, and power.

Galena

A little town (village), on a flat promontory. An old consumptive storekeeper—no knowledge of any old implements or skeletal remains. Lowden village moved here due to mine opposite and better site. About 10 Indian houses here; inhabitants now mostly in fishing camps.

From Galena down, low shores and islands as on the Tanana, as far as can be seen, with mountains, grayish blue, in far distance (and only occasional glimpses). River never less than three-fourths of a mile and sometimes together with its sloughs and islands several miles broad. Some geese; occasional rabbit seen on land; otherwise but little life. First gulls.

The Indians at Ruby and Galena show here and there an Eskimoid type, with the younger nearly all mix bloods (with whites). Full bloods of same type as all along the river, brachycephalic, low to moderate high vault of head, moderate to medium (rarely above) stature, medium brown, noses not prominent, concavo-convex, moderately convex or nearly straight, Indian cast of the face, but quite a few more or less Eskimoid. Not very bright.

Sit in the bottom of the scow, in front, before the stove and make notes. When we stop, jump out to tie the boat; when leaving, push it off. Getting sunburnt dark. Forgetting once again that I have a stomach or any other organ. Only sleep, never fully, much less than ought to; but even that is somehow much more bearable here than it would be at home.

6.45 p. m. Suddenly, after a turn, confronted with a steep rocky promontory about 500 feet high—stratified mud rocks. On side, high above, a tall white cross; learn later an Indian murdered a bishop here. A little farther, on a flat below the slope, a small settlement. A remarkable landmark, known as the Bishop's Rock. Afterwards again flats, but some more elevated than before to the left. River like a great looking-glass. Same character of vegetation and colors as farther above, but details varied.

At Ruby had made a genuine, effective, Alaska mosquito netting, and so now feel quite independent of the pest; also have two bottles of mosquito oil, which helps. Fortunately on the water we are not bothered.

Toward night reach Koyukuk River, and later on, Koyukuk village, a pleasant row of houses, white and native, on a high bank. Here, at last, pass one good night, sleeping under good mosquito netting in the house and on the bed of an Italian trader. Also had good supper of salmon, and good breakfast of bacon and eggs, and so feel rested and strong.

Friday, June 25. But in the morning the sky is overcast and every now and then there is a loose shower. Of course my boon companions are not ready again until long after 9 o'clock, and then the engine will not go again, so a longer delay. They were inclined, in fact, to "lay over," but I urged them on. But they are determined if it rains a bit more to "tie to" somewhere. Fortunately there is no wind. About 3 miles below Koyukuk and its flats, the high bluffs with

steep more or less shavedlike barren slopes recommence. A gloomy day.

About 7 miles down, after a large rocky promontory, a small graveyard on the side of a hill, with a little native camp about a third of a mile beyond.

10.45 a. m. Beautiful wooded great hills, 400 to 800 feet high, all along the right bank again, with large V-shaped valleys between. A fine, rounded, slightly more than usually elevated island ahead. Left banks flat.

Sun coming out a little; cool, but not unpleasant. No more showers, river smooth, boat making time. Blue hazy mountains far to the left front.

Hills to right rocky, strata horizontal to warped, mud rocks, broad banks of sandy, gravelly or mucky materials, not consolidated, between hard strata.

Now and then a small Indian camp, usually two or three tents, Indians, dogs, boats; some drying fish (not much).

11.00 a. m. Another isolated little graveyard, right slope, near an old camp.

There is no possibility now of excavating any of these graveyards, for the Indians are in unpleasant disposition toward the Government for various reasons. But such a place as that near Burchell's could be excavated as soon as conditions improve. Also that above Ruby and another opposite and just below Ruby. There are no longer any superstructures left at these (or but traces), and the graves, as seen above Ruby, are near (within 2 feet of) the surface.

No trace or indication of anything older than the double-grooved ax culture has thus far been seen anywhere in the valley; and large stretches of present banks are quite barren.

As we approach Nulato the horizon before us becomes hilly and mountainous. The sun is now fully out and its warmth is very pleasant. Pass an Indian woman paddling a canoe; later an Indian family going upstream in a motor boat. Most of these Indians possess a motor boat of some sort, and know how to run it, though it is not in their nature to be overcareful.

Nulato

(Pl. 1, *b*)

Arrive midday. Quite a village, as usual along the water front on a high bank. Large fancy modern surface burial ground with brightly painted boxes and flying flags on a hill to the right. Met by local marshal and doctor; my things are taken to a little hospital. Natives here have poor reputation, but now said to be better. Boys nearly all mix bloods. Several men and women show Eskimo type,

but majority are Indian to somewhat Eskimoid. Soon find they are not very well disposed—want pay for everything, and much pay. Have a few specimens, but to obtain anything from them is difficult. Have been spoiled.

A visit with the marshal to the site of old Nulato on the proximate point; nothing there, just a rabbit's skull and a lot of mosquitoes. Photograph old graveyard (that of old Nulato), on the distal point beyond the creek.

Mr. Steinhauser, trader, of Czech descent, helpful and kind. But nothing further to do here. Steamer that was to be here to-night or to-morrow will not arive, just learned, until Tuesday (this is Friday); and so must engage a little gasoline boat to the next station, Kaltag, 40 miles down the river.

Sleep under my new netting in the hospital. In the morning, after parting with doctor and marshal, start 8.30 a. m. Boat little, shaky, run by a half-breed boy of about 18. My old scow with Peake and his companion will stay a day longer. Partly cloudy, warm.

Pass flats, and come again to similar shaved-off bluffs like yesterday. We are now running close to the shore so that I can see everything. Flowers, but not many or many varieties.

9.50 a. m. Pass (about 8 miles from Nulato) a few burials (old boxes) on right slope. (Pl. 1, *c*.) Indian camp about one-half mile farther, and a few old abandoned huts and caches.

Everything on and along the river about the same as yesterday, except in little details. Sky clouded; light clouds, however. The boy with me has had good schooling (for a native) and is a good informer. But there is little of archeological or anthropological interest hereabouts. (Pl. 2, *a*.)

12.10 p. m. Another rounded island ahead of us; far beyond it grayish-blue hills and mountains. Six miles more to Kaltag. But little life here—a few small birds, a lone robin, a lone gull.

Kaltag

1.00 p. m. Kaltag in view—a small modern village on right bank, less than half the size of Nulato; a nearly compact row of log and plank houses. Nothing of any special interest seen from distance, and but little after landing. The old village used to be somewhat higher up the river.

There is an old abandoned site also just opposite the present Kaltag. Another site. "Klenkakaiuh," is, I am told, in the Kaiuh slough south of Kaltag, in a straight line about 10 miles, but no one there; and several other old villages in that region along that slough—same Indians as those of Kaltag. All of Kaltag go there on occasions, but do not live there permanently any more.

a, "Old Minto" on the Tanana. Indian village. (A. H., 1926)

b, Present Nulato and its cemetery (on hill to right of village) from some distance up the river. (A. H., 1926)

c, The Greyling River site, right bank, 22 miles above Anvik; site and graveyard (male skeleton) from top of knoll. (A. H., 1926)

a, View on the Yukon from above Kaltag. (A. H., 1926)

b, Indian burial ground, Middle Yukon. (A. H., 1926)

c, Anvik, from the mission. (A. H., 1926)

At Kaltag Eskimoid features already predominate and some of those seen are fully like Eskimo.

There is a tradition of an Asiatic (Chukchee) attempt at Kaltag once.

Later in the afternoon photograph some natives and go with Mr. Müller, the storekeeper, and Mr. McLeod, the intelligent local teacher, on the latter's boat, "hunting" along the banks up the stream. Meet an old Indian (Eskimo type) paddling a birch-bark canoe, said to be the only canoe of that sort now on the Yukon. About three-fourths of a mile above the village see caved bank and find a skull and bones—"split" old burial of a woman.

A canoe coming, so we all go farther up the beach, pretending to examine stones. It is only the boy who brought me, however, going home with some planks, and he grins knowingly.

After that we locate three exposed coffins, two undisturbed and covered with sod. These two, for fear of irritating the natives, are left. But the third is wrapped only in birch bark. It was a powerful woman. With her a bone tool and a white man's spoon. With the burial that had tumbled out of the bank there were large blue and gray beads and three iron bracelets—reserved by the teacher.

I gather all the larger bones and we put them temporarily in a piece of canvas. It is hard to collect all—the men are apprehensive—it might be dangerous for them if detected. Everything smoothed as much as possible, and we go across the river to examine two fish nets belonging to the trader. One of these is found empty; but the other contains five large king salmon, 15 to 20 pounds each, three drowned, two still alive. The latter are hooked, hoisted to the edge of the boat, killed with a club, and, full of blood, thrown into the boat—great, stout, fine fish. To secrete our other findings from the natives the storekeeper gets a large bundle of grass and ties it to my package. We shall be bringing "medicine."

Arrive home, only to learn that against our information the river boat has left Tanana on schedule time, is now above Koyukuk, and is expected to arrive at Kaltag before 8 p. m. Hurriedly pack, a few more photographs, supper, and the smoke of the steamer begins to be visible. In a little while she is at the bank, my boxes are brought down, a greeting with old friends on the boat—the same boat (*Jacobs*) on which I went from Nenana to Tanana—and we start off for Anvik.

Mr. Müller, the trader at Kaltag, German by birth, has a young, fairly educated Eskimo wife, a good cook, housekeeper, and mother of one child. The child is an interesting white-Eskimo blend.

In his store Mr. Müller showed me a good-sized heavy bowl of red stone with a figure seated in a characteristic way near one end. The specimen was said to have come from an old site on the Kaiuh and

is of the same type as that at the museum in Juneau and the two in the east, one at the Museum of the American Indian, New York, and the other at the University Museum, Philadelphia. Regrettably Mr. Müller would not part with the specimen. (See also p. 34.)

The natives of Kaltag, so far as seen, are more Eskimoid than those of any of the other settlements farther up the river.

Fine evening; sit with a passenger going to Nome, until late. Learn that the boat to St. Michael is waiting for this boat and will go right on—not suitable for my work. Also we are to stop but a few minutes at Anvik, where I am to meet Doctor Chapman, the missionary.

Sunday, June 27. About 5 a. m. arrive in the pretty cove of Anvik. Received on the bank by Doctor Chapman, the head of the local Episcopalian mission and school, and also the Anvik postmaster. The doctor for the present is alone, his wife and daughter having gone to Fairbanks, and so he is also the cook and everything. In a few minutes, with the help of some native boys, I am with my boxes in Doctor Chapman's house, and after the boat has left and the necessities connected with what she left attended to we have breakfast. I am soon made to feel as much as possible "at home," and we have a long conversation. Then see a number of chronic patients and incurables; attend a bit lengthy service in Doctor Chapman's near-by little church; have a lunch with the ladies at the school; visit the hill graveyard. They have reburied all the older remains and there is nothing left. Attend an afternoon service and give a talk to the congregation of about half a dozen whites and two dozen more or less Eskimoid Indians on the Indians and our endeavors; and then do some writing, ending the day by going out for about a mile and a half along the banks of the Anvik River, looking in vain for signs of something older, human or animal. (Pl. 2, *c*.)

There are many and bad gnats here just now—how bad I only learned later, when I found my whole body covered with patches of their bites; and also many mosquitoes, which proved particularly obnoxious during the lunch. As the doctor is alone, the three excellent white ladies of the school, matron and teachers, invited us, as already mentioned, to lunch with them. We had vegetable soup, a bit of cheese, two crackers each, a piece of cake, and tea. But I chose an outlandish chair the seat of which was made of strips of hide with spaces between; and from the beginning of the lunch to its end there was a struggle between the proprieties of the occasion and the mosquitoes that kept on biting me through the spaces in the seat. Chairs of this type, and I finally told that to the ladies to explain my seeming restlessness during the meal, should be outlawed in Alaska.

The Anvik People

The Anvik people, it will be recalled, were the first Yukon natives seen by a white man. They were discovered in 1834 by Glazunof, and since then have occupied the same site, located favorably on a point between the Anvik and the Yukon Rivers. They belonged to the Inkalik tribe, a name given to them, according to Zagoskin, by the coast people and signifying "lousy," from the fact that they never cut their hair, which in consequence, presumably, harbored some parasites. Their village was the lowest larger settlement of the Indians on the Yukon, the Eskimo commencing soon after.

The Anviks to-day are clearly seen to be a hybrid lot. There are unmistakable signs of a prevalent old Eskimo mixture. The men are nearly all more or less Eskimoid, and even the head is not infrequently narrower, fairly long, jaws much developed. The women, however, show the Eskimo type less, and the children in a still smaller measure—they are much more Indian. Yet even some women and an occasional child are Eskimoid—face flat, long, lower jaw high, cheek bones prominent forward (like welts on each side of the nose), whole physiognomy recalling the Eskimo. The more Indianlike types resemble closely those of the upper Yukon. There is perceptible, too, some mixture with whites, particularly in the young.

To bed about 11. Attic warm and window can not be opened because of the insects. Sleep not very good; some mosquitoes in room anyway. Wake up after 3 and just begin to doze off again when the doctor gets up. About 4 he puts his shoes on—one can hear every sound throughout the frame house, even every yawn—and then goes to the kitchen where there soon comes the rattling of pots. At 4.30 comes up to bid me good morning and ask me if I am ready to get up and have breakfast. A man with a boat is to be ready at 6 to take me to some old site. So a little after 5 I get up, shave, dress and go down. Another night to make up for sometime, somewhere.

We finish breakfast and the doctor goes to look for the man, but everything deadlike, no one stirring anywhere. So I pack my stone specimens from the river above and the bones from Kaltag, etc. It is 8 a. m. and then at last Harry Lawrence, our man, appears—having understood to come about that time—and before long we start, in a good-sized boat, up the Yukon.

Day mostly cloudy but fairly good; no wind. Must use mosquito mixture all the time, even after I get on boat, but they quit later. Am standing on the back of the boat against and over the "house" over it—inside things shake too much and I can not see enough.

Passing by fish wheels—heaps of fish in their boxes—some just being caught and dumped in. Picturesque bluffs passed yesterday

seen to be of volcanic stone, near basalt, not granite, with indication of minerals. Passing close to vertical cliffs of fissured and fragmented rocks 200 to 500 feet high—dangerous. Consolidated volcanic ashes with inclosure of many bowlders—fine lessons in geology. Slides of soil and vegetation here and there. Large spruces and altogether a richer vegetation since this particular rock region was reached. There was in fact a plain line of demarcation in the vegetation where the rocks changed.

Sleepy. Afraid to doze and fall off, so go inside. But there the motor thumps and shakes too much for a nap to be possible.

About 12 miles upstream from Anvik, on the north bank, the mineralized rocks and tufa suddenly cease, to be superseded by a line, several miles long, of sheared-off loess bluffs about 200 feet high. Here the vegetation changes very perceptibly. Two mammoth jaws obtained from these deposits have a few years ago been given to Mr. Gilmore, of the United States National Museum.

22 to 23 miles up the river, north bank, a fine large platform and an old native site. Many signs still of pit and tunnel houses. A little farther upstream a hill with abandoned burials. Excavate a grave on a promontory over the river—not very old—wet and not much left of soft parts, but succeed in getting the skeleton. Fine middle-aged adult, somewhat Eskimoid, about typical for this region. Carry down in a bag, dry on the beach gravel. Lunch on beach; cheese, bread, coffee. The site is known as that of the Greyling River. (Pl. 2, *b*.)

Start back a little after 3. Very warm day. River smooth. Sky looks like there might be a storm later.

Hear of pottery—40 years ago it was still made at Anvik. Was black, of poor quality. The women used to put feathers in the clay "to make the pots stronger." When buried it soon rotted and fell to pieces. In shapes and otherwise it was much like the Eskimo pottery. Its decorations consisted of nail or other impressions, in simple geometrical designs, particularly about the rim. It was rather gross, but better pieces did occur, though rarely.

It is becoming plain that there are no known traces of any really old settlements along the present banks of the Yukon; nothing beyond a few hundred years at most. If there was anything older no external signs of it have been noted, and no objects of it have ever been found. It seems certain that the stone implements thus far seen were used and made by the pre-Russian and probably even later Indians. They all belong to the polished-stone variety. No "paleolithic" type of instrument has yet been seen.

It is also evident that the Eskimo admixture and doubtless also cultural influence extended far up the river. The farther down the

river, particularly from Ruby, the more the Eskimoid physical characteristics become marked and the Indian diluted, until at Anvik most, or at least much, physical and cultural, is clearly Eskimo.

Have further learned quite definitely that native villages on the Yukon were seldom if ever stable. Have been known (as at Kaltag and elsewhere) to have changed location as much as three times within the last few scores of years, though in general they keep to the same locality in a larger sense of the word. Anvik alone seems to have remained on the old site since the advent of the whites.

Anvik, Tuesday, June 29. Last night gave talk on evolution to white teachers, etc. Quite appreciated, regardless of previous state of mentality.

Caught up with some sleep, even though my attic room was so hot that the gum from the spruce boards was dropping down on me. Good breakfast with the doctor—canned grapefruit, corn flakes with canned milk, bread toasted in the oven, and coffee.

Pack up my Greyling skeleton—much drier to-day—and dispatch by parcel post, through the doctor as postmaster.

Photograph school children and village. Gnats bad and have to wear substantial underclothing (limbs are already full of dark red itching blotches where bitten by them) though it is a hot day again.

The full-blood and especially the slightly mixed children would be fine, not seldom lovely, were they fully healthy; but their lungs are often weak or there is some other tubercular trouble.

The color of the full-bloods, juvenile and others, on the body, is invariably submedium to near medium brown, the exposed parts darker; and the chest test (mine) for full-bloodedness holds true. The young are often good looking; the old rather ugly.

All adults fishing now, the fish running much since a day or two; all busy at the fish camps, not many, in the daytime especially, about the mission.

At noon air fills with haze—soon recognized as smoke from a fire which is located at only about a mile, and that with the wind, from the mission. We all hasten to some of the houses in the brush—find enough clearing about them for safety. The school here burned two years ago and so all are apprehensive. Natives from across the river hasten to their caches. Luckily not much wind.

After lunch children come running in saying they hear thunder; one girl saying in their usual choppy, picturesque way, "Outside is thunder"; another smaller one says, "It hollers above." Before long a sprinkle and then gradually more and more rain until there is a downpour followed by several thunderclaps (as with us) and then some more rain. That, of course, stops the fire from approaching closer and all is safe. Such storms are rare occurrences hereabouts.

My limbs are a sight from the gnats. Must apply Aseptinol. Worse than any mosquitoes; like the worst chiggers. Poisonous—some hemolytic substance, which causes also much itching, especially at night.

Arrange to leave to-morrow. Good people these, unpretentious, but white through and through.

Mr. Lawrence, the local trader, who with his boy was with me yesterday, is going to take me to an old site down the river and then to Holy Cross. Donates a fine old ivory arrow point from the site mentioned. Doctor Chapman gives three old dishes and two stone axes—haft on one of recent manufacture. The natives seem to have nothing of this nature, and no old site is near. The nearest is Bonasila, where we go to-morrow.

This is truly a fish country. Along the placid Anvik River fish smell everywhere—dead fish on shore here and there, or fish eggs, or offal.

Wednesday, June 30. Hazy and cool, 52° F. Take leave with friend, Doctor Chapman, then at school, and leave 8 a. m. for Bonasila.

The gnat pest was bad this morning—could hardly load my baggage; had to apply the smear again, but this helps only where put and for a time only.

Bonasila

Close to 10 a. m. arrive at the Bonasila site. Not much—just a low bank of the big river, not over 4 feet high in front, and a higher rank grass-covered flat with a little stream on the left and a hill on the right. But the flat is full of fossae of old barabras (pit and tunnel dwellings), all wood on surface gone; and there is a cemetery to the right and behind, on a slope.

Examine beach and banks minutely until 12. Modest lunch—two sandwiches, a bit of cake and tea—and then begin to examine the shore again. Soon after arrival finding bones of animals, some partly fossilized; beaver, deer, caribou, bear, fox, dog, etc., all species still living in Alaska, as found later, though no more in the immediate neighborhood.

Mosquitoes and gnats bad—use lot of oil. Begin soon to find remarkably primitive looking stone tools, knockers, scrapers, etc. Crawl through washed-down trees and brush. Many stones on the beach show signs of chipping or use. Very crude—a protolithic industry; but a few pieces better and showing polished edge. Also plenty of fragments of pottery, not seldom decorated (indented). Make quite a collection. And then, to cap it, find parts of human skeleton, doubtless washed out from the bank. Much missing, but a

good bit recovered, and that bit is very striking. (See p. 156.) Also a cut bone (clean cut, as if by a sharp knife) in situ in the mud of the bank, and a little birch-bark basket still filled with mud from the bank, with later a larger basket of same nature in situ; could save but a piece. Conditions puzzling. Was there an older site under one more recent?

2 p. m. About 2 p. m. go to the cemetery. About a dozen burials recognizable. A pest of mosquitoes and gnats—Lawrence soon bleeds over face and neck, while I keep them off only by frequent smearing. He soon has to smear, too. Open five graves—placed above ground, wooden (split and no nails) boxes covered with earth and sod. Skeletons all in contracted position, head to the east and lying on right side. Some in poor condition. Three women, one man, one child. Gnats swarm in the moss and the graves, and with the smears, here and there a trickle of blood, the killed pests and the dust, we soon look lovely. But there is enough of interest. With each burial appears something—with the man two large blue Russian beads; first woman—a pottery lamp (or dish), iron knife; with the second two fire sticks, stone objects (sharpeners), partly decayed clay dish; with the third, a Russian bead and a birch-bark snuffbox; with the child a "killed" (?) glass bottle of old form and an iron flask; in the grave of an infant (bones gone) a Russian bead. A grave of a child—bones burned.

6.15 p. m. Rest must be left. Lawrence may be enabled to do some work in the fall. Leave 6.15; carry quite a lot—in sacks, gasoline cans, lard cans. Wonder how I shall be able to send things from Holy Cross, and what next. Cool, sky overcast whole day.

Holy Cross

Thursday, July 1. Slept on the floor of a little store last night at Ghost Creek. The Catholic mission at Holy Cross, with all sorts of room, about 1½ miles down, and where, though late and tired, I visited Father Jules Jetté, a renowned student of the dialects of the Yukon Indians, did not offer to accommodate me, and the trader in their village could only offer me a "bunk" in one little room with three other people. So after 10 p. m. we went down to the "Ghost Creek," where I was gladly given a little corner in the store of Alec Richardson. Of course there were whining dogs outside, right next to the store on both sides, and they sang at times (or howled) like wolves, whose blood they seem to carry. And a cat got closed in with me and was pulling dried fish about, which she chewed, most of the night it seemed. So there was not much sleep until from about 5 a. m. to 8.30, after the cat was chased out and the dogs got weary. Then no breakfast till near 9.30.

Went to mission again to see Father Jetté—he is not of the mission—a fine old Frenchman and scholar. He was not responsible for last night and anyway I was spoiled farther up the river. His meritorious work deserves to be known and published.

After a very simple lunch packed yesterday's collections from the Bonasila site—five boxes. The parcel post here alone will cost $20.40. How odd that the transportation of the collections of a Government institution must be paid for from the little appropriation received for scientific work to another department of the same Government.

It is cloudy, drizzly, cold. Am endeavoring to leave to-morrow, but they want $35 to the next station, and the boat does not leave for St. Michael until the 11th. Fortunately I am able to send away the collections, and there will surely be some way down the river.

Ghost Creek

July 1–2, 10.30 p. m. A night on the Yukon. (Pl. 3, *a*,) They have lit a powder against the mosquitoes. Smear the many gnat bites with Mentholatum—helps but for a while—and having now my fine meshed netting, my own bedding, and a clean pillow, I feel fine, safe from all the pests, and ready for a quiet night, all alone.

Commenced dozing off when a he-cat, who hid in the store at closing, begins to make all kinds of unnamable noises. Stand it for a while, but he does not stop and one could never sleep—so crawl out from the bed, catch the beast, and throw him out.

In again and settling down, when another cat—did not know there were two here—begins to mew and tries to force its way out under the door, which is about 2½ inches above the floor. Persists until I have to get up the second time. Throw that cat out and in bed once more.

In a minute, however, the dogs outside espied the cats and began a pandemonium of howls and yelps and barks. Try hard, but can not stand it. Moreover, the last cat got on the roof, where I hear him walking, and he seems in no hurry to get off. So finally have to get out, catch the cat on the edge of the roof, throw him back into the store, and to bed for another trial. But soon have to smear the body; the bites itch too much. The sleepiness is now quite gone. A mild amusement as to what next. It must be midnight or later now, and it has grown cold. One blanket is not sufficient. Doze off a little, wake up with cold, readjust blanket and flaps of bag, doze off a little again—the dogs commence to howl, just for a song this time, in two, three, then a unison. The bites itch bitterly, now here, now there. The sun has risen; it is real cold, probably no more than about 40° to 45° F. And so on until 5.30, when at last fall into

a deep, dreamless sleep, regardless of light, cats, dogs, and everything and sleep until 8.30.

Wake up, can not believe my watch; but it goes, and so probably is right. But no one anywhere yet stirring.

Dress, wash a bit in the muddy river; head feels as if it had been knocked by something heavy. Make my "roll" of bedding and then work on notes, putting down faithfully what has transpired. About 9.30, at last, the storekeeper comes to say they overslept and that a cup of coffee will be ready before long.

Friday, July 2. "Ghost Creek" was named so because of many burials about the creek. The flat between the hills here is about three-fourths of a mile long by the water front, with rising slopes, and used to extend considerably farther out, but was "cut" or washed away by the river. It has been used for a village site and burial ground by the old Indians of the vicinity. As the banks tumble away, bone arrow points, barbed and not, stone scrapers, and other objects wash out. Graves are found in the ground as well as above it. Russian influence prevalent in the objects buried with the bodies, but site extends to pre-Russian time. Same type graves as at Bonasila, with slight local modifications.

At Bonasila the burials above ground were in boxes of hewn wood, joined somewhat as the logs in a log house, and without any base. The body inside was covered with birch bark (three or four pieces), then covered with the top planks, unfastened, and these in turn covered with about a foot of earth and sod. At Ghost Creek the same, but there is an undressed-stake base or platform on which the sides of the "coffin" rest and with somewhat less earth and sod on the top of the box. But graves differ here from underground and birch bark alone (no trace of wood, if any was ever there; but probably none used) to such aboveground as have iron nails and sawed planks. Here, as at Bonasila, a few simple articles are generally found buried at the head, and for these many of the graves were already despoiled and the skeletal remains scattered or reburied.

There appears to be no line of demarcation between the underground and aboveground graves; possibly the latter were winter burials, but this must be looked into further.

The bodies here, except the latest, are buried flexed. Exceptionally, both at Bonasila and here, the planks surrounding the grave were painted with some mineral pigments which resist decomposition better than the wood, and decorated in a very good native way with series of animals and men, caribou, bear, etc. Too faint to photograph, and too bulky and decayed to take away; but decoration much superior to ordinary Indian pictographs, and apparently connecting with the type of art of the northwest coast. It is of interest that

practically the same decorated burials were seen by Dall among the Eskimo of Norton Sound (Unalaklik).[4] In this case it was probably the Indian habit that was adopted by the near-by Eskimo, for none of the more northern Eskimo practiced such burials. The habit was also known in southeastern Alaska. (Pl. 3, *b*.)

Jim Walker, the helpful local mix-breed trader, has dug out many of these graves (alone or with Harry Lawrence), and a good many of the objects are said to have been taken away by Father O'Hara, formerly of the Holy Cross Mission.

According to all indications the stone culture of Bonasila and of Ghost Creek (1½ miles upstream from Holy Cross) were related, both passing apparently into the Russian period, and that at Ghost Creek continuing down to our times, for there is still living here an old man who belongs to this place which once had a large village. Much could be done yet and saved in both places.

Saturday, July 3. At last slept, notwithstanding everything, and succeeded even in being warm.

Breakfast 8.30, for a wonder. Two soft-boiled Seattle eggs, two bits of toast with canned butter (not bad at all), some over-preserved raspberries, and a faded-looking nearly cold "flapjack" with sirup, also mediocre tea. But all goes here, and the stomach calls for no other attention than to fill it.

Finishing work, getting further information from the old Indian, writing, and waiting to go away with a trader to Paimute, the first all-Eskimo village, 25 miles farther down the river. Rains occasionally, but not very cold. Many gnats when wind moderates.

Lunch—canned sardines (in this land of fresh salmon!), a bit of toast, some canned fruit, and that unsavory tea.

Have utilized this day in a profitable manner. Have learned that there was another burial ground about half a mile farther upstream, behind an elevation. So got a rowboat and with Jim Walker's young boy rowed over. Had to wade through high grass over a wet flat, and then up the rank grass and bush-covered slope, and there found a number of old burials. All rifled, but most of the bones still there. So send boy back, on the quiet—there is above the store the camp of the old man with an old Indian woman and sick girl—for some boxes, and meanwhile collect. It is an unceasing struggle with the mosquitoes and gnats in the tall grass and weeds; but one after another I find what remains of the usual old box

[4] Alaska and Its Resources, p. 19: "Our attention was attracted by the numerous graves. These are well worth the careful attention of the ethnologist; many of them are very old. The usual fashion is to place the body, doubled up, on its side, in a box of plank hewed out of spruce logs and about 4 feet long; this is elevated several feet above the ground on four posts, which project above the coffin or box. The sides are often painted with red chalk, in figures of fur animals, birds, and fishes."

a, Midnight on the Yukon

b, Lower middle Yukon: Painted burial box of a Yukon Indian (before 1884) said to have been a hunter of Bielugas (white whales), which used to ascend far up the Yukon

a, Eskimo camp below Paimute, Yukon River

b, Old "protolithic" site 12 miles down from Paimute, right bank, just beyond "12-mile hill." (skull, bones, stones)

c, "Old" site in bank seen in middle of picture, 12 miles down from Paimute, opposite that shown in preceding figure. (A. H., 1926)

burials. The bones are mostly in good condition. The boy arrives with several empty gasoline boxes, we gather drier grass and moss, and pack right on the spot, eventually get to the boat, strike off as far as possible from the shore so none could see what is carried, and proceed to Walker's storehouse. Old Indian and his old crony nevertheless stand on bank and look long at us. In storehouse boxes closed, later delivered by the boy to the mail boat, and so that much is saved; for were it not collected, in a few years the weather, vegetation, and animals, human and other, would destroy everything.

Moreover, the utmost care is taken always to leave everything in as good shape as found; and the remains taken will be treated so well and may give us so much that we need that there is no more hesitation in securing them than there would be on the part of a paleontologist in securing old bones for his purposes.

For supper, though it is still early, am invited by Simel, an elderly Jew mail carrier. Have fine meat-and-potato soup, lettuce-and-cucumber salad (even if the cucumbers from the Holy Cross hothouse are overripe and bitter), fresh (storage) meat, cooked dried apples, and poor but hot coffee—all seasoned with the best will and genuine, simple friendliness.

Max Simel, whose home is at Ophir, has been in this country 29 years, and "never needed to buy a quarter's worth of medicine." Has a wife in Seattle, also a daughter and a son; has not seen them for four years. Wants me to call on them and tell them I met him. With his companion, Paul Keating, of Holikachakat, gives me some interesting information. They tell me independently and then together of an occurrence that shows what may happen along this great river. A well-known white man and woman, prospectors on their mail route, have last year thawed and dug out a shaft, nearly 40 feet deep, through muck and silt, to the gravel, in which they hoped to get gold; and just before they reached the gravel they found a piece of calico, old and in bad condition, but still showing some of its design and color.

7 p. m. It rains, but wind has moderated, and so near 7 p. m. we start on our way farther down the river, stopping just long enough at Holy Cross to attend to my reservation for St. Michael. The agent has no idea when the boat will go—maybe the 11th, maybe not until the 14th or later.

Going on an old leaky scow with an elderly, faded, chewing, not very talkative but for all that very kindly and accommodating man, who with one hand holds the steering wheel and with the other most of the time keeps on bailing. He carries supplies for his store and I my outfit, camera, and umbrella. Sky has here and there cleared,

even patches of sun appear on far-away clean-cut hills. Water not very rough; make fair time downstream. Banks flat now, river broad, some hills in distance.

8.00 p. m. Hills nearer ahead of us. Some of the flats look from distance like fine tree nurseries. Getting cool. Cloudy ahead. The banks flat and low, no good site for habitation. Not even fishing camps here—just long "cut-banks" (banks being cut by the river) and low beaches. Here and there new bars and islands that are being built by the river. No birds, no boats, just an occasional floating snag or a rare solitary gull.

Paimute

Paimute down river, I am told, has nothing but Eskimo; Holy Cross, but a few natives now, mainly Indian; above Holy Cross, Indian, Eskimo only as adapted or in admixture.

July 3, 8.30 p. m. Hills on right now right before us. Behind first a fish camp of the Holy Cross Mission natives. River narrows and bends. Two other fish camps become visible. Stop; damp, cold, smoke, fish smell, a few natives, Eskimo. River now like molten glass, but air damp and cold, and I must sit behind the engine and keep my hands over the hot exhaust pipe to keep somewhat comfortable.

Pass bulging bluffs on right—old stratified shales.

11.00 p. m. Arrive at our destination about 11 p. m. But a few log huts on the right side of the river, with few others and a primitive frame church in the back. A little store and a big storehouse (with skins, etc.), trader's house (log cabin) a few rods away. Open store, only to find that a pup had been forgotten there, made a lot of mess and dirt and ate most of one side of bacon.

12.00 p. m. Got to bed in the cabin at 12. Spread bed roll on two reindeer skins which, with fire in the stove, keep me fairly warm. Rain in night and several earth tremors—common in these parts; feel several light ones every night and a stronger one occasionally even in daytime (a big "fault" in the Alaskan range and a proximity to the Aleutian volcanic zone).

Awake before 8, but as it still rains nothing can be done, while my man within a few feet of me still snores; stay in blanket till 9. Modest breakfast at 10 a. m.

10.00 a. m. A little house cleaning—watch kitten clean windows of the many flies, which it eats; and then my man, a Swede by birth, sailor, self-taught painter (of ships and sea scenes), and musician (accordion), goes to bail out the boat. Still full of bites that itch and need a lot of Aseptinol, which in turn makes underwear look dreadful. And no bath possible.

Last night met some of the local Eskimo, full bloods, mostly from the Kuskokwim River. Strong, kinder than the Yukon Indians. But they differ but little in some cases from the latter. They are medium brown in color, hair exactly like the Indian, beard also—only the rather flat (not prominent) mid parts of the face, with rather long and narrow (upper two-thirds) nose, and the cheek bones protruding more or less forward, with face long (often), due to the vertical development of the jaws, helps to distinguish them as Eskimo. There is no clear line of demarcation between the Indian farther up the river and the Eskimo down here, yet in some here the Eskimo type is unmistakable. They have more epicanthus, flatter, longer, and stronger (more massive) face, stronger frame, rather submedium length of legs, and less brachycephalic (or more oblong) head, but not the characteristic, narrow and high, keel-shaped dome that one is used to associate with the Eskimo.

1 p. m. A little lunch—just a cup of coffee and a few crackers. Photograph two natives.

1.30 p. m. Start toward Russian Mission. Trader carries sugar in bags and tea for camps.

Near 2. Stop at an Eskimo camp, see sick baby, photograph a few individuals. Get an ax for a pocketbook—old man happy as a child at the exchange. Made another one happy this morning in payment for information with one of my steamer caps. (Pl. 4, *a*.)

Pass along the still continuing bulging hills on the right. They are forested over lower parts, barren, though mostly greenish, above. As usual flats on left, devoid of man. Occasionally a fish camp on right, or a small village, somewhat different, though in essentials like the Indian (more gregariousness noticeable—up river mostly individual or at most two or three families). Every favorable higher flat or low saddle among the hills on the right and facing the river (or a slough) is utilized by the natives, but such places are scarce.

The ax obtained looks as if it had been broken after found, to make of it a single-edge tool. Tumbled out of a bank. Old Eskimo knew not who made it. Found some miles below Paimute by the old man. Others found, but lost. Ivory arrow and spear points also known to natives, but no one now has any.

A mountain ahead of us. Sky clouded mostly, high diffuse vapors and low, heavy but separated cumuli in the east; one would expect soon a heavy rain. Visibility exceptionally good, horizons far away, uncommonly clear. Mountains sharply outlined against the sky.

About 12 miles below Paimute, on left, some higher banks (old silts and dunes). The ax from the old man had been found here. Stop. Find pottery 12 feet, charcoal 15 feet from surface. Also polished

and worked stones. But most of bank has already been cut off and what remains shows no signs of man on the top. (Pl. 4, *b*.)

Cross river obliquely to right bank, just beyond last ("12-mile") hill. Find at once numerous evidences of stone work along the stony beach. In an hour have a fair collection, mainly rejects, but interesting. On top of bank find several mounds and ridges, doubtless dunes, though the one farthest up the river looks very much like a large oval man-made mound. Parts of two much-weathered skulls and one bone lay on the top of this. No definite marks of graves excepting perhaps in one instance. A sign of old clearing farther down, but no "barabras." A spot well worthy of exploration. It was, I learned a little later from Nick Williams, a native who used to act as a pilot on the river, the old mountain village or "Ingrega-miut," and the site is 12 miles downstream from Paimute. (Pl. 4, *c*.)

Beyond are flats and cut banks, both sides, but with hills (old water front) behind on the right and mountains in front. River here very wide.

Many of the worked stones, and occasionally, according to native information, skulls and bones, are washed out from the banks and deposited (rolling, etc.) lower on the beach in something like strata, and in that way evidence is being perverted. Some day a new bank or even a dune may be formed over these secondary deposits and a great source of possible future error be completed.

All the natives along the river (to here) like to bury on the lower slopes of near-by hills.

To bed on floor of kitchen tent at the fine, clean little place of Tucker's, at 10.30. At 1.30 the 20 dogs start a fine, sustained, unison howl song, and I seem to hear an approaching boat. As the Governor of Alaska is expected, slip on shoes and necktie, brush hair, and run out. There is a little boat at the little "dock" (the only one seen so far on the Yukon). Tucker and his son are already there, and I soon hear that the governor is on the boat, which is that of Mr. Townsend, of the Fish Commission. In a few minutes we meet, both in shirt sleeves. And I learn the *Matanuska*, the boat that was to take me from the Russian Mission to St. Michael, has broken down and is not coming. In her place, but no telling as to time, will be sent the *Agnes*, a smaller and slower boat, on which three people have already this season been "gassed" (overcome by the exhaust gases), one of them jumping into the river. She has accommodation for four persons at most, and that of the most primitive, they say. The governor fortunately gives me some hope that I may be picked up and taken down by the same boat which is taking him to Holy Cross. He also tells me of a skull for me at one of the stopping places, Old Hamilton. A frank, good, strong man.

Boat leaves in a few minutes. Back to bed, but now almost full daylight—also cold, and so no more than a doze until 6.15, at which time the boy comes to the kitchen where I was kindly accommodated to start fire and breakfast. So up with a drowsy head. At 7 breakfast—coffee, oatmeal, flapjacks, and good company. Everything about this place is neat, fresh, pleasing—the best individual place on the river. Cloudy, blustery, cool; can not start, so go 1½ miles down to Dogfish village, or I-ka-thloy-gia-miut—probably the same as Zagoskin's I-ka-lig-vig-miut. Only three or four families there now; nearly all the inhabitants died of influenza in 1900. But already before reaching the village, in examining the stones along the beach, I find some chipped ones, and they represent the same industry evidently as those at the two sites yesterday. Later find numerous chipped scrapers, pointed hammers, crude cutters and chisels, and a few axes. Make quite a collection, including a few objects found in possession of natives.

This is a good site, above high water. Must be old. Pottery also encountered occasionally by present occupants, but not one bead; little if any river cutting here for a long period. Worth exploration. Photograph another Indianlike Eskimo. Want to buy an old dish from an Eskimo, border inlaid with six white stones, shaped like an oblong lozenge with rounded corners, but he wants $20. Lunch all together, some Eskimo included, at Tucker's, and then as the wind moderates and the sun comes out, start for the Russian Mission. Mostly still clouds and cool, with some rain in the mountains to the right.

Finds and inquiries made at Dogfish village make it positive that the stone culture there is Eskimo, i. e., of the Eskimo of this region who are probably not a little mixed with Indians. Their head is but moderately oblong, not keel shaped. The majority, however, have Eskimo features.

But the cupid-bow (double-grooved) axes are not known to have been made by these people, and when used after being found or brought down from farther up the river they apparently were broken. One such example was seen already at Ruby—another one at Anvik—secured; and one found yesterday at Mountain village. The axes here are most often oblong, quadrilateral, without groove, or approaching the single-grooved axes of the Indians in the States.

July 6. Proceed down the river toward Russian Mission, examining the banks as closely as possible. Toward evening stop at "Gurtler's," a short distance above the mission.

Mr. Gurtler is a German by birth; his wife is half Indian, of Ruby. She, as well as her 14-year-old daughter, are neat, apt, and very industrious, quiet and nice mannered. With an Eskimo woman, she

cleans and cuts up—a whole art of its own—on the average over 200 good-sized salmon a day. Clean place, very good smoking house—much superior to those up the river, except Tucker's.

Sleep in a clean bed of theirs; would much prefer my own and the hard floor, but fear to offend.

Russian Mission

Pack my stones and bones collected between here and Holy Cross, and after lunch go to Russian Mission. Meet Mr. Cris Betsch, the trader, and find him both friendly and anxious to help. Teacher and her mother invite me to supper. Before that Mr. Betsch calls in a number of the older men, and we have a talk about ancient things, but they know nothing worth while beyond a few score of years at most; they give me, however, some data and names of old villages.

A few years ago some human bones and skulls were dug up here and reburied. Eskimo readily agree to help us find them and to let me take them. Moreover, they are quite eager to dig up an old medicine man supposed to be buried under a good-sized (for this country) blue spruce. They get shovels, soon find some of the old bones and a damaged skull, and later on, with the help of information given by an elderly woman, uncover also a female skull. Uncover further the end of two birch-bark-covered coffins, from Russian time, and would readily dig them out did I not restrain them; as also with the medicine man. We shall probably get some such specimens from this locality later, so there is no need of disturbing the burials.

Mrs. Barrick, the teacher, gives us a "civilized" supper, at which I am introduced for the first time to a great and fine Yukon specialty, namely, smoked raw strips of king salmon, and find them excellent. Then a good talk with all, after which pack specimens—still somewhat damp, but it would be difficult to wait—deliver to the post, and am sent to my place around the hill at a little past 10 p. m. with an invitation by Mr. Betsch to go to-morrow to "the slough of the 32 kashims (council or communal house)," about 10 miles down the river. But I have already been promised by Gurtler to take me down to this place, and so I can not accept. Just now I need sleep.

July 7. After breakfast examine banks and beach along Gurtler's place and find two stone implements, two pieces of decorated pottery, and a bone of some animal. Wash, dry, and pack, then a cup of coffee—the Gurtler's have a habit of drinking a second cup at about 10 a. m. each day—and then, after some of the seemingly inevitable trouble with motor, start down the river. It rained yesterday; the clouds show low pressure; it is not warm and the water is somewhat rough.

Stop a bit at the mission to give Mrs. Barrick a fish and get a bag or two from Mr. Betsch, and then proceed. From the river the Russian Mission settlement is seen to be very favorably situated at the foot of the southern slope of a big hill. But the recency of the flat below and in front of the church and schoolhouse is clearly seen again. The site about where the church and school are may—in fact must, it is so favored—be a very old one, and doubtless a thorough excavation of the slope from the back of the houses upward would be both easy and very instructive. The place should by all means receive attention.

Reach and examine the "32 kashim slough," a beautiful side channel about 7 miles long; reach about 1½ miles from its entrance, examine banks and pass through jungle, find tracks of foxes and of a bear, also see one big beautiful red fox trotting ahead of us on the other beach—but not a trace of man. Examine also the "mounds" on Grand Island, but find them to be only dunes.

Lunch on the beach; remarkably few mosquitoes and no gnats; smoked raw salmon strips again, and coffee; and at 5 leave for home, it being impossible so late to go down to the end of the channel.

On return all going nicely until 5. Then, in a slough 3½ miles from the Russian Mission, after an examination of another likely site, breakdown of the motor. Do everything possible to make it go until about 8, but in vain. Then I take the crazy little rowboat that luckily we took with us, bail out the water with our shovel, and row to the mission for help. Get there about 9, send back a launch with some natives, have a little supper with the teacher, and row home around the hill, reaching Gurtler's near 11. In a few minutes the launch is towed in and all is well once more. Mr. Betsch got for us two good native "kantágs" or wooden dishes. Also we fix to go down to the "32 kashims" to-morrow once more with Mr. Betsch and the teacher.

July 8. Up a little after 6; breakfast; and then comes in a native from the mission with two letters and information that the *Agnes*, the little mail-carrier boat, has arrived during the night and is waiting for me to take me to Marshall and to Old Hamilton, whence another boat will take me in a day or two to St. Michael. So get ready in a minute, put my baggage on a native's boat, pay my bill, leave another lot of good friends, and row to the mission. There is the little dinghy *Agnes* with its "accommodation" for three passengers already two-thirds filled up, and towing two big logs as a freight. Put my things partly in a "bunk," partly on the roof, give good-byes to Betsch and the teacher, help to push off the boat which is stuck in the mud, and we are off for another Yukon chapter.

We pass by the lower end of the "32 kashim" slough—no sign of any site—all recently made flats. If there is anything left of the old sites it must be at the foot of the hills, or has been covered with silt. The site is so favorable that in all probability there was once there a good-sized settlement, but due to river action and the jungle it could not be located. Mr. Betsch visited the place that day, and again with some old natives on another occasion, without being more fortunate.

Cloudy, slightly drizzly day, no trace of sun, mists over the tops of the hills. Could not stand it in the boat, so sitting on my box on the roof of the boat, wrapped, due to the cold, in a blanket.

A little below the "32 kashim" slough a small stream enters from inland—a place to be examined; but this boat can not stop for such a purpose.

A half mile or so farther down a few graves and crosses, with remnants of a native habitation.

Over 3 miles down, just beyond first bluff, fine site, with low hills stretching far beyond it—now but a few empty, half-ruined native houses. Should be explored.

South of second rocky bluff a live camp, and farther down another.

The left side of the river is still all flats as far as one can see, but about 17 miles below Russian Mission human bones came out of a bank there (on a slough).

Marshall

At 3 p. m. reach Marshall, a little cheerful-looking mining town, high on a bank. See the place, identify the skeleton from the above-mentioned bank as that of a missing white man, see telegraph operator, postmaster, teacher, commissioner. Sun comes out, is warm. Almost no mosquitoes here and no gnats. Hills above and beyond town belong already to the coast range and are barren of trees, even largely bare of shrubs and bushes. Leave 4.30.

Soon after Marshall—after passing by an Eskimo village (white man's style of buildings)—leave the hills and enter flats on both sides. This is the beginning of the delta region. River like glass, and it is warm in the sun but very perceptibly cooler when sun is hidden.

The boat has only three bunks, and there are five of us with the two pilots. But on the last trip up, there were, fortunately only for about eight hours, seven, including two women and a child, and that without any privacy or conveniences whatsoever. It is almost criminal, and they charge a very steep fare. However, for me it will soon be over—only about 36 hours. Still it is hard to believe this

is yet in the United States and presumably under some sort of supervision.

Which brings me to a realization that the first half of my journey—the preliminary survey of the Yukon—is slowly closing; a little, and it will be the sea and other conditions, which also brings the realization that I have seen much but learned not greatly. What should be done would be to own a suitable fast boat; to locate on each of the more important old sites a party for careful, prolonged excavation; and to try to locate, in the rear of or on the higher places on the present river flats, more ancient sites than are known to date. These steps, together with the enlisting of the interest in these matters of every prospector, miner, and trader, would before many years lead to much substantial knowledge.

Friday, July 9. Must keep up these notes, for they alone keep me posted on the day and date; even then I am not always sure. There are no Sundays in nature.

Slept in my bag on the roof of the *Agnes*. Her namesake must have been one of these goodly but insufficient and but indifferently clean native women, plodding, doing not a little work, but wanting in many a thing. It was cold and dreary, but I found an additional blanket, and so, with mosquito netting about my head—one or two got in anyway—would have slept quite well had it not been for a dog. At about 1 a. m. we stopped in front of a little place called also "Mountain Village." And almost at once we began to hear a most piteous and insistent wail of a dog who either had colic or thirst or hunger, and he kept it up with but little stops for what seemed like two hours, making my sleep, at least, impossible.

Saturday, July 9. Morning. Cold, cloudy, rough—head almost beginning to feel uncomfortable, the boat is tossing so much. A teacher comes aboard with an inflamed hand which I fix; a few questions, the mail bag, and we are off again. Enter a slough where it is less rough and warmer. Later the sun will probably come out again. This evening we shall be at Old Hamilton and then a new anxiety—how to get to St. Michael.

Just had a little walk over the roof—my roof, for the other two passengers prefer to sleep in the gassy, dingy room below, though how they can stand it is beyond my medical ken. It is four short steps long, or five half steps in an oblique direction.

Every object in distance appears magnified all along the river for many days now. An old snag will look like a boat or a man, hills look higher, a boat looks much more pretentious than she proves to be on meeting.

Firs and spruce have now completely disappeared, also forests of birch, etc., are reduced to brush both on flats and lower parts of hills.

Very large portion of the hills in distance just greenish with grass and lichens, not even a brush.

9.45 a. m. Meet the *Matanuska* bound upward. Looked from distance like an ocean steamer; from near, just a lumbering, moderate-sized river boat with a barge in front. But a whole lot better than ours.

The scenery has become monotonous. The gray river, although only one of the "mouths," is broad, and the country is all low. Nothing but bushy or grassy cut banks on the right, and mud flats, "smoking" under the wind, to low banks on left. It is a little warmer and the warm sun shows itself occasionally, but I still need the wrapping of a double blanket. The wind luckily is with us and the waves not too bad.

Noon. Passing "Fish village"; a few huts and tents.

No "camps" here outside the few villages; just an endless dreary waste and water.

New Hamilton—a few native huts only now—no whites.

Reach Old Hamilton—about a dozen houses with a warehouse, a store of the Northern Commercial Co., and a nice looking but now unoccupied school.

Here the governor told me there was somewhere a skull waiting for me, and the storekeeper would tell me of it. But when we arrive there are only two or three natives to meet us. The storekeeper, who is also postmaster, is said to be sick in bed. He is supposed to have an ulcer or some other bad thing of the stomach. So we go to his house and find him in bed, with a lot of medicine bottles on a table next to him. Is alone; no wife. Shows no enthusiasm in seeing me, though heard of my coming. Reads letters—no attention to me. Gets up—I ask him about his illness—answers like a man carrying a chip on his shoulder. Goes to store to attend to mail, and barely asks me to follow. I wait in store; he finishes mail and goes out—orders the Eskimo present out gruffly, and to me says, "You may stay in the store; I'll be back." But I wait and wait, and finally decide the man for some reason is unwilling to help me. Asked him before he went out about the *Matanuska*, but he told me she might not be back from Holy Cross in a month, trying doubtless to discourage me to stay. On going toward the *Agnes* I find him sitting on a log and talking to a couple of men from a tugboat that has arrived—just talk, no business, judging from their laughing. So I go on the boat, write a few words to Mr. Townsend of the Bureau of Fisheries, who makes this place his headquarters, and with some feeling hand this to the man, telling him at the same time that plainly he does not wish to assist me in any way. This, of course, rouses him; he gets red and says a few lame words, ending with, "Do you think I would touch any of them dam things or that

I would let any of my men (natives) touch them? Not on your life!" So I leave Old Hamilton, for he is the only white man there now. But the place had other distinctions. Until recently, I am told, they have had a teacher, a young girl, who in her zeal had the natives collect all the burial boxes with their contents and had them all thrown into the river. Not long after she accomplished that she left. The storekeeper told me that "If I want them so bad I could pick them up (skulls and bones) along the river where the water washed them out after the teacher threw them in." Luckily there were not many "Old Hamiltons."

We met here a boat from St. Michael with Mr. Frank P. Williams, the well-known postmaster and trader of St. Michael, who comes for the two men, my fellow passengers. We get acquainted and, to escape the gases of the *Agnes*, I go with them. The boat is heavier and free from fumes, though without accommodation. At about 7 p. m. we arrive at Kotlik, at the mouth of the river—an abandoned wireless station, a store, and four tents of natives. But the old wireless building, now the storekeeper's house, is the dwelling place of a clean white man, Mr. Backlund, who is now "outside," but with whom Mr. Williams is in some partnership; so we occupy the building. Outside the wind has risen to half a gale and there are squalls of rain and drizzle. The *Agnes* has to "tie to," as she would be swamped in the open. My boxes and bedding, which were on the roof of the *Agnes*, are soaked, though the contents will be dry. So both boats are fastened to a little "dock," and we soon have fire in the stove, supper, and then—it is 11 p. m.—a bed, not overclean, somewhat smelly, but a bed and free from mosquitoes, rain, wind, and cold.

July 10. Up at 6.30. Outside a storm and rain—just like one of the three-day northeasters with us, and cool. Both boats were to leave, but are unable to do so. I find that Mr. Williams's tug will come back here and go to St. Michael on the 13th, so arrange with Mr. Williams to take me and leave the *Agnes* for good. This partly because I learn of two graveyards near, one 1½, the other 4½ miles distant.

After lunch, rain for a while ceasing, I set out for the nearer burial place. This is already a tundra country—treeless and bushless flats overgrown with a thick coat of moss, into which feet bury themselves as in a cushion, and dotted with innumerable swampy depressions with high swamp grass. Walking over all this is very difficult—lucky I have rubber boots. Even so, it is no easy matter, except where a little native trail is encountered.

The graveyard, belonging to the now abandoned little village above Kotlik, consists of only about half a dozen adult graves. These consist of boxes of heavy lumber laid on a base raised above the

ground level, and covered with other heavy boards. Some of the burials are quite recent. Open three older ones. In two the remains are too fresh yet, but from one secure a good female skeleton, which I pack in a practically new heavy pail, thrown out probably on the occasion of the last funeral. Then back, farther out, to avoid notice, through swamps and over moss, and with a recurring wind-driven drizzle against which my umbrella is but a weak protection.

Reach home quite wet and a bit tired. Have to undress and, wrapped in a blanket, dry my clothes and underwear about the stove.

Nothing further this day and evening—just wind and heavy low clouds and rain.

July 11. Up at 4.40. Weather has moderated. The *Agnes* left at 4 and Mr. Williams's boat, due to favorable tide, must soon go also. Breakfast, and all leave me before 6.

Yesterday we brought up my needs—i. e., collection of skeletal material—to the few natives here, explaining to them everything, and they do not object in the least. One of them, in fact, is to take me to-day to the more distant cemetery in a rowboat and help me in my work.

My man, after being sent for, comes at a little after 7. He is a good-looking and well-behaving Eskimo of about 35. He brings a good-sized tin rowboat—a whaling or navy boat probably; but "he leaks a whole lot." The oarlocks are not fastened to the boat, the plate of one is loose, and the oars are crudely homemade of driftwood and pieces of lumber fastened on with nails; in one the shaft is crooked, while the other is much heavier. But we start, with the sky still leaden and gray but no wind and calm water. I row and he paddles; then he rows and I paddle. We carry but the camera, a little lunch, a heavier coat each, and a box and two bags for the specimens. We pass a number of broods of little ducks, the mother prancing before us until the young are in safety, and there are several species of new kinds (to me) of water birds, some of which fly right above us, examining us. In the distance we see a big abandoned dredge, then a few empty log houses and "barabras" on the bank of a stream and the edge of the tundra. This is Pastolik, our destination. There is no one anywhere near, an ideal condition for work, if work there'll be. And there will be—for almost immediately upon landing I see, beginning at a few rods distance on the tundra, a series (about 50) of old graves, in all grades of mossiness and preservation. A few are, we later find, quite late, but the majority are old—60 years and over according to information given by the natives of Kotlik. They do not, except perhaps the few late ones, seem to belong to anyone still living. Yet "Pash-

tolik," as they wrote it then, used to be a place of some importance in the Russian times, and even later.

We settle in an empty native house, and I start investigation. The older graves are found widely spread in several clusters, but a few are isolated at a distance.

The graves are all aboveground and resemble in substance those along the lower Yukon (Bonasila and downward). They consist of a base of small logs or splits; a rude box about 3 feet long by about 2 feet wide, of heavy, unpainted, unnailed, split boards; four posts near the four corners; a cover, unjoined, of two to three heavy split boards; two crosspieces over this, at head and base, perforated and sliding over the upright posts, and a few half splits (smaller drift logs split in two) laid over the top of the crosspieces.

On the first cover lies as a rule a stone—generally a piece of a slab or a good-sized pebble—unworked, though now and then showing some trace of use. The pebble is generally broken.

When the grave is opened there is usually over the body, as a canopy on a light frame, a large (probably caribou) skin—rarely birch bark. Neither covers or envelops the body but simply forms a covering over it, with some space between it and the body. The body lies flexed, on left or (rarely) right side, with the head toward (or near) the east (same as at Bonasila). It is often covered with or enveloped in a native matting. There are but few traces of clothing on women; none on men. And very seldom is there anything else in the coffin.

Some of the oldest graves were found tumbled down and could not be examined. The moss and roots envelop the bones, and it is a tough job to get them out; also they eat the bones and destroy them. Even in the older boxes, however, the downward part of the skeleton—generally the left—is, due to moisture, usually in much worse state of preservation than the upper.

Children have been buried in large native wooden dishes and these were in some cases placed on the top of adult graves, but more generally about these, or even apart.

Many household articles, from matches and pails to dishes, alarm clocks, lamps, etc., are placed upon the ground near the more recent dead. Excavation would probably recover here many older objects, though wood decays.

The wind has died down and the flat is as full of mosquitoes as a Jersey salt meadow, and there is an occasional gnat. They bite, and, having been almost free of the pest at Kotlik, I failed to take my "juice" along, so just have to do the best possible. The gnats enter even the eyes, however.

Work as never before. Decide to utilize the rare opportunity to the limit, and to take the whole skeletons, not merely the skulls, leaving only the few fresher ones and those that are badly damaged. A great Sunday; burial after burial; opening the wooden grave—taking out and marking on the spot bone after bone—fighting mosquitoes all the while—and packing temporarily in any convenient receptacle. Fortunately there are quite a few boxes and pails and oil cans on the spot, left by the dredge people and the few natives who evidently sometimes come to the place. At about 2 eat lunch—coffee (the Eskimo put what was for three cups into about two quarts of water, so there is but a suggestion of coffee), raw smoked fish for me and eggs with bacon (left over from breakfast) for my companion, and on again until about 5 p. m. or a little later. Last two or three hours, however, work with some difficulty. A gnat bit me in an eyelid, or got into my eye, and that has now swollen so that I can hardly see with it. My Eskimo, however, is about all I could wish. He just looks at me working in a matter-of-fact way, and carries the filled boxes, or looks around for something I could take with me, and even helps on a few occasions with the bones, finding evidently the whole proceeding quite right and natural. Brings me, among other things, an old copper teakettle, but to his wonder I do not want it and leave it. I find a fine large walrus-ivory doll and a handsome decorated "kantág" (wooden bowl), besides smaller objects, and also a large piece of a poor quality clay pot (no pottery now), with a fragment of a decorated border as on the lower Yukon.

Pack up, we load on the boat—lucky now she is so spacious—get into the shallow river—the tide has run out—push the boat out and start for home.

Thus far we had but slight drizzles. But the clouds now grow heavier, and as we have much farther to row than this morning, due to the low water, we are caught by showers. The last mile or so we have to hurry, see a big rain approaching. My man pushes her with a pole while I row all I can, with both hands, with the heavy oar. Of course the whole population of Kotlik has to see our arrival. And more, too, for in our absence a schooner came in with wood and a number of the natives. They talk, but no one is either angry or excited. We two carry the boxes, pails, etc.—grass covered—into the house; how lucky I am now alone. Inside I remove the wet grass from them—the bones, too, are somewhat wet—then pay my Eskimo $5, which again is taken as a matter-of-fact thing, without thanks, but he well deserved the amount, even if I rowed a full half.

It is 9 p. m. My man comes again, we have a modest supper, he some left-over meat and I again the smoked fish, which I feel is strengthening me as well as agreeing with my stomach, and then to

rest, quite earned to-day. Seldom have done as much in a day. Thirty-three graves collected, with over twenty nearly complete skeletons, and all restored so that I had to take considerable care not to go again into some already emptied. But this place should be dug over. The tundra in a few years swallows up everything on the surface. It literally buries or assimilates bones and all other objects, the moss and other vegetation with probably blown dust covering them very effectively. Finding anything below the surface and that even a foot or more, as was actually experienced, means something quite different under these conditions than it might elsewhere.

Monday, July 12. Slept fairly well and feel refreshed, but the eye still badly swollen. The Eskimo believe, I think, I got it from the bones. Yet they are quite sensible—a marked mental difference between them and the Yukon Indians.

Breakfast before 7—cereal, raw smoked fish, and coffee. Then pack. At the store buy empty gasoline boxes, but no nails to be had, and no packing. Lunch at 1—macaroni, raw smoked fish, sauerkraut, coffee; then pack again, fix boxes, break old ones to get nails, even pull a few unnecessary ones from the boards of the house, go see my man's wife, a hopeless consumptive, and at 6 through with all except cleaning. Another fair work-day, 12 tightly packed boxes. Then clean up, burn rubbish, and ready for departure early to-morrow.

Supper—macaroni, raw smoked fish, greengage plums, a little sauerkraut, and coffee. Then a little walk outside, watch Eskimo women and children jump the rope (hilariously, but awkwardly), and go in to catch up with my notes. Nobody scowls at me, so that although they probably fear me as a "medicine man" they are not at all resentful for what I did yesterday. They are grown-up children, much more tractable than the Indians. But otherwise they show so much in common with the Indian that the more one sees of them the more he grows drawn to the belief of the original (and that not so far distant) identity of their parentage. It seems the Eskimo and the Indian are after all no more than two diverging fingers of one and the same hand; or they were so a bit farther back. Mental differences there are, yet these are no more than may be found in different tribes of the Indians or different groups of other races.

Tuesday, July 13. Rise a little after 6. Eye still sore after Sunday's gnat and sweat and dirt; must use boric acid frequently. An Eskimo actually said yesterday it was a sickness from touching the bones. A little breakfast—have no more salmon strips, so just cereal, canned plums, and coffee. And then with the help of two young Eskimo carry my spoils and baggage on to the tug, which has come for me. By about 7 start. Good-by Kotlik, what little there is of it.

At 9 arrive at Mr. Williams's reindeer camp farther up the coast. There are five tents and two small log houses of natives—the herders with their families, dogs, and fish racks; and three whites, Mr. Williams, owner of the boat and of most of the herd of about 8,000 animals; Mr. Palmer, of the United States Biological Survey; and a Dane, Mr. Posielt, here for the Biological Survey of Canada. All are already at the corral some distance over the hill, branding, counting, etc., the great reindeer herd, which belong to several owners.

A short walk along the shore brings me in sight of the herd. The animals can be heard grunting a good distance off. The herd is so large and so compact that it looks like a forest of horns. The animals keep on moving in streams, but remain in the herd. They go to the shore to drink some of the salty water, instead of salt. All is of interest, even though the branding, the cutting off of big slices from the ears, and castration, is rather cruel.

At lunch, for the first time, reindeer meat, a select steak. It is tender and decidedly good. Has no special flavor and is poor in fat, but tender and good.

Afternoon, once more to the corral, and then various things, including a photograph of a little impromptu native group.

Supper once more on reindeer meat. This time prepared as a sort of a stew with onions—again very good. But we were to leave after supper for St. Michael and I see no intention to that effect. Instead they all go once more to the corral to continue the work until about 11 p. m. So I have to settle for the night, with some hope that we may leave in the morning. We sleep four side by side in a tent 10 feet wide. Luckily they had a spare clean blanket or two, and but one of the three snores, and he like a lady; also the weather has cleared and is warmer, so the night is fairly good.

Wednesday, July 14. Morning bright, calm. Breakfast, and all hurry off to corral without even any explanation—just a few casual words, from which I understand that we shall not go. So I write whole forenoon, though feeling none too good about the delay. Had I my own boat, as one should have in this country, all would be different. As it is I am utterly helpless. At lunch speak to Mr. Williams; and though not much willing, he half promises that we may go to St. Michael tonight.

Afternoon. Walk 8 miles along the beach, to a cape and back, looking in vain for traces of human habitation and collecting along the beach what this offers, which outside of some odd, flat, polished stones is but little. Come back near 6—soon after supper—and hear with much satisfaction that, after all, we will go to-night to St. Michael.

RÉSUMÉ

So ends the Yukon and its immediate vicinity. What has been learned?

1. The great and easily navigable river, extending for many hundreds of miles from west to east, could not but have played a material part in the peopling of Alaska, and quite probably in that of the continent, and all human movements along it must have left some material remains. It seems, therefore, a justified inference that the valley of the Yukon harbors human remains of much scientific value.

2. Such remains, judging from the present conditions, were left exclusively along the banks of the river, on the flood-safe elevated platforms of the banks, and especially about the mouths of the tributaries of the Yukon of those times.

3. But the banks and mouths of the past are seldom, if ever, those of to-day. The river, with its currents, storms, and ice pack every spring, is changing from year to year. It is ever cutting and eroding in places, and building bars and islands or covering with flood silts in others. In many stretches no one can be sure where the banks were 500 or 1,000 years ago, not to speak of earlier periods.

4. The banks and islands of to-day, therefore, are for the most part recent formations, in which it would be useless to expect anything very ancient. And there is nothing like the successive ocean beaches at Nome and elsewhere, which would guide exploration.

5. The right hilly side of the river alone seems to offer some hope of locating some more ancient sites and remains; yet it is quite certain that the river ran once far to the left, for all the vast flats on that side are of its construction; so that the more ancient remains of man may lie in that direction. But there everything is, from the point of view of archeology, a practically unexplorable jungle and wilderness, and there is no one there who might make accidental discoveries.

6. It would seem that the best hope for the archeologist along the Yukon, so far as the more ancient remains are concerned, lies along the tributaries of the stream, and that particularly at the old limits of the more recently made lands.

7. Nevertheless the banks of the Yukon as they are now are not wholly barren. Up from Tanana, at the Old Station, probably about Ruby and Nulato, about Kaltag and the Greyling River, at Bonasila, Holy Cross and Ghost Creek, and at the Mountain village, Dog village, Russian Mission, and doubtless a number of other sites, they contain both cultural and skeletal remains that, if recovered, will be invaluable to the anthropological history of these regions.

8. The line of demarcation between the Indians of the Yukon and the Eskimo, outside of language, is indefinite. Traces of old Eskimo admixture are perceptible among the Indians far up the river, and the cultures of the two peoples in many respects merge into each other; while among the Eskimo of the lower river and farther on there are physiognomies that it would be hard to separate from the Indian. Whether all this means simply extensive past mixture, or whether, as would seem, the Alaska Indians as a whole are nearer physically to the Eskimo than are the tribes in the States, remains to be determined. Among the Athapascan Mescalero Apache, who have reached as far south as New Mexico, a somewhat Eskimoid tinge to the face, especially in young women, was by no means very unusual 25 years ago when I studied this tribe. This problem will be touched upon again in this volume.

9. All along the Yukon, from near Tanana (Old Station) to the mouth of the river, in the Indian and in the Eskimo region, there prevailed the same type of winter house, namely, a largely subterranean room with a subterranean tunnel or corridor entrance; and also a similar type of summer dwelling, formerly a skin, now a canvas, tent. The winter dwellings were built within of stout posts and covered with birch bark and sod, looking from outside much like the present-day Navaho hogan; while the pits left by them remind one of the southwestern "pit dwellings," the kashims of the Pueblo kivas. As a hogan, so these largely subterranean dwellings along the Yukon had a smoke-air-and-light hole in the center of the top, a fireplace in the middle of the floor, and benches (of heavy hewn planks in the north) along the sides. Each village, furthermore, had at least one larger structure of similar nature, the "kashim," or communal house. All this may still be traced more or less plainly on the dead sites along the Yukon, and houses as well as a kashim of this type were seen at Kotlik and Pastolik, at the mouth of the river.

10. The native industry of the river presents also much similarity, though there are differences.

Pottery, of much the same type and decoration, was made at least as far as the lower middle Yukon.

Stone implements were made and used all along the river, and were much alike. But the double-grooved, cupid-bow ax of the Yukon Indian, hafted in the center and used for chipping rather than cutting, is lower down replaced by the same ax, in which one end has been broken off (or has not been finished), and which is hafted as an adze; or by oblong quadrilateral flat axes which have not been found up the river.

The peculiar and apparently very primitive stone industry of Bonasila is, it seems, just a development of local conditions—nature

of most available stone, and essentially hunting habit of the people that resulted in many skins which called for numerous scrapers. Nevertheless the site deserves a thorough further exploration.

There was apparently not much basketry along the river, the place of the baskets being taken by the birch-bark dishes of the Indian and the kantag or ingeniously made wooden dish of the Eskimo part of the river.

Canoes among the Yukon Indians were mainly of birch bark, while the Eskimo had mainly skin canoes.

11. Neither the Indians nor the Eskimo of the Yukon practiced deformation of the head or of any other part of the body, or dental mutilation. The Indians as well as the Eskimo occasionally pierced the septum of the nose, for nose pieces, while the Eskimo cut on each side a slit in the lower lip for the introduction of labrets. The Eskimo cut their hair short in a characteristic way, reminding strongly of certain monks; the Indians left their hair long. But at Anvik the Indians both cut their hair and wore labrets. They also used the wooden dish.

12. From all the preceding it appears that there must have been long and intensive contacts between the Yukon Eskimo and Indians; that, through war or in peace, they became mutually admixed; and that there were mutual cultural transmissions.

13. No further light for the present could be gained on the origin, antiquity, or early migrations of the Yukon Indian. It was determined, however, that he represents but one main physical type, and that this type is the same as that of the Indians of the Tanana and most other Alaskan Indians of the present time.

14. Exceptional skeletal remains were washed out from the bank at Bonasila. They are of Indians (?), but appear to be not those of the Yukon Indian of to-day. They present a problem which is to be solved by further exploration of the site.

15. The Eskimo of the lower parts of the river are in general better preserved and more coherent than the Indians. They are more tractable people and are taking more readily to work and civilization.

16. These Eskimo show, in the majority of cases, fairly typical Eskimo physiognomies. But their heads are not as those of the northern and eastern members of the race. The head is less narrow, less high, and has but now and then a suggestion of the scaphoid form that is so characteristic of the Greenland, Labrador, or northern Eskimo cranium; also, the angles of the jaws are less bulging and the lower jaws themselves do not appear so heavy.

17. The Yukon Eskimo burials are in all essentials much like those of the Indians up the river. Here again a cultural connection

is very evident, in this case there having in all probability been an adaptation of methods by the Eskimo from the Indians.

18. Archeological prospects along the delta flats occupied by the Eskimo appear very limited.

St. Michael

Thursday, July 15. In the morning, after a good trip, reach St. Michael—quite a town from a distance, with many boats on the shore in front of it; but soon find that it is largely a dead city and ships' graveyard, not harbor. With the gold rush over, and the Government railroad from Seward to the Tanana, men and business have departed. Before the summer is over most of the large buildings and the fine large boats are to be demolished, and there will be left but a lonely village.

Unload my collections on the old dock. The postman kindly comes down from his place, which, with Mr. Williams's store, is far up on the hill above the harbor, the boxes are weighed and stamped for the parcel post, and relieved of them I go to the hotel and spend the day in visiting the teacher, the marshal, Mr. Williams's store, where I see a whole lot of recent Eskimo ceremonial masks decorated with colors and feathers, and the wireless station to send a message to the Institution. All native (Eskimo) character is almost gone from the place, what remains being mainly civilized mix bloods; and also little, if anything, remains to be collected, particularly now when all vacant land is thickly overgrown with grass and weeds. An occasional skull appears, one having been seen recently on the beach and one on Whale Island, but there is little besides, though things could be found doubtless by excavation.

Items of interest in Mr. Williams's store, and also in that of the N. C. Co., are various articles cut handsomely by the Eskimo from walrus ivory, both fresh and "fossil" (old and nicely discolored). There are beads, napkin rings, hairpins, cigar and cigarette holders, and other objects, generally exceedingly well made and decorated. It is, of course, well known that the Eskimo are very apt in this work; it is not, however, so well known that every island or village has certain specialties and types of decoration. This is so true that an observer before long can tell in many instances just where a given article has been made.

The fossil ivory industry is, it was soon learned, becoming a serious detriment to archeological work in these regions; of which, however, more later.

During the day I find that a small boat, the *Silver Wave*, belonging to Lomen Bros., will leave St. Michael for Nome that same evening. As this suits me very well I engage a berth on the boat, help

to get my baggage on deck over a broken landing place, and get ready to depart.

At 6 leave St. Michael. The *Silver Wave* is a tub—too short—am told if it were of proper length they would have to have more help. Result—very unsteady. Fortunately the weather is fair, and the captain gives me a berth in his cabin. I had originally a stateroom, right in the back, with three bunks or beds, so small that one could barely get into the beds; but there came two mix-breed women with a girl and so they turned me out and put me in the "hole"—seven bunks in an ill-ventilated cabin under the deck in the stern of the ship. She is only about 60 feet long by about 15 broad. As it is I have a bunk in what would have been a well-ventilated little cabin, had it not been for rough weather which came on later in the night and which necessitated the closing of the window.

Friday, July 16. The rougher weather came and the boat began to pitch and roll. Luckily I slept for the most part. At about 6.30 the captain called me to breakfast with him. I got up rather groggy from the sea, but managed to wash my face and get to the little messroom, where the cook started to bring eggs, bacon, coffee, etc.—and then I had enough and had all I could do to reach my bunk again without getting seasick. I was kept on the verge of it until after 10, when we arrived off Nome.

This, however, meant no relief. There was no bay, no dock, no shelter for even such a small boat, and so we anchored a few hundred yards off the shore along which stretch the long line of unpainted (mostly), weather-beaten frame dwellings of this northern capital.

By this time I barely keep my feet, but they lowered a heavy row-boat, and several of us—there were four other men passengers—are helped to tumble in. I get back, and to steady myself catch hold of the borders of the boat, only for this the next moment to be dashed against the larger boat with my hand between. It was almost too much, the seasickness and added to it the very painful hurt. Fortunately the fingers were not crushed, just bruised badly—they might easily have been mashed to a pulp.

They row us in and we tumble out on the sand, and there is no one to receive anybody or take any notice. However, after a while there comes accidentally an old two-seated Ford. Three of us crowd in, leave the few bulkier things we brought along on the beach unguarded, and are driven to the other end of the town, to the Golden Gate Hotel.

This is a big old frame building, out of plumb in several directions. There is no one in the spacious lobby. However, after a time some one, not looking much like a proprietor—more like a groom at work—comes out from somewhere and without much ado shows us each to a room. Mine smells musty, old sweat and blankets and mould, and

looks out on a dilapidated tin roof—must ask for another. Finally get one "front" for $3—the other was only $2.50. Musty too, but fairly large, and with a double bed with, at last again, clean covers.

Unshaven—in the khaki worse for rain and work—with fingers so sore they can not bear a touch, feverish, and head still dizzy—I go to lunch. On my way stop at Coast Guard building—no one there; at the Roads Commission—office empty; at the Customs—not a soul. But at the courthouse they tell me where Judge Lomen sometimes lunches, and so I go there. It is near by—nothing here is far distant—and so I soon sit at Mrs. Niebeling's, a justly famed Nome's "for everybody," at a clean table and to a big civilized dinner. Order reindeer roast—find it this time, in my condition, not much to boast of—one could hardly tell it from similarly done beef—and begin on the coffee when in comes a young man, asks me if I am the doctor, and introduces himself as Mr. Alfred Lomen, the judge's son; and in a minute or two in comes the judge himself, a kindly man of something over 70. It all makes me feel a lot better, though still weak. Have rest of lunch together and talk, but do not get very far in anything that interests me; but the judge takes me to the Catholic Fathers here, who have an orphanage somewhere near where I want next to go, and leaves me with Father Post. The father is kindly, but himself does not know much, and so makes arrangements for me to meet next day Father Lafortune, who works among the Eskimo.

Then I go once more to the Coast Guard building and meet Captain Ross, in charge. The *Bear*, I learn, has just arrived here, and is soon going north. She is my godsend, evidently. So Captain Ross sends me over to see Captain Cochran. The meeting is good, and I have a promise to be taken to the cape and some other stations. But the *Bear* goes first to coal at St. Michael, and then will make a visit to St. Lawrence Island. So I propose to go to Teller first, see what I can of the Chukchee-Eskimo "battle field" near there, and be taken from there by the *Bear*. The priests give me some hope for getting there over an inland route, but later on tell me one of the boats of the orphanage which is located in that region is away and the other has broken down, so that there will be no possibility of making the trip through the Salt Lake and to Teller. But the *Victoria* (the Seattle boat to come to-night) will go to Teller. Unfortunately, if weather is rough or there are no passengers she will not stop at Nome, so all is again uncertain. The *Silver Wave* goes northward next Monday, but I have a dread of her. All of which is put down merely to show slightly what an explorer without a boat of his own may expect in these regions.

Nome, Saturday, July 17. Poor night again—it surely seems to be the fashion in Alaska. The *Victoria* came at night (or what

should be night). The ramshackle big frame hotel, with partitions so thin that they transmit every sound, got about 40 guests, and next room to mine came to be occupied by two women who had visitors, female and male, were taken out for a ride after 12 and returned about 2 a. m. One of them, or their visitor, had a perpetual vocal gush, the others chimed in now and then, and a strong male voice added the bass from time to time, with old Fords noisily coming and going outside, and people going up and down the stairs. So sleep for some hours was out of the question. And there was nothing to do about it.

After breakfast went to meet Father Lafortune, a Catholic missionary priest to the Eskimo, who speaks their language well and who promised to accompany me to their habitations; and together we spent the forenoon on one side of the town, among the natives of the Diomedes, and most of the afternoon on the other end among the people from King Island. It was a good experience, resulting in seeing a good many of the Eskimo and getting some information, a few photographs, and quite a few old specimens. Then we went to the parsonage, where I got a few good photos from Father Lafortune's collection. He is a matter-of-fact, always ready to help, natural he-man, rather than a priest and teacher, and a great practical helper to the natives, who all are his friends.

Also saw Judge Lomen, arranged for lecture to-morrow, saw Captain Ross about the *Bear*, and various other people; but there is not much to be obtained here about old sites and specimens. Telegraphed Institution, and also to the Russian consul at Montreal for permission to visit the Great Diomede Island. Evening packing. Natives bring walrus ivory, some excellent pieces. Weather whole day cloudy, threatening, occasional showers, cool but not cold.

Sunday, July 18. Heavy sleep 10 p. m. to 7 a. m., regardless of a typewriter going in the next room and the women (now quieter, however) on the other side.

Forenoon spent in talking with people and attending a little service, for the natives mainly, at the Catholic Church of Fathers Post and Lafortune. Poor, simple, but sincere and interesting.

After lunch more consultations, then a visit to bank where they smelt gold dust (even to-day), and then a lecture on "The Peopling of America," at the courthouse. Well attended, and many came to shake hands after. Then a dinner, with examination of a number of interesting and valuable specimens, at Judge Lomen's. Among other objects there is a duplicate, in ivory, of the broken double ax from the Yukon, the two grooves and even the break being well represented. Evening—examination of specimens at Reverend Baldwin's. Cloudy, cool, threatening, but stormy weather abating.

About Nome

Due to the delay with the *Bear*, the next few days until July 23 were spent at and about Nome. They proved more profitable than was expected. Numbers of interesting specimens were found in the possession of some of the dealers, and more of those of scientific value were secured either through gift or by purchase for the National Museum. These collections consisted of objects of stone—i. e., spear points, knives, axes, etc.—but above all of utensils, spear points, effigies, etc., some of them of remarkable artistry and decoration, were made of walrus ivory that through age has turned "fossil."

Among the stone objects were several axes made of the greenish, hard nephrite which came from the "Jade Mountain" on the Kobuk River. The objects from fossil ivory came principally from the St. Lawrence Island, the Diomede Islands, Cape Wales, unknown parts of the nearer Asiatic coast, and here and there from the Seward Peninsula.

A large majority of these objects are now collected by the natives themselves, who assiduously excavate the old sites, and are sold at so much per pound as "fossil ivory" to crews of visiting boats or to merchants at Nome and elsewhere, to be worked up into beads, pendants, and other objects of semijewelry that find ready sale among the whites.

In addition a certain part of these objects is reserved by the natives, especially those of the Diomede Islands, and worked up by themselves. The more striking the coloration of the ivory, the more desirable it is for the beads, etc., and the less chance of the object, regardless of its archeological or artistic value, to be preserved. The most artistic pieces, nevertheless, are usually disposed of separately, bringing higher prices than could be obtained for beads.

In this way hundreds of pounds collectively of ancient implements, statuettes, etc., are recovered each year from the old sites on both the Asiatic and the American side of the Bering Sea, and are cut up, their scientific value being lost. Most of the fossil ivory, fortunately, consists of objects which, though showing man's workmanship, are of relatively little scientific value; nevertheless it was seen repeatedly that specimens of real archeological value and artistic interest would be destroyed if their color and texture made them suitable for some of the higher-priced jewelry.

The Eskimo, as repeatedly found later, have not the slightest hesitation about excavating the old sites, and whatever they can not use, which as a rule includes animal and human bones, and in fact everything else except stone tools and ivory, is left in the excavated soil and lost. The amount of destruction thus accomplished by the

women, children, and even men each year is large and promises to grow from year to year as long as the supply lasts. This means that unless scientific exploration of these old sites is hastened there will be little left before long to study.

The fossil ivory trade has become such that many of the officers and the crews even of the visiting vessels, including the revenue cutters, engage in buying the ivory from the natives and cutting it up in their spare time into beads and other ornaments. A captain of a well-known boat who with his crew visited in the summer of 1926 a small island on which there is an extensive frozen refuse heap containing many bones and tools of the natives who once occupied the place, exclaimed, "Gad, there's $50,000 of ivory in sight."

The boat crew took away about "2 bushels" of it, or all that could be removed from the extensive frozen pile. I saw some of this ivory later, all cut up, but with a number of the pieces still showing old human handiwork, and some beads made of other parts of the lot were brought later to my office in Washington.

If American archeology and ethnology are to learn what they need in these regions it is absolutely essential that they take early steps for a proper exploration of the old sites, besides which every effort should be made by the intelligent traders, missionaries, teachers, and officials to save the more artistic and characteristic pieces of human workmanship in the old ivory, and bring them with such data as may be available to the attention of scientific men or institutions. It would in fact be of much value, and the writer has suggested this to the Governor of Alaska, to establish a local museum at Nome, where such objects could be gathered and saved to science.

ABORIGINAL REMAINS

The coast of which Nome is now the human center, up to Cape Wales, together with the nearer islands, was occupied by the Maiglemiut (Zagoskin), or Mahlemut (Dall et al.) subdivision of the Eskimo. They were a strong group, and great traders. During the Russian times the Aziags, from what is now the Sledge Island, with probably others from the coast, visited yearly for trading purposes as far as St. Michael and the Yukon, while the Wales people were known to trade up to fairly recently as far as Kotzebue, both at the same time having trading connections with Asia.

Of these natives, with the exception of those at Wales, there remains but little. On Sledge Island there are only two dead villages, and on the coast from Port Clarence to far east of Nome there is not a single existing native settlement. A few remnants of the people live in Nome, but they have lost all individuality.

Dead sites are known to exist from west to east, at Cape Wooley; at the mouth of the Sonora or Quartz Creek; at the mouth of the Penny River—some natives are said to still go to fish there in summer; at the mouth of a small river 3 miles east of Nome; both west (a larger village) and east (a small site) of Cape Nome; and 18 miles east of Nome (the "Nook" village).

Most of these sites have been peopled within the memory of the oldest inhabitants.

Thanks to the kind aid of the Reverend Doctor Baldwin, I was able to visit several of the sites east of Nome, more particularly the Nook village, and it was still possible to find two skeletons and a skull on these sites.

The Nook site must have been one of considerable importance. It was an especially large village, or rather two near-by villages, in one of which I counted upward of 30 depressions, remnants of the semisubterranean houses with vestibules, such as are elsewhere described from the Yukon.

Here a clear illustration was had of what changes on sites of this nature may be wrought in a short time by the elements.

Fifteen years ago, I was assured, there were still many burials and skeletal remains scattered along the coast near the Nook village. Then in 1913 came a great southwestern storm, which at Nome ripped up the cemetery and carried away some coffins with bodies, scattering them over the plains in the vicinity. Since that storm not a vestige remains of any of the burials or bones near the large Nook village. On prolonged examination I found nothing but sands overgrown with the usual coast vegetation. Everything had been carried away or buried and the pits of the houses were evidently themselves largely filled in.

The burials on this coast west of Golovnin Bay were evidently all of a simpler nature than those on Norton Sound and the Yukon. There is plenty of driftwood, but for some reason this was not hewn into boards with which to make burial boxes. The dead were merely laid upon and covered with the driftwood, though this was done, as later seen on Golovnin Bay, rather ingeniously. One of the two skeletons found near Cape Nome, an adult male, lay simply among the rocks on the lower part of the slope of the hill.

Old sites, though often small, may be confidently looked for along all these coasts in the shelter of every promontory, at the mouth of each stream, and on the spits which separate the ocean from inland lagoons (as in the case of the Nook village).

Nome—Bering Strait—Barrow

Friday, July 23. Received word to be on the *Bear*, which arrived yesterday, before 10 o'clock this morning. Due to the shallow-

ness of the water the boat, though drawing only 18 feet, stands far out from the shore and makes a pretty sight, looks also quite large in these waters where there is nothing above a few hundred tons.

Am soon at home. The captain's cabin, with three beds, is nicely furnished, but has the disadvantage of being situated at the very rear of the vessel, above and beyond the screw. There is another passenger, a teacher-nurse for Barrow. I take the isolated bunk on the right, and this becomes my corner for the next six weeks. Toward 11 a. m. the wind begins to freshen, soon after which we leave for St. Lawrence Island. After midday the wind increases considerably, waves rise, and the *Bear* begins to plunge. Before the afternoon is over the wind blows a half gale and we are being tossed about a great deal. Have to take to bed. The boat is being tossed up and down and in all directions. Resist in vain, then at last become ill, and this passes into a long spell of about the worst seasickness I have ever endured. There were a good many sick on the *Bear* that evening and night.

Saturday, July 24. Wind and water slowly quieting down, and the boat is approaching Cape Chibukak off St. Lawrence Island, where is located the main of the two villages of the island, known as Gambell. The *Bear* gradually approaches to within about a half mile of the shore, where we anchor. The water here is quieter, and before long a large baidar (native skin boat) is shoved off from the land and approaches our boat. This is the usual procedure when the sea permits. There are no docks, and closer in there is danger from rocks and shallows. There are a number of natives in the boat, together with the local teacher, and each one, including the teacher, carries a smaller or larger bag of fossil ivory, various articles made of fresh ivory, and some other objects, for sale to the officers and crew of the boat. They climb on our deck, where they evidently feel quite at home, and in a few minutes carry on a busy trade and barter with everyone. I succeed in getting a fine fossil ivory pick; but the main supply had evidently been preempted and I only see it later in the possession of the officers, who kindly let me have what is of less value to them and more to science.

Some of the Eskimo bring, in addition to the ivory, other articles for sale—fish, birds, and the meat of the reindeer, which are for the ship's messes and constitute very welcome additions to the diet. Besides all this the natives also frequently bring skins of foxes and even bear, which also find buyers. In return the boats carry off the mail and such supplies as they have obtained by barter or purchase. These visits are mutually enjoyable as well as profitable occasions,

and afford one the opportunity of seeing many of the natives, even if prevented, as in this case, from visiting their village.

The Eskimo impress one here as in every further locality as a lively, cheerful, and intelligent lot, good traders, and advancing in many ways in civilization. The latter is perhaps especially true of the St. Lawrence Eskimo, who from what was seen now and later must have had especially good missionaries and teachers as well as a considerable freedom from bad influences from the outside.

Savonga

About 40 miles east-southeast of Gambell is the second and smaller village of the St. Lawrence Island, known as Savonga, which was the object of our next visit. It was here that we were to buy two or three reindeer carcasses, the animals being killed and dressed for us by the natives in an astonishingly short time. The little village is prettily situated on the green flat of the elevated beach. It consists of less than a dozen modern small frame dwellings. One of these, that of the headman, Sapilla (who regrettably died during the following winter), is of two stories—a unique feature for an Eskimo dwelling in these waters. Here we were visited by three boats and the previous scenes were repeated, only, due to the proximity of a rich old site, there were more objects of old ivory.

The captain made me acquainted with Sapilla, whom I found remarkably white-man-like in behavior. Then the ship doctor, not feeling very well after yesterday's storm, filled my pockets with tooth forceps and I was taken to the shore, to see the women and children who would not venture out and to attend to any tooth extraction that might be needed.

We were considerably farther from the shore than even at Gambell, but I was sent on one of our motor boats and so it did not take long to land. Upon landing we came to bright and clean and smiling little groups of women and children, full of color in their cotton dresses, and I was soon in one of their houses. All these dwellings were built by the Eskimo themselves, and it was a most gratifying surprise to find them as clean and wholesome as any similar dwelling of whites could be. Moreover, these houses were furnished with stoves, chairs, tables, crockery and other utensils exactly as if they were those of a good class of whites, with the smell of the seal, which as a rule is so clinging to and characteristic of the Eskimo house, barely perceptible.

It was a busy and interesting hour that I spent at Savonga. I saw probably all the inhabitants that were at home; pulled five teeth—the teeth of these quite civilized people are no more as sound and solid as were those of their fathers and mothers—and found and

purchased cheaply many smaller objects of fossil ivory, which they excavate from a near-by old site.

These objects are obtained from an old village located on the coast about 4 miles farther east, on or near the North Cape, visible from our boat. The natives excavate in this site as far as it thaws every summer, and find many objects. They, moreover, make an occasional trip to the two little rocky Punuk islands located about 12 miles south of the East Cape of the St. Lawrence, which, though accurately charted by the Russians as early as 1849, yet until the summer of 1926 remained practically unknown. On one of these islands there is now known to exist an extensive frozen refuse heap, containing large quantities of old ivory implements as well as other objects of scientific interest.

The land visit was a great tonic after the wild and mean preceding night, and I did not relish at all the *Bear's* whistle calling us away. What a great thing it would be if a revenue cutter could for just one season be given to science!

Sunday, July 25. Left St. Lawrence 9.30 last night, sea quieting. We are now passing, on our right, King Island, isolated rocky mass. Day fair, cool, water getting smooth.

About 50 miles north one can now see plainly Cape Prince of Wales (pl. 5, *a*), and to the left, hazy, the two Diomedes. We are now 95 miles from St. Lawrence. On really clear days one could see from here even the Asiatic heights. Therefore, from the latter on a clear day one sees the Diomedes, the Cape, the highlands beyond, and King Island, while a little farther south there is on such a day a good view from Asia of the St. Lawrence Island. All this was in good weather easily reached from Asia and must have been utilized from the earliest time in passing onward from one continent to the other.

We can now see also much of the coast in the direction of Teller and the York Mountains behind.

From hour to hour there is growing on one a profound appreciation that the Bering Sea was a most favorable amphitheater of migration, particularly from the less hospitable Asia eastward into America. And practically the whole trend of native movements to this day is from Asia toward America.

Later in the day, now a fine, bright summer day, arrive off Wales. Here again anchor far out. Last year the *Bear* grounded here and our captain is apprehensive. Wales is a straggly village—or two villages—located on a large, flat sandy spit, dotted with water pools, and projecting from the Seward Peninsula toward Asia. Near by are old sites, probably of much archeological value, and in these for some weeks now excavations have been carried on by Dr. D.

Jenness, of the Victoria Memorial Museum of Ottawa. Here also is located an exceptionally educated and observant teacher, Mr. Clark M. Garber.

A big umiak comes to us with many natives bringing the usual trade, and on it, much to my pleasure, are both Doctor Jenness and Mr. Garber. Doctor Jenness asks to go with us to the Little Diomede to do some work there. He has had encouraging experience here, finding evidences of occupation dating many centuries back, and has collected some valuable specimens, including a few with the fine old curved-line decoration. Mr. Garber gives me some valuable information about the skeletal remains of this place and engages to collect for me, who can not leave the boat, a few boxes of these specimens, which promise is fulfilled later.

The natives are a jolly and sturdy lot, even though they bear, and that since their earliest contacts with whites, a rather bad reputation. That this is founded in some fact, at least, is told us in the annals of the Russians, and is also shown by the little structure on the hillside off which we are anchored. This has a tragic and at the same time quaint history. It is the grave of a missionary Doctor Thornton, who was killed, we are told, by two local young fellows. These were apprehended, sentenced to die, and were to be shot by their relatives, which all evidently found quite just. On the appointed day they were taken out to the burial ground, helped to prepare their burials, one asked yet to be allowed to go to the village to get a drink, went and returned, and then both were shot. The executioner of the boy who went to get the drink is said to have been his uncle.

The Diomedes

Late that night we leave slowly for the Diomede Islands, the nearer of which is only about 18 miles distant. The two islands lie, as is well known, just about in the middle of the Bering Strait. One is known as the larger or Russian, the other as the smaller or American Diomede. The boundary line between Russia and the United States passes between the two. Both islands have been occupied since far back by the Eskimo. To-day there is one small village on the American and two small settlements on the Russian island.

July 26. Up at 5.40, breakfast 6, and off in one of our staunch motor boats, with Jenness, for the Little Diomede. Countless birds flying in streams about the island.

The island is just a big rock, with barren flat top and steep sides, covered where inclination permits with great numbers of larger and smaller granite bowlders. There is neither tree nor brush here. The village, if it deserves that name, with a school, occupies an

easier slope, facing the larger island across a strait seemingly about a mile broad. There are but a few dwellings, due to local necessities and conditions built above ground and outside of stone. One that was entered showed a dark foreroom, a storage attic, and a cozy somewhat lighted living and sleeping back room, entered through a low and narrow entrance. The houses seem to be built on old débris of habitations, and there are refuse heaps, one of which was eventually worked in by Doctor Jenness, though without much profit.

The bowlder-covered slope above the village was the burial ground of the natives. (Pl. 5, *b*.) Unfortunately most of the skeletal remains have been collected by a former teacher and then left and lost. With Doctor Jenness and the present teacher, himself an Eskimo, we climb from bowlder to bowlder and collect what remains. The work is both risky to the limbs and difficult in other respects. The large bowlders are piled up many deep; and there being little or no soil, there are all sorts of holes and crevices between and underneath the stones. Deep in these crevices, completely out of sight or reach, nest innumerable birds (the little auk), and their chatter is heard everywhere. But into these impenetrable crevices also have fallen many of the bones and skulls of the bodies that have been "buried" among the bowlders, and also doubtless many of the smaller articles laid by the bodies.

The burials here were made in any suitable space among the rocks. The body was laid in this space, without any coffin and evidently not much clothing. About it and on the rocks above were placed various articles. We found clay lamps, remnants of various wooden objects, the bone end pieces of lances, and finally one or two pieces of driftwood to mark the place. Here the bodies decayed and what was left had either tumbled or was washed by rain into the crevices. It was suggested, however, that much may have been taken by dogs and foxes. Some of the skulls and here and there one of the larger bones remained, to eventually be covered by moss and eroded. With the help of Doctor Jenness and the teacher I was able to find five male and seven female crania in fair condition, which will be of much value in the study of this interesting contingent of the Eskimo.

No evidence in the graveyard among the rocks of any great antiquity, nothing more than perhaps a few scores of years. But traces of older burials would surely be completely lost among the rocks, though they may lie in the deep crevices and holes where they can not be reached.

Upon return am treated to a cup of good hot coffee—never can get a real hot cup of coffee on the boat—and excellent bread, made by the Eskimo wife of the teacher; and see his family of fine chubby

children. Can not help but kiss his girl of about 10—she is so fresh and innocent and pretty. Obtain also from the wife of the teacher a good old hafted "jade" ax, though she hesitates much to part with it—it used to belong to her grandmother; and from the teacher himself a number of interesting articles in old ivory. Leave Doctor Jenness. Have learned to like him much, both for his careful work and personally, in our short association; and at 11 a. m. return to the boat.

Cold, but calm and sunny. Sit on boxes at the very end of the good old *Bear*. See Asia, the two Diomedes, and Seward Peninsula, all in easy reach, all like so many features of a big lake. Pass around Greater Diomede.

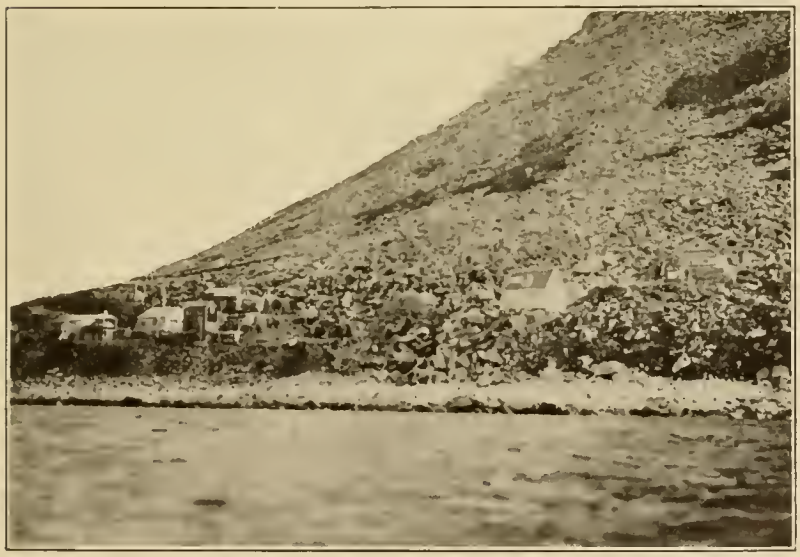
There never could have been any large settlement on the Diomede Islands—they are not fit for it. The Great Diomede has just two mediocre sites, which are occupied now each by about half a dozen dwellings. A small old settlement, a few stone houses, has also once existed, I am told, on the elevated top of the larger island opposite the Little Diomede. On the latter only the one visited—everywhere else the steep slopes or walls come right down into the water, and there is even no landing possible (or only a precarious one at best) except where we landed. The old natives of the Little Diomede are said to have believed that another village had once existed farther out from the present site and that it has become submerged. The evidence cited (told by the native teacher) is not conclusive, and no indication of such a settlement could be seen from the beach. But in front and possibly beneath the native houses, in the old refuse, there may be remnants of older dwellings.

Just passed from Monday to Tuesday, and then back to Monday, all in a few hours—the day boundary. We are now just north of the Bering Strait and see all beautifully, in moderate bluish haze.

A grand panorama of utmost anthropological interest. A big lake, scene of one of the main migrational episodes of mankind. Sea just wrinkling some, day calm, mostly sunny, mildly pleasant, with an undertone of cold.

How trivial feel here the contentions about the possibilities of Asiatic migrations into America. There can be no such problem with those who have seen what we now are witnessing. Here is a great open pond which on such days as this could be traversed by anyone having as much as a decent canoe. As a matter of fact it has always been and is still thus traversed. (Pl. 6, *a*.) The Chukchee carried on a large trade with America, so much so that we find the Russians complaining of their interfering with their trade. (Pl. 6, *b*, *c*.) The Diomede people stand in connection on one hand with the northeastern Asiatics and on the other hand with the whites

a, Cape Prince of Wales from the southeast. (A. H., 1926)



b, Village and cemetery slope, Little Diomede. (A. H., 1926)

a, Asiatics departing for Siberia from the Little Diomede Island. (Photo by D. Jenness, 1926)

b, "Chukchis" loading their boat with goods on Little Diomede Island, before departure for Siberia. (Photo by D. Jenness, 1926)

c, "Chukchis" loading their boat with goods on Little Diomede Island, before departure for Siberia. (Photo by D. Jenness, 1926)

a, Eskimos from East Cape arriving at Nome, Alaska

b, East Cape of Asia (to the southward). (Photo by Joe Bernard)

A GROUP OF WOMEN AT SHISHMAREF

(Taken at 2 a. m. by A. H., 1926.)

as far as Nome, where most of them go every summer to sell their ivory and its products and bring back all sorts of provisions. And in the same way the King Islanders come every summer to Nome, on the east end of which, as the Diomedes on the west, they have their summer habitations. (Pl. 7, *a*, *b*.) Only a year or two ago, the natives tell, an Eskimo woman of St. Lawrence Island set out alone in a canoe with her child to visit a cousin on the Asiatic coast, 50 miles distant, and returned safe and sound after the visit was over.

To bed dressed—the captain tells me we shall soon be at Shishmaref, on the north shore of the Seward Peninsula, and that he will have me called, if I want to visit the village.

Awake 11.30 p. m. At 11.45 word comes that we have arrived and a boat is getting ready. On deck in five minutes. Of course it is still light—there is no real night any more in these regions.

Have a cinnamon roll—the night specialty for the crew on the *Bear*—and a bowl of coffee. The natives, two boats full, already coming, and a fine full-blooded lot they show themselves to be. They are accompanied by Mr. Wegner, a big, pleasant young teacher.

Leave natives trading and set off in ship's boat. The *Bear* is anchored about 1⅓ miles off. Fortunately fairly quiet or we should not be able to go ashore. Teacher and a young English-speaking native go with us. We have the launch and the skin whaleboat. Anchor first off shallow beach and transfer into the skin boat for the landing.

Tuesday, July 27. It is about 12.30 a. m. Many native women, youngsters, and some men gather about us at the school. Talk to them—explain what I want, which is mainly skulls and bones—all quite agreed. Take two young natives, some bags, and proceed to where they lead me.

Find, about half a mile from the present village, a big and important old site, which existed up to the white man's time. But dunes on which burials were made and house sites have been largely graded by a fox-farm keeper and trader, Mr. Goshaw. He had gathered many skulls—shows me a photo of two rows, at least 40—will not tell what he did with them. Says he sent "many things to the Smithsonian," but can give no details, "and to the universities," but will not mention which. Also "buried a lot." Bad business.

Gathering what is possible from the débris thrown out by the Eskimo working for the fox farm, we proceed rapidly from mound (dune) to mound. Find burials still on the surface in situ—i. e., nearly buried by the rising carpet of the vegetation—but skulls gone. Many of those on remaining heaps imperfect, but at least something can be saved. Collect all that is worth collecting. See Mr. Goshaw—

get but little out of him. Donates a few archeological specimens of no great value—has no more.

We hurry on to the other village and burial ground, almost a mile west of the present settlement. Find only a small pile of bones, with one whole male skeleton of fairly recent date.

Then back, as fast as possible, the Indians carrying the bags with bones, and load on boat. My shoes and feet have long since become thoroughly wet, after which Mr. Wegner loaned me wool socks and native shoes that protected my feet. But now these must be left behind and I have to get into my wet, cold shoes—socks too wet. Officers in a hurry to get back. It is now 3.00 a. m.; the sun rose about 1.30. Pay my men, change shoes, photograph women (pl. 8) and then men—all pleasant and willing. See a few poor articles of archeological nature—not worth getting; and after a hearty handshake with the teacher we take off through the somewhat rougher water to the whaleboat, then on to the motor boat and the ship. Arrive with six bags of specimens, reaching boat just a little after 4. Sleepy captain meets us, but luckily shows no grudge, though this stop and his loss of sleep were essentially for me. Though it would seem they could have readily waited for our going ashore until morning, or have given me a little more time at the Diomedes, which would have brought us here later. Am too much awake now and worked up to sleep. Lie down a while but fully awake. Total sleep last night 2½ hours. But it was worth it, except for the vandalism.

Pack—inadequate boxes—until 3.30 p. m. Whole collection made last night put in order. But back and knees stiff. Weather two-thirds fair (my own estimate), some wind, sea choppy. Lie down but can not sleep.

At 5.30 off Kotzebue. Due to shallowness of water must anchor far out of sight. At 6 go to land in ship's larger launch. Waves rather bad, much tossing about and spray, have to get behind the canvas canopy that is raised over one seat. It is 15 miles from where the *Bear* is anchored to the Kotzebue village—over two hours of (at times) rather violent tossing up and down and sidewise. Run for a part of the time not far from beach—a number of isolated, orderly fish camps—lots of fish drying. Wonder at not getting seasick again—it must be the open air or difference of movement.

Kotzebue village lies around a point on a not very high, flat bank, facing the bay of three rivers (Selavik, Kobuk, Noatak). As we approach I count over 50 clean tents of Eskimos, about 15 frame houses and stores, and many skin and other boats on beach or in water. Many natives hurry to meet us.

Go ashore. Thomas Berryman, the trader, with the local judge and two or three other whites come also to meet us. After getting ac-

quainted inquire about possibility of exploring the Kobuk and reaching the Koyukuk and Yukon. But all that I learn is uncertain and discouraging. There are but few native villages on the river, all Eskimo; and higher up the water is rapid, necessitating much hauling of the boat by the natives, which is costly; upon which follow three or four days' portage. The trip would cost much, and no loads over 40 pounds to a man could be carried.

Only a few old sites hereabouts are known by those whom I have a chance to ask. Say there is a somewhat important one at Cape Krusenstern. Mr. Berryman has from there a big stone (slate) lance. He also has a huge piece of serpentine, over 80 pounds in weight, with a moderate depression in top and some cutting (old native work), said to have been used as a lamp. Wants to keep this and spearhead, but donates an old rusty tin box full of smaller things and promises to obtain skulls for us; and I get a similar promise from a man (probably one of Mr. Berryman's storekeepers) from farther up the country.

Later meet here Mr. Chance, the school superintendent of these parts; a young and not prepossessing man, but one who steadily improves on closer acquaintance. Learn from him of a skeleton recently dug out from the ground under the schoolhouse.

See many natives, all Eskimo, good looking, clean, and kind. Some mix bloods, but the majority pure. Good to moderate stature, well proportioned though not fat body, medium to somewhat lighter brown color, physiognomies less typical Eskimo than hitherto and often strongly like Indian. Too late and dusky to photograph.

Go to see the teacher and find that the skeleton he dug out was placed by him in an open box, pushed as far as possible under the rafters of the floor of the schoolhouse and covered with gravel and earth. There are four of us—start hurriedly digging for it, remove with shovel, hoe and arms about a ton of the "filling"—and can not reach the box. It is 10 p. m., the wind rising, officer comes and urges me to get back to the boat. So must leave with promise that the box will be gotten out and await me on our return from the north. Have by this time decided the best policy will be to go with the *Bear* as far as she may go. Load empty boxes, some packing—and one of the young white men who have been digging with us runs up from the distant schoolhouse announcing that they "struck" the box. Urge him to run back as fast as he can and get it. Luckily the postmaster and a good many others who came to see us off delay us; also the transfer of the mail and boxes to the larger boat. Finally, after a good many anxious looks, I see at last the two young men appear, one with a wheelbarrow on which is the box of bones. Bones look not very old, and Eskimoid at first sight, but

take box, which contains a good deal of gravel, carry it through the very interested Eskimo to the boat, all get in, hurried good-bys to everybody, and we are off.

A two and a half hours' trip once more, and the last more than half of it very rough. Such tossing and dancing and dipping and twisting, with the spray, fortunately not cold, shooting high up at times, or an angry wave splashing over. But the boat is large and strong and so eventually we reach the *Bear*, which was completely out of sight until about an hour after we started, and in a few minutes off we go to the north. A little fruit, bed, and know nothing more until near 7 the next morning. It was a long day—over 25 hours in a stretch without a wink. Yet did not feel bad; the work and good nature of people about and those met with, with some success, are good tonics.

Wednesday, July 28. All of us have to consult the calendar to be sure of the day and date.

Sort and wash Berryman's specimens—a nice lot of little things, mainly of stone, slate, flint, etc.

Then go after my bones. Find the spray made the earth and gravel in the box thoroughly wet, so that it is necessary carefully to excavate all the bones. Find a male, rather short-statured, typically Eskimo. May have been a burial of the Russian times. Wire for all details. Must dry bones. Meanwhile try to catch up with notes. Toward evening expect to be in another village. Weather fair. Have passed the Arctic Circle during night, but it is not cold nor in any way strange here. Sunset coloring lasts long and passes into that of sunrise—no real night, no stars; but moon seen late at night and far to the south.

May this weather continue, for in rough weather landing at any of these places—there are no harbors whatever and always shallows and bars and shoals—would be extremely risky or impossible and my work, for which I feel ever more eager, would suffer. If only I could see all worth seeing, and stay a little longer when I find what I am after.

We reach Kevalina. It is just a schoolhouse and about seven sod houses. Only a native school teacher, from whom I do not get much.

No remains or old site very near, but an old village, with "good many things," exists on the Kevalina River within a few hours' distance (by canoe) from Kevalina.

Natives bring old adzes (mounted by them, however), and a harpoon handle from the old site—bought.

Spend rest of day in washing, sorting, and packing specimens.

After supper am invited to the officers' room and given by Lieut. M. C. Anderson a fine selection of old ivory harpoon heads and other

things. Many of these are from the old site on the St. Lawrence Island, and especially from little isles off that island named Punuk. All this strengthens the importance of those islands for regular exploration.

Thursday, July 29. In anticipation of being called up again during the night, at Point Hope, which is evidently another important spot for archeological exploration, for the natives are said to bring many old articles for sale each year, I do not undress and go to bed earlier, but have, because of the anticipation, closeness of air, and a cat jumping on my face just as I am dozing off, a very poor night; and no call came after all. In the morning there are cold showers, the sky is much clouded, and the wind keeps on blowing from the north-northwest, threatening, the officers say, to drive the ice toward this shore, which would be bad for us. It is cool and disagreeable. We have anchored to the south of the spit on which stands the village and can not unload or get ashore. Nor can the natives come here to us.

The village consists of a schoolhouse, a little mission (Rev. F. W. Goodman), an accumulation of houses, semisubterraneans, and tents. A few tents are also seen a good distance to the right—a reindeer camp. Otherwise there is nothing but the long, low, sandy, and grassy spit projecting far out into the ocean.

Later. The north-northwest still blows, and so the ship has to anchor to the south of the long spit on the point of which is the village. Of this but little can be seen, just a few houses, and it seems near and insignificant.

The captain is evidently waiting again for the natives to come out, and I am helpless. Finally, however, a boat is made ready and I am taken to the shore with the mail. This is piled on the beach, and with two officers we start to walk toward the dwellings opposite to us, which are the mission. Heavy walking in the loose sand and gravel of the steep beach, and as we ascend it is seen the buildings which seemed so near to the shore are about a mile or more away.

A man coming toward us—the missionary, Archdeacon Goodman. Tell him my mission; says he has some business on the ship, but will come, and there will be no trouble in helping me to a "good deal of what I want," which sounds fine.

In the absence of the missionary, go to see the teacher. The school is over a mile in the direction toward the point. Find him at home and helpful. In 15 minutes, with his aid, engage two native boys, give two sacks to each, and send them out over the long flats (old beaches) to pick up every skull and jaw they can find. They go cheerfully, and we depart shortly after to see Mr. La Voy, a movie-picture man, who has been staying here for some time making movie

pictures of the natives, and at the same time collecting all the antiquities they could bring him. We go to see his collection, but find him not home; has gone for mail. The rare mail in these regions is, of course, the most important of events. So back to the school (a good many rods from the sod house part of the native village to the left), and then—it is now near noon—to the mission, a good mile from the school and more from the village.

Road staked on one side with whale ribs about 2 rods distance. Flats on both sides show many parts of bleached human bones. They are a part of the old extensive burial grounds. Unfortunately, about two years ago the predecessor of the present missionary had most of the skulls and bones collected and put in a hole in the new cemetery, now seen in the distance to the right of the mission. This new burial place is surrounded by a unique whale-rib fence. Reach mission, but no one there. Does not look good. Try one building and door after another—no one—learn later that the missionary has no family. Twenty minutes to 1. Nothing remains but to go back to the school for some lunch. So leave my raincoat, camera, and remaining bags (expecting to do main work on the buried bones) and hurry back to the school, which I reach just after 1, and, thanks to their late clock, just in time for a modest lunch, but with a real hot cup of coffee. Queer that the only genuinely hot cups of coffee I got on this journey were furnished by Eskimo—for Mrs. Moyer, the wife of the teacher, is an Eskimo.

Then comes the mail and Mr. La Voy, and I go to see the latter's collection.

Find a mass of old and modern material, of stone, bone, and wood. All the older things are from an old site on the point. It is an important and large site, as found later (at least 50 houses), which the natives (getting coffee, tea, chewing gum, chocolate, candy, etc., for what they find) are now busy digging over and ruining for scientific exploration. Women dig as well as men, confining themselves to from 2 to 3 uppermost feet that have thawed; but even thus finding a lot of specimens. Bones, of course, and other things are left and no observation whatever on the site is made. It is a pity.

Mr. La Voy donates some stone objects, mainly scrapers, and then I go with a native he employs to the "diggings." Find much already turned over—one woman actually digging—but very much more still remaining. Examine everything—site evidently not ancient but of the richest—and then return with the woman to get some of her "cullings."

On the way am called by a man whose sod house (semisubterranean) we pass. We sit on the top of his house and soon establish a regular trading place, with a big flat stone as a counter. One

after another the native women and men bring out a few articles, good, bad, or indifferent, lay them on the stone. I select what I want, lay so much money against the articles, and usually get them. Everybody in the best of humor. The natives surely enjoy the sport, and so do I, if only I was not hurried. Thus trade for at least an hour until my pockets are bulging. Then once more to the school and once more to the mission. In the latter get my things, as nobody is there yet. Doctor Goodman having doubtless been delayed on the boat. I hear that there are prospects of both him and Mr. La Voy going north with us on a little vacation. Send the coat with spare bags to the school by a native I meet, while I go to look at the rib cemetery and photograph it. Find the bones have been interred in its middle and a low mound raised over them, so there is for the moment nothing to do there. Therefore go over the plain a little farther, picking up a few odds and ends, a damaged skull, and finally, from a fairly recent burial box, a fine skull with its lower jaw. Then attempt to pass a pool of water and sink in the mud to above my rubber boots, so that the icy water runs in, wetting me thoroughly, and gurgling henceforth with every step in the shoes. Try to get these off but can not. The feet must be congested. So spill out all I can by raising the feet, and then do some hard walking which takes away the cold.

Evening, though no dusk approaching. Sit on gravel to empty more water from shoes, but can still hardly get one off. And just as I succeed I see, across another long pool, two men, one with a cap of an officer of the ship, waving their arms, evidently signifying to me that the time is up and I am to return. Call to them to wait. Impossible to make them hear me or for me to hear them. All here is elusive—enchantedlike—distances, sounds. Finally they stop. I catch up with them after passing a broad ditch and learn that the ship is about to sail and they are waiting for me. My coat, however, and collections are still at the school, over a mile away, so once more it is necessary to hurry to the school and then back to the ship. So things go when promises go wrong and one is alone under a constant apprehension.

The boys collected four bags full. Moreover, they undertook to bring them toward the boat, and are bringing the last two just as I approach the beach. There are Eskimos on the beach with dog teams and sledges waiting to cart off what was unloaded from the ship. Photograph one of the teams and then on into the boat and to the *Bear* with the four bags, a box full, part of another bag, and all pockets full of specimens. Only to learn when we reach the boat that both Doctor Goodman and Mr. La Voy are going with us and that the former after supper is still to go and get his things

from the mission. I have no boat to go back with, and so lose several hours.

July 30. Gloomy morning, windy, cool, sea not good. Do not feel easy. But need to pack. One of the officers, Boatswain Berg, lends me his short sheepskin coat, and I pack up to lunch. The sea is getting worse. Have but little lunch and soon after have to take to bed or would again be sick. To avoid the pitching of the end of the boat where my bed is I go to the dispensary and lie until 6. From 6 on the sea moderates somewhat, so that I am able to have a little supper. After that go to officers' wardroom, play two games of checkers with the doctor, get some more specimens from two of the officers, and retire.

When I boarded the *Bear* it became plain to me that I must earn as much as possible the sympathetic understanding of my work by both the officers and the crew, and so I gave two talks, one to the officers and the other to the men, telling them of our problems in Alaska, of the meaning and value of such collections as I was making, and of other matters that I felt would be useful on this occasion. As a result I had throughout the voyage nothing but the friendliest feelings of all and their cooperation. Sincere thanks to the officers and the crew of the *Bear*, from the captain downward.

Saturday, July 31. At 4.30 a. m. suddenly a heavy bump forward, followed by several smaller ones. Ship rises and shivers. Have struck ice floes. Going very slowly. Further bumps at longer or shorter intervals and occasionally the ship stops entirely. Sea fortunately much calmer.

Up at 7. We are in a loose field of ice—aquamarine-blue ice covered with hillocks of snow, all shapes and sizes, as after a hard winter on the Hudson, only floes mostly larger and especially deeper.

Soon after breakfast bear walrus and seals had been observed on the ice, and shortly before 9 the captain comes down hurriedly to tell us they have just spied—they now have a man in the crow's nest up on the foremast—a white bear.

Run up—everybody pleasurably excited—to the front of the ship. See a black-looking head of something swimming toward a large ice floe about 500 yards in front of us. As we approach the head reaches the floe, then a big yellowish paw comes out upon the ice, then the shoulders, and finally the whole bear. The officers hurry forward, each with a gun. Soon men all there. Some one fires. Bear stands broadside watching us. The bullet goes way over. Then other shots—still missing—water spouting high in many places. Bear bewildered, does not know what to do, lopes off a little here and there, stops again, looking at us, and now—we are less than 100 yards from him it seems—a bullet strikes him above the loin—we can see him jerk

and the red spot following. He runs clumsily, but other shots follow, some seemingly taking effect, and then he drops, first on his belly, then, twisting, turns over on his back. A few more movements with his paws and head, and he lies still, quite dead. Can not but feel sorry for the poor bear, who did not know why he was being killed, and had no chance.

A motor boat is lowered and goes to get him. They find on the floe the remains of a seal on which he fed. Tie a rope to him, drag him into the water, tow him to the *Bear*, which has stopped and where all stand on the bows in expectation and with all sorts of cameras, and prepare to hoist the brute aboard. Captain says it is the second case of this nature in 20 years. Ropes are fastened about the big body, attached to a winch, and the big limp form is hauled up, though not without some difficulty, due to its size and weight. All stand about him, examine, photograph. They will let the natives at Wainwright skin it and give them the flesh. It is a middle-sized, full-grown male. It shows only two wounds, the one in the side and one where the bullet passed through his mouth, knocking out one of the canines.

Cold—must put on second suit of underwear. Very gloomy, but storm abated. No land in sight—above Cape Lombard all is flat. It rains in that direction. We meander among the floes, now and then bumping and shivering. Should a wind come up and blow the ice landward we would be in danger of being closed in and stopped or delayed.

Evening. Arrive off Wainwright. Village recent—older site 20 miles away. People the usual type of Eskimo. Visit the village, but soon return.

After supper the boat stops—fear the ice. Another passenger is added here, Jim Allen, the local trader, with a bagful of white fox skins and a bear skin. Conditions becoming a bit crowded.

Sunday, August 1. No movement to-day. They are apprehensive of the ice, and so we stay here, the one place of all where there is nothing for me to do. Of course there are the natives, but with the constant uncertainty as to when we shall start and a lack of facilities I can not do much with them.

The weather is quiet but still cloudy, though the sun may possibly peep out. Ice seen in the offing. Would be more interesting to be in it, as yesterday. The bear has been skinned, cut up, and we shall try some of its flesh at noon. Rest of day quiet but still mostly cloudy, though occasionally a little of pale, lukewarm sun. At 3.30 give lecture to the officers and fellow passengers on the subject of evolution. Seems quite appreciated. Reading, writing, and walking the deck fills the time. Ate a little of the bear meat—some-

what tough, otherwise not much different from reindeer or even beef. If better prepared (especially roasted on coals) would be quite palatable.

Yesterday there were several flurries of snow, none to-day, but air cold enough to make a long stay outside disagreeable.

Toward evening Captain announces that he is going to try to reach Barrow, about 80 miles northeastward, and soon after supper we start. He also tells me we may be there at or not long after midnight and so to be ready, for the boat will be unable to stop more than an hour or two. As the only place where a few skulls and bones may be found is about 1½ miles outside of the village and it takes a good 30 minutes to make a mile over the tundras, I shall have to rush once more. But I am promised a man to help me.

August 2. With clothes on, and anticipation, slept poorly. Ship stopped about 1 a. m. and I imagined we were off Barrow. But on rising find that we have gone on and then backward again, encountering ever more ice. It is cold and foggy outside, and cloudy and gloomy. We now meander among the big floes, now and then bump into one until the whole ship heaves and shivers, and occasionally the siren, stop for a while to diminish the shock. We are now on way back to Wainwright. If we only could go as far back as Point Hope, where there is so much of interest. I might have stayed over, but would surely have reproached myself for missing the remainder of the coast.

Back off Wainwright, cold, windy, sky gloomy as usual.

Late in the afternoon go with the trader to land, to visit the site of an older village, about a mile down the shore. Walk along the beach. Cold wind, raincoat stiffens. Walrus meat and blubber chunks (slabs, etc.) along the beach at several places, also a large skinned seal. Traces, as one nears the village, of worked stones, but all waterworn and no finished objects. At one place in bank, about 3 feet deep, a layer of clear blue ice about 20 inches thick—strangely pure ice, not frozen earth or even inclusion of any dirt or gravel.

Village site small, along the edge of the low (about 10 feet) bluff. Count remains of eight dwellings. Some animal bones, but nothing else on surface or in vicinity. Burial place not seen. Companion says there is nothing.

A simple supper at the trader's, prepared by his Eskimo wife, and good company: Doctor Smith, of the Geological Survey, with two of his men; Jim Allen, the storekeeper, a big, good-hearted fellow; La Voy, the big, active movie man, who knows all the gossip and enjoys telling it with embellishment; and two men of the trader. Menu: Soup, boiled reindeer meat, underdone biscuits, coffee.

After supper go to a meeting at the school, where our missionary, Doctor Goodman, is to talk to the natives. Large schoolroom

crowded. I talk through an interpreter—a serious disadvantage—on cleanliness. Fine study for me on the many present, though like elsewhere on such occasions they are mainly women and children. Good many Indianlike faces, though cheekbones more prominent and more flatness between them. But hair, low foreheads, eyes (except in children where they are more superficial, less sunken, and with more epicanthus than in Indians), lips, and other characteristics the same as in Indians. Some of the faces are strong, many among the younger pleasant, some of the young women handsome. A moderate number of mix bloods, even among the adults. Color of skin in full bloods medium to submedium brown, exactly as in full-blood Indians along the Yukon, but cheeks more dusky red.

The behavior of these people is in all important points radically that of the Indian, but they are more approachable and open and matter-of-fact people. More easily civilized. Good mechanics. Less superstitious, more easily converted to white man's religion. And good singers. Their singing at the meeting in the schoolhouse would have shamed a good many whites in this respect.

Except for epidemics, I am told, these natives would more than hold their own in numbers. They are fecund, if conditions are right. Sterility is rare. They marry fairly young.

August 3. Still standing, though we had to pull out farther south and away from the shore. The water was pretty rough and I had to go to bed again, but weather moderated.

We are in touch with the world through the ship's radio, but get more trash—same all through the radio service in Alaska—than serious news. Spend time in reading, talking; some play solitaire games; captain and Allen play cribbage. Deck too small for any outside games, even if it were not so cold.

Ice floes floating about us, now scarce, now thicker; water splashing against them and wearing them out into pillared halls, mushrooms, and other strange forms. Due to their snow covering, the water upon them, so far as it results from melting, is sweet, and in it swim many small fishes. It snowed a bit again to-day.

August 4. No change, except that the sea is somewhat calmer, and for a while we have once more seen the sun, but it was hazy and just mildly warm, while the same wind, from the sea, even though now subdued, has an icy undertone. It snowed a little this morning.

Thursday, August 5. Sea calm, atmosphere hazy, but the wind has turned at last slightly offshore and the sun penetrates through the mists, until it conquers and shines, warm and bright if not wholly clear, once more. Ice visible only on the horizon. At 7.15 we start on another effort to reach Barrow.

Pass Wainwright, and all is well until after lunch, when fog (though fortunately not thick) develops and the floes increase until

they are as thick as at the first attempt in this same region. Heavy bumps and strains follow one another and the boat must often go very slow or even stop altogether. Sometimes the heavy ship just staggers from the impact, but the floes are generally broken by the shock and swirl away out of our way, or scraping the ship pass to the rear. All aboard show new interest and energy. The forced stops and inaction were dulling even to the crew.

File a wireless to be sent from Barrow. It will reach Washington to-morrow after we shall have started on the return journey.

Two dogs on board light fiercely. An officer, the owner of one, trying to separate them is bitten by his own through a finger.

A marine, in swinging the heavy lead with which they are constantly sounding the depth, gets the cord caught about his hand and suffers a bad sprain with fracture.

The captain's little black cat, Peter, helps to entertain us by his antics. No wonder sailors in their often monotonous existence like all sorts of mascots.

Friday, August 6. Of course our dates got mixed, and more than one has to consult the calendar and count. The *Bear* had to turn back once more last night; ice too heavy. Anchored, however, not far to south. This morning very cloudy, rainy, chilly, but wind from near to east, and so from about 6 a. m. we are once more laboriously on our way. Now and then a bump, heave, stagger, then again the screw resumes its cheerful song. We are passing through the most dangerous part of all the coast here where many vessels have been lost, sometimes whole small fleets of whalers. But very few come here now—we have seen but one since leaving Kotzebue. They call this stretch "the boat graveyard."

Saturday, August 7. Stalled, about 30 miles from Barrow. Anchored in the protection of a great grounded flat, in a clear pond of water, with ice all around it, but especially seaward, where the pack seems solid. Some open water reported beyond it, but wind (wild) keeps from the wrong quarter and the captain will make no further attempt until conditions change. Of course it is cloudy again and has rained some during the night and morning, but the temperature is somewhat higher, so that one does not need an overcoat and gloves, although the officers wear their sheep-lined short coats which are nice and warm.

After noon asked the captain for the skin whaleboat to explore the shore. The latter is nearly a mile distant and shows about 60 feet high dirt bluffs. Got the boat and went with the boatswain, Berg, a young "hand," Weenie, and the movie man, La Voy. Rowed with La Voy. Had a wholesome two and a half hours exploring. Found a little stream, with traces of native deer camp

(collected two seal skulls); a moderate number of flowers and grasses (collected some mushrooms); some fossil shells from the bluffs; and two Eskimo burials. One of these, a woman, nearly all washed away and lost; of the other, a man, secured the skull, jaw, one shoulder blade and part of a diseased femur with corresponding socket (mushroom arthritis), also the two humeri. A good specimen. Returned, rowing again, near 4. All there playing cribbage and solitaire.

Am tempted to walk to Barrow; but there are some streams in the way which it might be impossible to ford. Moreover, no one knows the distance.

Sunday, August 8. Morning finds us once more thwarted, and standing at our place of refuge. No change in conditions, but there will be a change of moon to-night, so I at least have hopes. In my travels I learned too much about the moon not to believe in it. Toward evening ice begins to move out.

Monday, August 9. At 12.30 a. m., unexpectedly, a new start. The wind has turned at last (new moon!) to northeast, but is mild. Soon in ice. Many bumps and much creaking and shaking. Captain's collie gets scared and tries to get into our beds, one after another. But very little sleep under these conditions.

In the morning we find ourselves in a thicker ice field than any before, with floes on all sides. Boat barely creeps. Toward 10 a. m. further progress found almost impossible, and so forced to turn backward once more. However, can not even go back and so, near 12, anchor about a mile offshore opposite a small river with lagoonlike mouth and two tents of natives—"Shinara," or "Shinerara."

Ask captain for a boat to visit and explore the coast. Consents, and so at 1 we go forth, about eight of us, with the captain's dog. Reach Eskimo, photograph the group. All look remarkably Indianlike. Then go to look for skeletal material. Nothing near, so return for the Eskimo boy. He leads me about a mile over the highland tundra to two burials in boxes—not old. Look through crevices shows in one an adolescent, in the other a female (or a boy) with hair and skin still on. Leave both.

Then into the boat once more after buying some fossil teeth, and with the boy Isaac—his father is Abraham—try to go into the river, and soon get stuck in the stickiest mud (oily shale) imaginable—great work to clean even the oar with which we had to push ourselves off. Land then on the beach and for the next two hours explore that side of the basin. Find remains of two small settlements—seven huts in all, none very old.

Gather five skulls with parts of four skeletons, most bones missing; also some mushrooms, several interesting humeri of seals, and a piece

of pumicelike fossil bone. Near 4.30 begins to rain a bit so we hurry to boat, and in a little while, after depositing Isaac near his camp, reach the *Bear*.

Eskimo on shore had two skinned seal lying on the ground, and there were many reindeer horns. A pile of them was over a fire, being smoked.

The wind has been the whole day from the northeast, the long-wished-for wind, and the ice has moved out sufficiently to induce the captain to make another start. So at 5 p. m. off we go again, and for quite a while the screw sings merrily, until we reach some remaining ice, when there are more bumps and staggers.

The waters about the ship show, whenever calmer, the heads of swimming seal, grown and little. But they are wary and keep at a distance. Otherwise the only live things are an occasional gull, and rarely a couple of ducks. In the icy water, however, on and about the floes, are seen again numerous small, dark fish (from the size of a big minnow to that of a tomcod); and along the shore swim merrily hundreds of very tame and graceful little snipes, lovely small birds, too little, luckily, to be hunted.

Little enthusiasm about my collecting, but the boatswain and some at least of the men are genuinely helpful. I believe some of the others are a bit superstitious. But I get some chance at least, and that is precious.

Expect to reach Barrow before 12 p. m., and to start back before morning—a big chance for some sleep again if I want to do some collecting. Sleep, through the frequent lack of it, has become a kind of obsession in one's thoughts, yet when there were chances during the days of waiting it would not come.

August 9, evening, to 10 next morning. This is a land of odds and wonders. In the morning things looked hopeless; toward evening the wind has driven away enough ice to make a narrow open lane near the shore, and utilizing this we arrived without difficulty at 8 p. m. at the long unreachable Barrow. At 9 boat takes us ashore. At 9.30 p. m. I start with an Eskimo and a seaman (Weenie,) from the *Bear* on a collecting trip over about 3 square miles of tundra behind Barrow, and at 12:30 return to ship with four bags of skulls and bones. But sleep! Hardly any since 12.30 last night, and very little after return to-day, for due to fear of ice they called in everybody from shore before 3 a. m., and the newcomers keep on walking and talking and banging with their baggage until 5, when, fearing a return of the ice, we start once more southward, toward—it feels strange, but it is so—home. It was a remarkable good fortune, our getting there thus and getting out again, as we did, without damage.

Barrow is a good-looking and rather important place. It stretches about 2 miles along the low shore, in three clusters, the two main ones separated by a lagoon. It has a radio station, a mission hospital, and a school. There are over 200 natives here, and also quite a few whites, including Mr. Charles Brower, the trader, observer and collector, with his native wife and their family, the teacher, the missionary and his family, and the nurses.

The burial place here is the most extensive in the Eskimo territory. Taking the older parts and the new, it covers over a square mile of the tundra, beginning not far beyond the site of the hospital and extending to and beyond a small stream that flows over a mile inland. But the burials were grouped in a few spots, the rest being barren.

This extensive burial ground is now about exhausted for scientific purposes, except for such skeletons and objects as may have been assimilated—i. e. buried—by the tundra. That such exist became quite evident during our search, and they naturally are the oldest and most valuable. We secured two good skulls of this nature. They were completely buried, only a little of the vault showing, and had there been time we should doubtless have found also parts of the skeletons. The skulls were discolored brown.

Of the later skeletal material we found but the leavings, the best having been carried off by other collectors. There were remnants of hundreds of skulls and skeletons, but for the most part so damaged as not to be worth saving. Nevertheless our diligent midnight search was not in vain, and we brought back four sacks full of specimens, the Eskimo carrying his with the utmost good nature. The destruction here is due to sailors and other whites and to dogs, foxes, and reindeer.

The reindeer herds, going in hundreds over the ground, help materially to scatter and damage the bones. So, the older material gone, while the more recent burials are, at least so far as the younger element is concerned, quite worthless to science, containing many mix bloods of all sorts—even occasionally with the negro (men from the wrecked whaleboats). The collection now secured was the last one possible from this locality, except through excavation.

Tuesday, August 10. The boat is now crowded. We lost one woman and got three; also about five or six men—newspaper, movie, radioman, a dog teamster, a trapper. Quite a variety, in every way, and most are to go with us at least as far as Nome. They will have to hang up two hammocks in our little cabin each night, and some must sleep elsewhere.

Packing the whole morning. Five boxes. My man of last night helping, a fine, big young fellow. This aid in the work is a great

boon to me, and the transportation of the many specimens by the *Bear* down to Seattle or San Francisco will be a fine service to the Institution.

The older of us, that is those who have been longer on the ship, feel like veterans and are drawn closer together. The new lot, heterogeneous, do not attract, particularly one of the women. An older one, evidently a well-liked nurse, goes off at Wainwright, which we reach once more at 8 p. m. Here goes off also Jim Allen, the trader, who is a good fellow in a rough shell and whom I learned to like. He helped us all a good deal while in the ice.

The movie man from Point Hope is a somewhat spoiled, gossipy, and roughshod, but otherwise a good-hearted big kid—not very wise, but not mischievous, and more than efficient in his own calling. Is 40, but already aging, like a weather-beaten poplar—not pine or oak. Is violently against all "kikes," or eastern money-lending Jews, from whom he used to borrow at usurious interest and who sold him out once or twice when he could not pay.

Lost Jim Allen and dropped the nurse, but are still too many. At 10 p. m., just as the minister and I have retired, there comes a call for the former to go up. A couple of Eskimos have arrived, with their friends, to be married. So he dresses and performs the function. I am too weary to rise and dress to go and look at it. He says it was quite tame. Then the anchor, and once more we are off. No ice any more, and the sea has again a swell, which was absent in the ice-covered waters.

Wednesday, August 11. Swell, but not bad, though one of the women, another nurse, is ill, and the other, a "writer," etc., will not get up for breakfast. Quite a problem now to get washed and shaved. Both the minister (archdeacon) and the movie man like to use perfumed things, and the former takes much time with his toilet, so I endeavor as before to be first up.

August 12. A great day. Was called a little after 12.30 a. m., after but little sleep (through anticipation), to examine a site ashore—a coal mine, a water source, and possibly something human. Two miles to shore, in semidarkness; no night yet in these regions. A long tramp over the mossy and grassy tundra; mosquitoes. One native igloo, and on a little elevation some distance off a grave of a child; otherwise nothing. After examination of the coal strata, a curious secondary inclusion in sand and gravel, and the stream of water (good to drink, even if not clear), we depart and reach ship again after 4 a. m.

Beginning to be—in fact am already—a "night doctor," for sure. Never thought I could stand such doings, but am standing it, and that even with some cold and bothersome night cough. But am

sure short on sleeping, for it is impossible for me to catch up during the days; am not a day sleeper. I suppose when one is most of the time half hungry his mind naturally reverts to hunger, as mine does to sleep.

We are due to-day again at Point Hope, and I am anxious for a little time there.

At night. This was a day of harvest. Reached Point Hope about 3 p. m., but had to go around again to the other side, due to the swell and surf on the north. I went to shore in the first boat, about 4 p. m. Doctor Goodman, with whom we are very friendly, was with me and promised to go over and help me get some men with whom I want to excavate the burial hole of his predecessor. But when on the shore stays behind and remains. So we go on with my man from the ship to the whalebone graveyard. Near there see two Eskimo men with some dogs. They smile; so I tell them what I want; in two minutes have engaged them; in about three more we begin to dig, and in about five minutes after strike first bones.

My good friend the boatswain, Mr. Berg, comes to help, and as I now have four to work I take a bag and go on collecting a little more over the plains beyond where we are. Get a good bag. Find another good-natured Eskimo, Frank, coming from fishing, engage him to help carrying and eventually to take place of one of my first workers, who is an old man. Then we see Doctor Goodman, far away, coming to the mission. Borrow two more shovels from his stock and a few coal bags. Meanwhile bone and skull pile is fairly exposed from one side and top gravel partly removed, so I give up intended trip to old village site and, as we were given only to 9.30 p. m., go to work on the pile.

A great deal here. More than anticipated, though all is a jumble, with the long and other bones of the skeleton on the top. The work is to get down in the moist gravel, disengage one bone and skull after another as rapidly as possible, give it a rapid look-over, and either save, if fairly well preserved or showing some special feature, or discard. If saved, the specimen is handed to one of the Eskimo, who cleans it of gravel, lays it out to dry a little, and then places it gently in a bag.

Many of the bones and skulls were found so damaged that they had to be left. But much was also good. The strenuous work, however, had to go on without interruption and at the fullest possible speed, if the main part of what was there was to be saved. So no supper, no stop for even a minute, until after 8 p. m. Sixteen bags full, and some of the sacks quite spacious. At last had to give up—no more time, no sacks, and lower down everything frozen as hard as flint. The main part, however, secured—183 good skulls, several

hundred lower jaws, and a lot of long and other bones. This, together with the rest of the material from this place, ought to give us data of much value.

But now, how shall the lot be got on the boat. Luckily, one of the Eskimo that has been working for me has a dog team and sled. So I engage these; and shortly after we finish putting everything in order—in the presence now of Doctor Goodman, who comes to look at us—the man arrives, with a good-sized sled and 13 whitish dogs. Load all the bags on—and then a sight never to be forgotten—the dogs pulling the load across the tundra, depressions, gravels, right down to the water's edge and to the motor boat that is waiting for us. How they strained, pulled with all will, and obeyed. A wise leader in front, six pairs behind. No reins, only a few calls from the Eskimo, and they knew just what to do. Tried to photograph them, but light already poor—advancing season. (Pl. 9, *a*, *b*.)

Then hurry to the teacher, not home; to La Voy, not home. Find teacher in tent, sick, trembling; I fear beginning of typhoid. Did not get anything for me in our absence. La Voy promised to give me some things from his collections, but now is not here. A native woman, however, meets me far out on the beach, and I learn she has dug out for me since our first visit five good skulls from the ground—some, she shows, deep to above the elbow. She has them near the ship—we go on—on the road boys and women overtake me with a few things to sell. Then the woman brings her skulls, in a bag on her back, in excellent condition. I pay her for her trouble. Reach our boat, and the bell on the *Bear* rings 9.30.

The bone pile—the sled and dogs and load over the tundra—the woman carrying a native (seal) bag with skulls—will be three rare, indelible pictures.

On the *Bear* at 10. A little sandwich, fruit, and a cinnamon cake with coffee, and to bed. But irritating tire-cough keeps me up for another hour.

Friday, 13th. Packing. A nice day. Toward evening stop at Kevalina. Obtain a few things and pictures. To bed soon, but cough still bothers. I have nothing for it; there is but little on the boat in the way of medicines outside of the most ordinary things.

Saturday, 14th. Up 5.30, early breakfast, and 6.45 start once more for Kotzebue. The *Bear* has anchored about 12 miles off, so do not reach village until 8.35, and have to go back at 9.10. Rush to store, get boxes, barrels, and packing. And then to the schoolhouse, where I expect some information about the skeleton found under the house and obtained on my former visit. Also promised information from Mr. Chance, the supervisor, about old sites. But Mr. Chance is gone, and no letter or message—it came later, to Washington. A few

words with the teacher, and one of the boys from our boat is already calling me.

Return at 11 a. m. and spend the rest of the day packing, finishing just at supper. A curious sunset at 8, a horizontally banded sun, several clear-cut, fairly broad, dark bands. Sea getting rougher.

Sunday, August 15. Bad sea, wind, waves, fog. Have to take to bed and do without breakfast. Stay in until lunch. We could not stop again at Shishmareff; could not get ashore. The next stop, late afternoon, is to be at the Little Diomede, to take off Jenness; but if too rough we shall go on to Teller. The wind is from the northwest and the foghorn keeps on blowing.

The whole day continues rough, foggy, unfriendly. The ship can not stop at the Diomede, nor go to Teller; obliged to go to Nome. After supper all chairs and movable articles have to be tied up. Most day in bed, but escaped real seasickness, and got some sleep.

Monday, 16. Weather moderated. We are in lee of the mountainous part of Seward Peninsula. After breakfast off Nome, and at 11 a. m. in town. First stop at Lomen's. Then from one to another till 4.55 p. m., when Dan Sutherland, the Alaska Delegate to Congress, escorts me to the boat. Saw many friends, got some mail, and, best of all, got a fine deposit collection for the National Museum from Mr. Carl Lomen. The judge asked me for another lecture for next Saturday, when we are to see Nome for the last time.

About 5 a. m. arrive at Golovnin Bay to take water. At this place this is generally a day of partial rest and recreation for the crew. The water is taken from a small stream fed by a spring that comes out from a cave of the mountain, and is put direct into the whaleboats, brought to ship, and pumped into its tanks.

Shortly after breakfast the captain gives us the larger motor boat, and with Mr. Berg and two of the seamen I start for a little survey trip along the northern shore of the bay. In less than an hour we reach a sheltered nook with a small stream, where there is an old frame dwelling with some outstructures, all evidently abandoned, though various articles of use hang or lie about, including several guns of old patterns.

On a bluff to the left of the house are six burials, some old, wood near all rotten, some more recent. The latter, two in number, both show a large animal skin covering of the body, besides which the latter shows remnants of clothing. Secure two good skeletons, practically complete; also head and a few parts of a newborn (or near) child. A unique feature—with one of the male skeletons is found a complete skeleton of an eagle. Could have got also a female skeleton, but was still unclean, and we perceived a small native motor boat coming toward us from the reindeer camp about 1½ miles

farther inward. So we replaced everything (outwardly) and started off to meet the native boat. Found in it two young men and three women. Inquired about old sites and learned of one about 3 miles farther inward.

Stopped at the reindeer camp. Found there about a dozen individuals. Got more information, also a young man to go with us, bought for the *Bear* a dozen good-sized silver salmon—caught this morning and lying for protection against flies, in a pool of water—and left for the old site "around the point."

A nice site, but small. Fine beach for bathing if it were in a warmer climate. Remains of about a half dozen semisubterranean houses. A copper nail from one shows they were not very ancient. And no burials left, save one, more recent, of a child, most of which is gone. But there is a green elevated plane rising from the beach and we soon find several varieties of berries, especially large and good blueberries, a variety of huckleberry, and a sort of wine-tasting dwarf blackberry. Collect enough for immediate consumption—a most welcome diversion in every way—and get some for the captain.

Leave near 1 p. m. A little lunch on boat, then once more the reindeer camp, where the young women make us good hot coffee with as good biscuits as one could find anywhere. Buy more berries from them, load our fish (12 salmon ranging about 12 pounds each, for $3), and start off for another site just around Stony Point.

Round up one point, then another and another, up to five, and by that time the going has become so rough that we get much tossed about, ship water, dog gets frightened and near sick, and just as we reach what we thought must be the last point there juts out still another. It is now so rough that the boatswain thinks we could not land, and so nothing remains but to turn back to the mother boat. Reach there near 3.30 p. m. Soon all boats are hoisted, and at 4 the *Bear* is on her way to St. Michael.

August 18. Arrived about midnight off St. Michael; must stay outside due to shoal water. Somewhat rough.

In the morning boat coaling, dirty work, so all who can go ashore. Meet Mr. Williams again; buy a few native articles in stores, visit Mrs. Evans, the teacher-nurse, who has on an occasion successfully amputated a native's finger. The deputy marshal takes me to his house, gives me some dried deer meat and smoked salmon strips, and promises to be on a lookout for specimens for us. Near noon return. Still rough.

At night a bad blow and the ship tossing a great deal, almost as during the storm to St. Lawrence. Feel it considerably, but after 3 a. m. wind and water moderate. Feel effects of it, however, whole morning. For an explorer to be ever in rough weather subject to seasickness is a horrid affliction.

August 19. Off Nome once more. Everything, city, mountains, appear exceedingly, unnaturally clear—not a good sign. After 9 a. m. go to town. Soon at the Lomens' headquarters, and the sons, particularly Carl, bring out three smaller boxes full of things from St. Lawrence and Nunivak Islands, and give me the choice of all. And after I am through—near two hours' fast work—Carl adds one beautiful tusk (carved) from Nunivak Island, and then adds another, and two big bones of a mammoth, some as gifts, some as an addition to his loan to our institution. Excellent men.

Lunch with Ralph and Carl; then a good walk in the open; and then another lecture. All pleased, and two bring me specimens for our museum. Slowly back to boat and 4.45 on the *Bear* again. Nice day, but getting cooler and blustery.

Captain Ross comes to port, the graphophone starts its usual jazz songs next (ward) room, then the supper, all visitors gone, and the *Bear* raises anchor to be off for the north once more.

August 19, evening. A new, final chapter begins with to-day. What will it contain when over?

August 20. Rough. Go north until in plain sight of the Diomedes as well as Cape Wales, and then the captain decides landing would be risky, if not impossible; and so reluctantly we turn back and proceed toward Teller. What a tantalizing experience this must have been to poor Jenness, who is waiting for us on the Little Diomede, a most dreary place, to be taken off; and I, too, expected collections at both the Diomedes and the Cape.

Saturday, August 21. Port Clarence, off Teller. This proved a day never to be forgotten; for failure of a rigid system, for bad weather, for strain and endurance, and nearness to almost anything.

My purpose was to utilize the *Bear's* visit to Teller for a survey of a Chukchee-Eskimo battle field, of which I heard repeatedly from the Yukon onward. Sometime during the earlier half of the last century the Chukchee from Asia are said to have made an invasion of the peninsula and to have reached as far as the Salt Lake, east of Teller, when they were met by the united Eskimo and badly defeated. The exact spot where this happened is, however, somewhat uncertain, and it was to locate it, examine, and collect what might be possible of the remains that were said to be still there that I asked Captain Cochran to let me have one of the motor boats, to which he kindly consented, uniting the trip with some topographical observations for his own purposes.

The evening before I was told by the second officer that we shall start some time soon after midnight for that part of the old battle field—there seemed to be two of them—at the eastern point of the Salt Lake. As a result could not undress, and after ship stopped in

Port Clarence, near 11 p. m., had but a little rest. The call came at 4 a. m. A little breakfast, a package of lunch, and start at 5.10.

First note. Ship about 7 miles from Teller. Water deep enough much nearer, but we came at night. Here there are already dark nights between about 9 p. m. and 4 a. m., and so they were cautious.

Second. The officer says he has orders not to stop at Teller, where there is an old Indian (Dunak) from whom I expected to get exact bearings, and where there is also a white trader, Mr. Peterson, who knows the place and might possibly have accompanied us.

Third. Distances, as usual, longer than estimated. We find eventually that the destination is about 32 miles from Teller.

Fourth. A brisk head wind and sea retarding us.

Fifth. As we approach our spot, a shoal water, with grass, preventing us from going straight to the most likely place, and no other way was tried. It is 11 a. m. and already I hear an intimation that we shall not have time for anything except to make a lunch. This is the same officer, a very good man at his post but rigid and without much interest in anything else than his own field, who after 10 miles' trip to Kotzebue gave us 25 minutes there, when it required 15 minutes alone to reach the school from the boat.

So we end by landing on the extremity of a spit there to make lunch, and I have only the time it takes to prepare the latter. I find, in hurry, remains of five old semisubterranean dwellings on the northern side of the point, and about as many low mounds with remnants about of rotten driftwood—undoubtedly old burials. Probably the skeletons have been assimilated by the tundra vegetation and blown material. A single native skull, a female, without face, is lying about. Collected.

While lunch is being made ready the officer and the boatswain, Mr. Berg, each shoot a duck. Then the lunch, a hurried loading, and departure, after some delay in setting the sail, at 1.30 p. m. I saw nothing that looked like a battle field. Its determination and survey must be left for some future explorer.

Sail rapidly. Wind fresh, with us, also waves. Cross Salt Lake, and Tussoc "River." About 4.30 reach Grantly Harbor and wind increases; also waves. We run fast, and well enough, but the umiak (skin boat) we are pulling begins to suffer. It rides crazily and is jerked over the seething waves. The crossbar by which it is partly held breaks, and now the boat goes more sidewise, with water lapping over its border and getting in. Wind now quite a gale, breaking waves everywhere—every now and then a big one—whitecaps all over. A dim view of Teller in distance, when the skin boat begins to fill more rapidly and sag. Must stop engine—waves toss us like mad—one could be thrown bodily out of the boat if

not careful in bending or moving and holding. The sail comes down and the mast is laid down, a bad piece of work. Berg and Pete Brant (an elderly trapper with us but formerly of Coast Guard Service at Nome, a good sailor and knowing these waters) work very hard and well. The skin boat has to be pulled alongside and bailed out by young Weenie, a very hard and dangerous task. Mr. Berg's rain hat ("souwester") blows off and is lost in the seething waves. Later Weenie nearly loses his—snatches it out between the boats with a narrow escape for his head. Then Weenie climbs into the skin boat—a brave act—and finishes the bailing, but is much "in" after getting back. Then our big staunch motor launch starts again at reduced speed. But the skin boat does great antics and threatens to fill again or break; so Pete Brant holds the rope and is jerked every now and then, until I fear that he may any moment be jerked out into the waves and watch to catch his legs. Fortunately he succeeds in preventing it, but there was a slim margin.

It has drizzled or rained, besides the wind, most of the afternoon, and there is a lot of spray to splashes from the waves. All this has to be taken as it comes, but the water is not cold, and our boots and oilskins give protection. Nevertheless my right knee to hip gets thoroughly wet and chilly, and I was not alone. But there is little time to think of such things. We see at Teller the waves breaking high on the shore, some boats already on the beach and others being driven there, a few people looking helplessly on.

About 5.50 we round the Teller spit and come in the lee of it into calmer water. But the visibility over the water is probably not over a mile now, and we see no trace of the *Bear*. The gasoline supply is getting rather low; and all are more or less cold, though dressed warmer than I and, due to their hip-high rubber boots—mine reach only to the knee—not wet. I now shake a lot with the cold, without being able to stop it. So we skirt the protecting bluffs southward to where everyone thinks the *Bear* is, near a little stream from which they were to take fresh water. But though we all strain our eyes to the limit, there is no trace of the ship.

Thus reach Cape Riley and the stream, which is found dry, without a drop of water. Get on the pebbly beach, turn skin boat over to get the water out, and hurry to chop wood. No wood save the water troughs, so chop these. Must have fire. I warm up a little by running around and chopping. They pour gasoline on the wood, make a big fire, cook a pot of coffee, and with bread and preserved meat make a supper, though it is mainly coffee.

Near 8 and getting dark. Storm, outside of protection of cliffs, unabated. There is a second watering place, 7 or 8 miles across the

bay, and our only chance to find the *Bear* is to rush for this. But to do this we must go diagonally across the waves and similarly against the wind—a bad prospect. Also, we have only just about enough gasoline to reach the place. But there is no help.

Thus a new start, and before long we are once more in the waves. It is now quite obscure. The waves break now and then and splash over us. Before long the skin boat is again sagging and in danger of sinking. Once more pull alongside and dangerous, exhausting bailing by Weenie.

And so on, tossed, driven aside, but thanks to the good engine never stopping. I hold to seat not to be thrown against things or even out: the others are becoming gruff, irritable. And then Higsby makes out a faint light far ahead. No one certain, but in a while it seems moving. A solitary small light somewhere far on the shore, probably, not the boat.

But soon another stronger light discerned, seemingly moving to the left, and later several—the ship in all probability.

We toss and reel and stagger nearer, but motor still going strong. For the skin boat they found at last a position in which it takes but little water. Finally see decisively a blinking light, the mast signal. We show our lantern a few times. Then the ship looms before us, but there is still the risky task of getting alongside and aboard. However, all is accomplished without real damage.

The cabin—the good and anxious captain—a little canned grapefruit, and bed. But head falls and rises, the events of the day reappear, wonder what has become of the trade schooner we saw being driven on the beach—and so on until consciousness passes into deep sleep. The *Bear* is fairly quiet, not in the brunt of the weather. And this eventually moderates, so that a little after 4 we start again, only to anchor once more at 6, a little below where last night we had our supper.

August 22. Cloudy, drizzly, rough still, and wireless news of widespread bad storms, even in the States. So we shall wait. One more hope for my collections at the Cape and with Jenness.

Captain says this morning the officer misunderstood his orders about Teller. The trip demonstrated a number of things. One of the main and most gratifying was the sterling quality of the men with me, officer, boatswain, motorman, Weenie, Pete, in the teeth of real danger. They were all that men should be under such conditions, which is the best way I can express it. The trip may have been in vain so far as its scientific object was concerned, but it brought a number of men face to face with life's stresses and found their mettle of the truest quality, without exception, to witness which was worth the whole experience.

August 22–23. During the night have left Port Clarence and endeavored once more to reach Wales and the Diomedes, to be again turned away by fog and rough weather. The captain doubts if there will be any more decent "spells." The season for this stormy sea is too far advanced. Unable to land anywhere.

The day is followed by another horrid night, again off the St. Lawrence Island. Boat tossing and heaving and rolling, waves reaching and even splashing over the level of the high upper deck in the back, everything tied up and cleared or fastened, a danger in making even a few steps of being thrown against something, or on the deck of being thrown overboard, and everything constantly cracking, creaking, with every few minutes an impact big thudlike or a splash of a wave, the floor heaving and twisting; and thus from before evening until morning. Then a trace easier, but the whole day gloomy and rough and the night again more unsettled. To-day better, wind which began east then turned northwest, then almost north, now stopped, but a heavy swell is running, heaving us nearly as much as yesterday. We have gone very slowly.

Have arrived off Savonga. The sky is now clear and there is not much wind, but the swell is and keeps on such that, notwithstanding the repeated calls of our siren, the Eskimo whom we see above the beach near their boats, do not dare to launch these and come, nor does the captain care to risk one of our own launches, though we need fresh reindeer meat and all would like once more to meet the nice lot of natives of this village. After a prolonged wait and as conditions show no improvement, nothing remains but to leave the island.

Our next stop, if the weather permits, is to be at Nunivak Island. This is a large island off the Alaskan coast, well below the present delta of the Yukon and some distance above Kuskokwim Bay. The island is one of the least explored, and the people living upon it one of the least known. It is only during the last few years that a trading and a reindeer post has been established on this island, and only the second year that there is a teacher. What little is known of the natives, a branch of the Eskimo, shows that they have many different habits from those farther north, in clothing, decoration, etc. They make rather good black pottery, and from this island come the most elaborate carvings in ivory, reminding strongly of small totem poles. A photograph of a group of these people, seen at the Lomen Studio at Nome, showed remarkably broad and short faces, unlike the Eskimo of the north. All of which made me very anxious to visit the island.

To be brief such a visit, though promised to me by the captain, could not be realized. The waters about the island are so im-

perfectly charted that in weather that continued half rough it was thought unwise to risk a landing. I felt this keenly, as the various other impossibilities of the trip. But I could never forget all the unexpected help I received from the Revenue Cutter Service, for which I was deeply grateful, and had to acknowledge the justice of the captain's position. We came so near that the land birds from the island were already about us, but then turned toward the Pribilofs and Unalaska. . .

Only little remains to be told. At the Pribilof Island, St. Paul, we stopped at night, to take on four live fur seals for the Academy of Sciences of San Francisco, and there we ran once more into stormy weather. Here are a few notes from this period:

August 27. Toward evening again a gale, southwest. At night worse. Ship tossing rather wildly. No possibility to me of either getting up or resting. Barely keep from being horribly ill again.

Later in night ship had to be turned back and just drift.

August 28. All day the storm continues. I could take no meals, not even a drop of water. In bed and barely standing it. Ship hove to at last and just drifting.

August 29. Gale keeps on just as bad, howling till 1.30 a. m. Then it moderates somewhat and ship starts going again. Last night we were only 60 miles from Unalaska, now a good deal farther out. Steam, still in half a gale and big sea, until after midday, when, not without some difficulty and danger, we reach the fine little protected harbor of Unalaska. Feel weak, near worn out.

August 30, p. m. Rest, and all is well again. Secure a little row-boat and go with old Pete Brant to near-by islands. Storm over for the day and fair, though not entirely. Row, climb hills, pick berries and mushrooms, watch a bearlike semiwild pig, out whole afternoon, returning strengthened, refreshed. Only no appetite yet. Found no traces of human occupancy, but heard of some in the "Captain's Bay" and at other spots.

The few Aleuts in Unalaska at this time show physiognomies akin to the brachycephalic Indian, and not the Eskimo type.

August 31–September 1. A new gale, with drizzles. Luckily we are at a dock, but I can do little. They are cleaning the boilers and coaling. Evening of 1st have a good dinner—captain and the rest of us from the *Bear's* cabin—at a friendly local trader, Louis Strauss, and after that give lecture on "Man's Origin, etc." Introduction by Capt. Van Buskirk, local commodore of the Revenue Cutter Service. Lecture well received, make numerous friends, get good information. Strauss's supper was the first I could eat with some taste and hunger. But the lecture did me good.

September 2. Coaling and overhauling of boilers finished. Gale stopped. Ship leaves 1 p. m. Day fairly sunny. Everyone sees us

off. Harbor and hills look fine, though sky again clouded. Outside quite a swell after the gales. Pass the *Haida*, practicing with her cannon. The *Algonkin* was here too, with the story of their visit to the Punuk Islands. The fresh green steep mountains toward the entrance of the harbor are refreshing to the eye.

Pass through Akitan. Pass picturesque, especially the outstanding isolated rocks near the islands.

Toward evening, far to the left (east), see under the clouds a glorious icy cone, the "Pogrovemoi," and later a lower but still great mountain a little farther and to the right an old but not so very old volcano. Other volcanoes there are, the captain tells me, now hidden by the low clouds.

Have a new passenger, Mr. Charles Brower, the trader of Barrow. Came from the *Brower*, ship of his own company, a little larger and faster than the *Bear*, and going also to San Francisco, but with poorer accommodations. Brings with him a box of archeological specimens from the Barter Island, in the north. Examine them, but find little of special interest.

It takes us a little less than 10 days of a fairly good journey to reach San Francisco. Dock at Oakland late in the evening. The next morning, after breakfast, the boxes and barrels with collections are taken on the dock—a big pile. Then the Santa Fe officials kindly run a flat freight car to the pile, the boxes, etc., are loaded on, the main part taken to the freight depot, the most valuable ones to express, shipped, and shortly after what remains of the expedition is on the Santa Fe Limited for Chicago. It only needs to be added that, notwithstanding the variety of receptacles and the difficulties of packing, the collections reached the Institution without damage to a single specimen. Thanks once more for the help received in making all safe to the captain and officers of the *Bear*, to Mr. Berg, the best of boatswains, to the carpenter, and to all those of the crew who assisted.

THE YUKON TERRITORY—SITES, THE INDIANS, THE ESKIMO

The Tanana

BRIEF HISTORICAL DATA

The Tanana is the largest tributary of the Yukon. It is over 600 miles in length, and in its breadth, though not in its volume, it appears to equal, if not to exceed, the Yukon at their junction. The first white men to see the mouth of the Tanana were the Russian traders (about 1860), followed before long by the employees of the

Hudson Bay Co. Dall says that it has long been noted on the old maps of Russian America, under the name of the River of the Mountain Men, while the Hudson Bay men called it the Gens-des-Buttes River. (Alaska and Its Resources, 281–282.) Dall mapped the junction of the river with the Yukon. The first who descended a part of its course were two traders, Harper and Bates, who reached the river higher up, sometime in the late seventies. The name of Harper is preserved by having been given to the big bend of the stream, 12 miles above its mouth. Its scientific exploration begins only in 1885, with the passage down nearly its entire length of Lieut. Henry T. Allen, United States Army;[5] the main work concerning the geography and geology of the river being done in 1898 by A. H. Brooks.[6]

POPULATION

The native population of the Tanana has always been remarkably scarce. Dall obtained an estimate of their whole number as about 150 families.[7] Petrof, in 1880, thought they numbered perhaps seven or eight hundred;[8] Allen in 1885 estimated them at between 550 and 600;[9] Brooks, in 1898, thought there were less than 400;[10] and the 1910 United States Census gives the total number of the "Tenankutchin," full bloods and mix bloods, as 415.[11]

According to Brooks (Reconnaissance, 490–491), the Tanana natives were separated into two geographic contingents, the eastern or highland and the northwestern or lowland groups. The most easterly group included the Indian settlements in the vicinity of Forty-mile and Mentasta Pass trail; the northwestern comprises to-day those from Nenana to the mouth of the river.

The Tanana Indians were generally regarded by other natives as warlike and dangerous, but so far as their relation with the whites was concerned there was little justification for this notion.[12] Physically they were reported by Brooks to "average rather better than the Indians of the Yukon" (Reconnaissance, 492). There are but a few and scanty other references to them in this connection.

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[5] Allen, Henry T., Military Reconnaissance in Alaska. Comp. Narr. Expl. Alas., 415–416, 446–452.

[6] Brooks, A. H., Reconnaissance in the Tanana and White River Basins. Twentieth Ann. Rept. U. S. Geol. Surv., Washington, 1900, pt. VII, 437–438; also the Geog. and Geol. Alas., U. S. Geol. Surv. Doc. 201, 1906.

[7] "Their numbers are supposed not to exceed 150 families." Alaska and Its Resources, p. 108.

[8] Notes Alas. Ethn., 161.

[9] Brooks, op. cit., 493.

[10] Brooks, op. cit., 493.

[11] Population, III, 1137.

[12] See Castner, J. C., A Story of Hardship and Suffering in Alaska: Comp. Narr. Expl. Alaska, 686–709.

Indian Sites and Villages Along the Tanana

Upper course.—On this much larger part of the river it is possible to report but indirectly.

A. H. Brooks, in 1898, reports thus on this subject:[13] "Several Indian houses are found on and near the Tanana between the Goodpaster and Salchakat and constitute a subgroup of the upper Tanana Indians. * * * The most thickly settled part of the region is along the sluggish portions of the lower Tanana. The largest villages are at the mouth of the Cantwell and Toclat Rivers, and each of these consists of a number of good cabins. In the intervening region there are a number of isolated houses and fishing stations, which are marked on the accompanying map."

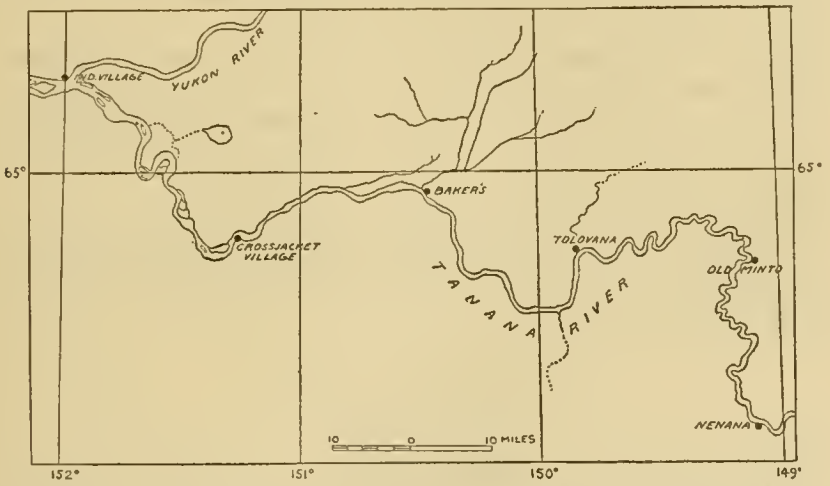

Figure 1.—The Tanana River between Nenana and Tanana, with Indian villages

To which Lieutenant Castner, who explored the upper Tanana, adds the following:[14] "On 750 miles of the Tanana proper and its tributaries I saw seven small hamlets, and not to exceed 100 Indians—men, women, and children."

From information obtained by me at Fairbanks, at the United States marshal's office and from miners, it appears that the following villages are better known:

Village, 150 miles east of Fairbanks.

Mansfield Lake village, 300 miles east of Fairbanks.

Tetlen, 410 miles east of Fairbanks.

East Tetlen, 7 miles southeast of Tetlen.

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[13] Brooks, A. H., A Reconnaissance in the White and Tanana River Basins, Alaska, in 1898: Twentieth Ann. Rept. U. S. Geol. Surv., 1900, pt. VII, p. 491.

[14] Castner, op. cit., p. 706.

LOWER TANANA, NENANA TO YUKON

No old sites were learned of on this part of the river, and few, if any, are probably preserved, due to lowness of banks and extensive destruction (cutting of the banks) by the river.

The present Indian villages on the river are as follows:

1. Nenana (or Tortella), about a mission, half a mile from the railroad station and town of the same name, on the left bank of the Tanana and near the mouth of the Nenana River. (Fig. 1.)

2. "Old Minto," 27 miles from Nenana, right bank; but a small number of Indians there now.

3. Village at the mouth of the Tolovana, right bank (where the Tolovana enters the Tanana); the village is on the distal (downstream) point. Nearly abandoned; only two families there now. Summer (fishing) camp on the opposite point.

4. A small settlement at mouth of Baker Creek, right bank, about 4 miles upstream from Hot Springs.

5. "Crossjacket village," on left bank, about 45 miles above Tanana, 40 miles below Hot Springs. Used to be called "Cosna." Occupied, though only a few there.

6. Near 5, but on the opposite bank, a few habitations.

During the open season the Indians live scattered along the river in fishing camps. This is especially true along the right bank downstream from Nenana.

The Yukon Below Tanana

BRIEF HISTORY

The Yukon is the principal river of Alaska. It is one of the greatest and most scenic rivers in the world. It is approximately 2,300 miles long (from the headwaters of the Lewes River), in its middle and lower courses ranges at times with its sloughs to several miles in breadth, and includes many hundreds of islands of its own formation. Its scenery is still essentially primeval, affected but little by human occupation or industry. It has, in fact, gone considerably back in these respects since the gold rush was over.

This great stream has been known to the white man for less than a century. Cook, in September of 1778, sailed near, discovering Stuart Island and Cape Stephens of the St. Michael Island, but missed the river.

In 1829 P. E. Chistiakof, director (1826–1830) of the Russian-American colonies, sent the naval officer Vasilief to explore the coasts between the Alexander Redoubt (at the month of the Nushagak) and the Shaktol or Norton Sound, and in 1830 Vasilief explored the larger part of the Kuskokwim River, of which the Russians

knew already from their earlier explorers. Here they heard of an even greater stream to the north.

In 1831, on the recommendation of Vasilief, Michail Dmitrievich Tebenkof was sent to Norton Sound with the view of further exploration and the establishing of a post in that region. Tebenkof discovered that Cape Stephens was not a part of the mainland but of an island; and he built here a fortified post which in honor of his patron saint is called St. Michael, a name which subsequently passed to the whole island. The post was to serve both trade and further exploration.

From St. Michael, at the end of 1834, a small party is sent out under the leadership of an educated "kreol" (son of a native mother and Russian father), Andrei Glazunof, and on January 26, 1835, they reach the good-sized Indian village of Anvik, on the Kwikhpak, or Yukon.[15] From here Glazunof travels down the river to the large village of Aninulykhtykh-pak (above Holy Cross), the last Indian (as distinguished from Eskimo) village down the river, whence Glazunof sends most of his party back to St. Michael and himself proceeds to the Kuskokwim.

In 1836 the Russians effect the first settlement on the Yukon, at Ikogmiut (Zagoskin, 6), later known as the Russian Mission.

In 1838 Malakof, over land portage, reaches Nulato and builds there a trading post, which, during his absence the next winter, is burned by the natives. In 1841 Dieriabin rebuilds and fortifies this post, becomes its headman, and is there eventually (1851) killed by the Indians.

In 1841 Lieut. Laurenti Alexief Zagoskin is delegated to explore the "Kwikhpak," with its portages to the Kotzebue Sound, and the Kuskokwim River; and in 1843 he navigates and maps 600 miles of the Yukon, or from about the mouth of the Apkhun (northern) pass to the mouth of the Novitna River, with approximately 100 miles of each, from their mouth, of the Koyukuk and of the Ittege (or Innoko) Rivers.

The Russian post at Nulato remains until the sale of their American dominions by the Russians to the United States in 1867. From it and from St. Michael individual Russian traders ranged over the river

[15] There is some confusion about the exact date of Glazunof's journey, partly due perhaps to the fact that he started on Dec. 30. Wrangell (Stat. and Ethnog. Nachricht., 138) says that Glazunof's expedition was outfitted the same year (1833) in which the St. Michael redoubt was established. In Zeleny's abstract of Zagoskin's report (p. 212) and by Zagoskin himself (pp. 6, 23) the departure of the expedition is put a year later, or 1834, which is probably correct. Dall's remarks (Alaska and Its Resources, 276, 338) on the subject contain several errors, both of dates and facts. There is also considerable confusion as to the names Kvikhpak and Yukon. The term Kvikhpak (Kvikh, river; pak, large) is of Eskimo origin and was applied by these to that part of the river which they occupied. The name Yukon, or something near this, is of Indian derivation and was applied to those parts of the river, below Tanana at least, that were peopled by the Khotana or Indians.

and its lower affluents, but there was no further noteworthy scientific exploration. In 1863, however, Lukin, who after Vasilief and Kolmakof helped to explore the Kuskokwim, reached to Fort Yukon.

Meanwhile the river has been visited by both the English and the Americans. In 1847 Mr. Bell, of the Hudson Bay Co., having heard of the great stream from some of the Indians who visited the fort on Peels River, set out in quest of it, accompanied by a native guide, and reached it by the Rat and the Porcupine Rivers.[16]

Between 1843 and 1867 the river in its lower and middle reaches is freely traversed by the Russian traders. In 1851 Nulato is reached by Lieutenant Barnard, of H. M. S. *Enterprise*, in search of Franklin, only to be massacred there with some of the Russians and natives by the offended Indians of the Koyukuk. In 1861 Robert Kennicott traverses a part of the Yukon, and in 1865 he, with Capt. Charles S. Bulkley, leads there the expedition of the Western Union Telegraph Co., which is accompanied by William H. Dall and Frederick Whymper, and results in much information. Already, however, in 1863, Strahan Jones, commander of the Peels River Fort, has descended the Yukon to the mouth of the Novitna River or the uppermost point reached by Zagoskin, thus completing its identification as one and the same great stream. This point and the Tanana mark the westernmost penetration by the English (the Hudson Bay Co.).

In 1865 begin American explorations proper. In that year, under an agreement with the Russians, Maj. Robert Kennicott, heading a party of the Western Union Telegraph explorers, crosses from St. Michael to Nulato. Kennicott dies in Nulato a year later, but the explorations are carried on to result eventually in a series of valuable publications, more particularly by Dall and Whymper.[17]

The researches under the auspices of the Western Union Telegraph Co., themselves backed by the Government, are followed by explorations under the direct auspices of the American Government. Thus, in 1869 there is a reconnaissance of the river by Capt. C. W. Raymond; in 1883, that by Lieut. Frederick Schwatka; in 1885 by Lieut. Henry T. Allen; in 1898 by Capt. W. P. Richardson; and these are succeeded by the geological surveys of A. H. Brooks and companions.[18]

From 1878 on commenced placer and mining explorations for gold in Alaska leading gradually to the eventual great gold rush of the later nineties, which brought a whole flotilla of large river steamers and other craft to the Yukon and led to a rapid growth of some of the old and the establishment of a number of new settlements along

[16] Richardson, J., Arctic Searching Expedition, London, 1851, II, 206.

[17] For details see Dall's Alaska and Its Resources, Boston, 1870.

[18] See Compilation of Explorations in Alaska, Senate Rept. 1023, Washington, 1900; and reports on Alaska of the United States Geological Survey.

its banks. The rush passed in turn, many of the miners and others departed, boats became idle and were beached or taken to the St. Michael ship "bone yard," where, together with most of the buildings, they are now (1926) being broken up; and the Yukon has reverted in a large measure to its former primeval, dormant, lonely state.

Such, in brief, is the white man's history of the Yukon, with all of which the river remains but half known, at best. It has never been fully surveyed, which would be a vast and unending task. It contains a large number of barely known little tributaries that are lost in the jungle-covered flats with their many pools and lakes. It has innumerable islands and channels, in which the traveler is easily lost, and it cuts and builds constantly during the open season. Its valley is squally and rainy. The stream may one moment be like a great, liquid, softly flowing mirror, to be in a few minutes churned into an ugly and dangerous roughness from which every smaller boat must seek shelter. Its shores are inhospitable, except for the native fisherman and hunter, and torment man with swarms of gnats and mosquitoes.

But there is no malaria; no snakes or other poisonous things. And when the weather is decent the water, the wooded shores, and the fresh, clean virginal parklike islands have a greatness and charm that compensate for much. Besides which there is the still more intensive allure of original exploration. Botany, zoology, and above all paleontology, find here still a fruitful field, while for anthropology, and especially archeology, the land is still largely a terra incognita.

The Yukon Natives

Upon their arrival on the Kvikpak and Yukon, the Russians found the banks of the stream peopled in its upper and middle courses by Indians and lower down by the Eskimo.[19] The last Indian village downstream was Aninulykhtykh-pak, since completely gone. Its site is identifiable with one that used to exist in front of the present mission of Holy Cross or just above. The first Eskimo village of some note was Paimute.

As to the Indians of the Yukon and its tributaries, there is a considerable confusion of names, almost every author using his own spelling and subdivisions. It is evident that there were two sets of names of the various Indian contingents, namely the names, sometimes contemptuous, given to them by outsiders, and the names in

[19] See Auszug aus dem Tagebuche des Schiffer-gehülfen Andreas Glasunow. In Wrangell. Ferd. v., Statistische und ethnographische Nachrichten ü. d. Russichen Besitzungen a. d. Nordwestküste v. Amerika. Ed. by K. C. v. Baer, St. Petersburg, 1839, 137–160. Zagoskin, A., Pešechodnaia opis časti russkick vladenll v. Amerikě. 2 parts, St. Petěrsburg, 1847–1848, pp. 1–183, 1–120, and 1–43; with a map.

use among themselves, which generally meant the people of this or that locality. The facts are that they all belonged to the Tinné or Dené family;[20, 21] that there were two probably related generic names for them, namely Kutchin (used especially on the upper Yukon) and Khotana (used mainly along the central and lower parts of the stream); and that along the Yukon itself, with its channels, there were three main subdivisons of the people: The Kutchin (with various qualifications) on the upper parts of the river, down to Fort Yukon; the Yukonikhotana, from Fort Yukon to Nulato;[22] and the Kain (Petrof) or Kaiyuh (Dall) Khotana, or Inkaliks (of the Russians), from Nulato to Holy Cross.

In addition there were the Tenan-kutchin Tenan-khotana or Mountainmen of the Tanana; and the Yunnaka-khotana (Zagoskin) or Koyukuk-khotana (Dall), the people of the Koyukuk.

These groups were settled in a moderate number of permanent or winter villages along the rivers, in the summer spreading along the streams in camps. The population found by the first Russian explorer, Glazunof, from Anvik to Aninulykhtykh-pak, was seemingly a rather large one. He is reported by Wrangell to have counted, at Anvik, 240 grown males; at Magimiut, 35; and at Aninulykhtykh-pak 300. At the last-named village in particular there were present "many people," Glazunof estimating altogether nearly 700. These figures, except for Magimiut, seem too large and were not even approached later; but before the next count, that by Zagoskin, all these settlements had been visited by smallpox; and at the big village Glazunoff may have seen a potlatch, such as may still yearly be witnessed at some settlements on the river.

Zagoskin in 1843 made a detailed and evidently reliable count of all the villages that became known to him. His data in this respect, as in others, being of fundamental value, are here given, the Eskimo, for convenience, being included.

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[20] Dall, Contr. N. A. Ethn., vol. 1, p. 17.

[21] Zagoskin: "* * * great family of the Ttynai nation, which occupies the interior of the mainland of our colonies and known to us under various names—Yug-elnut, Tutna, Golcanĕ or Kilčanĕ [according to the pronunciation of those giving the information], Kenaici, Inkaliti, Inkalich-liuatov [distant Inkaliks], and others—names given to them by the neighboring coastal people."

[22] Petrof, Ivan, p. 161: "This tribe, comprising the Yunakhotana and the Kutcha-kutchin of Dall, inhabits the banks of the Yukon River from Fort Yukon westward to Nulato."

NATIVE VILLAGES ON THE YUKON AND IN THE VICINITY, 1843 (ZAGOSKIN, III, 39–41)[1]

Villages	Total	Adult males [2]	Houses
INDIANS			
Inkalit-lugelnut:			
Inselnostlende	33	8	2
Khuingitatekhten	37	11	3
Iltenleiden	100	30	6
Tlego	45	14	3
Khuligiehagat	70	25	5
Kvygympainag-miut	71	25	3
Vazhiehagat	80	18	5
Anvig	120	37	5
Makki	44	9	3
Anilukhtakpak	170	48	8
Total	770	225	43
Inkiliks proper:			
Kunkhogliuk	11	5	2
Ulukak	35	10	4
Ttutago	32	8	2
Kakoggo-khakat	9	3	1
Khutul-khakat	16	4	2
Khaltag	9	3	1
Khogoltlinde	60	17	4
Takaiak	81	27	7
Khuli-kakat	11	3	1
Total	264	80	24
Yunnaka-khotana:			
Notaglit	37	8	3
Tlialil-kakat	27	7	3
Toshoshgon	30	5	2
Tok-khakat	6	3	1
Nok-khakat	50	11	3
Kakhliakhlia-kakat	26	7	2
Tsonagogliakhten	11	4	1
Tsogliachten	7	2	1
Khotyl-kakat	65	19	4
Unylgakhtkhokh	17	2	2
Nulato	13	2	1
Total	289	70	23
Tlegon-khotana:			
Innoko natives seen on the Yukon	44	33	3
Village totality	45	14	3
Total	89	47	6
All Indians counted on Yukon and Koyukuk	1,359	[3] 422	132

[1] See also Petrof (Ivan), Tenth Census Rep., Wash., 1880, VIII, 37; but his transliteration of names is not always correct.
[2] This doubtless included many subadults.
[3] 31 per cent, or 1 in 3.2.

NATIVE VILLAGES ON THE YUKON AND IN THE VICINITY, 1843 (ZAGOSKIN, III, 39–41)—Continued

Villages	Total	Adult males	Houses
ESKIMO			
Kavliunag-miut	11	3	1
Nygyklig-miut	13	4	1
Kanyg-miut	45	11	4
Ankachag-miut	122	32	6
Takchag-miut	40	12	3
Ikuag-miut	130	35	6
Nukhluiag-miut	60	17	4
Ikog-miut	92	22	5
Ikaligvig-miut	45	14	3
Pai-miut	123	35	5
Total of Kvikhpag-miut	681	185	38

Dall, referring to 1866–67 (Contr. Am. Ethn., I, 23, 39), estimated the number of the Yukon Eskimo at 1,000 and that of the Yukon and Koyukuk Indians, from the mouth of the Tanana downward, at 2,800. Only a few sites of villages are incidentally given by Dall.

Ivan Petrof, as a special agent for Alaska of the United States Census for 1880, reports himself the following Indian settlements and numbers of inhabitants on the Yukon (Compil. Narrat. Expl. Alaska, 68; gives also data on Eskimo, but his arrangement and unidentifiable localities prevent these data from being used here):

Anvik station and village	94	Big Mountain	100
Single house	20	Single house	10
Single house	12	Sakatalan	25
Single house	15	Yukokakat	6
Tanakhothaiak	52	Melozikakat	30
Single house	15	Mentokakat	20
Chagelnk settlements	150	Soonkakat	12
Khatnotoutze	115	Medvednaia	15
Kaiakak	124	Novo-kakat	106
Kaltag	45	Kozmas	11
Nulato, station and village	163	Nuklukaiet	27
Koyukuk settlements	150	Rampart village	110
Terentiefs station	15	Fort Yukon	82

Later demographic records on the Yukon and its tributaries and on the coast comprise additional data by Petrof, published as a part of the Eleventh (1890) United States Census and arranged by districts and linguistic groups; and the data of three subsequent

United States Censuses, 1900, 1910, and 1920, which are given in differing ways, but in the main by major ethnic and territorial or jurisdictional subdivisions.

Due to incomplete enumerations; to the use of native estimates for actual count (as seems to have been the case with Dall's figures, as well as others); the different methods and classifications employed; and the inclusion of units now into one and now into another group (as with Petrof, who includes three Indian villages below Anvik among the Eskimo, etc.), the various counts are not comparable and give but hazy ideas of the true conditions. Yet they are not without value, particularly in showing the earlier population of the villages and the relative proportion of the sexes and ages. The more helpful details are given in the appendix; for still others see references in bibliography.

PRESENT CONDITIONS

To-day, judging from all the obtained evidence, which comprised information, the witnessing of a potlatch at Tanana at which were assembled practically all the Indians above Nulato, and a visit below the Tanana of nearly all the villages where the Indians still live, the total number of the Tinneh on the lower Tanana (from Fairbanks to the mouth of the river) and on the Yukon from Tanana to Anvik, can scarcely be estimated to reach 1,000. It is probably well below that number. Moreover, not one-half of the adults and much fewer among the young are still full bloods. Disease, bad liquor (Yukon), and mostly as yet imperfect accommodation to changing conditions are steadily diminishing the numbers. Since our visit many have died from influenza, especially at Anvik. Their future is not hopeful. On the Tanana, however, and with the more educated in general, conditions are better, and much good is being done by the four missions on the two rivers (Nenana, Tanana, Anvik, and Holy Cross).

The old Indian settlements along the Yukon are gone, with a few exceptions. On some of the sites, as at Tanana, Nulato, Kaltag, etc., there are new villages bearing the old names but built by or in imitation of whites and sheltering a mixed population. The very names of not a few of the older Indian sites have gone into oblivion; or the natives call those they still know by a corruption of a white man's name, such as "Ulstissen" (for Old Station). Anvik alone has kept its original site and some of its old character, the mission and the white trader being across the river.

In the Eskimo part of the Yukon, below Holy Cross, conditions on the whole appear to be somewhat better. There has also been a diminution in population. The majority of the old villages have ceased to exist, while under the influence of whites some new settle-

ments or names have appeared. Yet there are respectable remnants of the Eskimo, and, being better workers than the Indian and seemingly more coherent, they manage to sustain themselves somewhat better than he does. Their greatest handicap is disease. The beneficial effect among them of the old Russian Mission has declined, but there are a number of Government schools which have a good influence. They are more tractable, sensible, and in some respects perhaps more able than the Indians.

But there exists to-day no clear-cut demarcation, geographical, cultural, or even physical, between the two people. Anvik, the last Indian village downstream, is in every respect at least as much Eskimo as Indian; more or less Eskimolike physiognomies are seen again and again among the Indians; and Indianlike features are common among the Eskimo. There has either been an old and considerable admixture on both sides, or there are some fundamental similarities of the two groups; perhaps both.

Archeology of the Yukon

Up to 1926 no archeological work had been done along the Yukon or its tributaries, and barring a few isolated specimens there were no archeological collections from these regions.

The archeology of the river consists, (1) of the dead but formerly known villages; (2) of older sites, "dead" and unknown before even the Russians arrived; and (3) of random stone objects worked by man that now and then are washed out from the river banks or are found in working the ground. Except in details conditions are much alike along the whole river and will best be dealt with as a whole.

The random specimens

Wherever the beach of the river shows more or less of stones that are not talus or just pebbles, there are generally found stones worked by man. Such localities are scarce. The first exists between Tanana (the village) and the mission above it. Here specimens are found occasionally on the beach and occasionally in the soil of the local gardens. Other such sites were located at Bonasila, below Anvik, and in four places between Paimute and the Russian Mission. A few are also present from Marshall seaward.

An examination of the terrain adjacent to such parts of the beach shows mostly, but not always, traces of an old settlement.

The specimens consist of characteristic axes or adzes, stone scrapers, hammers, stone knives (along the Eskimo part of the river), tomahawk heads (probably), objects less well defined, and chips. There may be semifossilized animal bones, and rarely a bit of char-

coal, a piece of pottery (for details see Narrative), or an object of ivory.

The ax proper is peculiar. It is a cupid's-bow ax, double-edged, and with one or two grooves across its middle. (Pl. 10.) It is as a rule made of heavy basaltic stone, and its edges are sharpened by polishing. Rough parts may have been polished also on the body. Its distal surface is convex (from sharp edge to sharp edge), its proximal surface straight or mildly convex. I succeeded in getting a specimen remounted recently by one of the Indians near Tanana. This form of an ax is still remembered by the old Indians when in use. They cut trees with it, cutting sidewise and detaching the wood in splinters. They also remember clubs with stone heads, and told me they were carried on the back over the right shoulder so as to be ready for instant and effective use.

These axes have apparently been used by both the Indians and the Eskimo, but there is an interesting difference. The several specimens I obtained or saw from Tanana to Ruby were all complete. But from about the vicinity of Ruby downstream the bi-edged ax seems to disappear, or, rather, one-half of it disappears, the butt henceforth either being left unfinished or one-half of the double ax being broken off and the remainder being mounted now as an adze on a shorter handle. This form, and it exclusively, with various secondary modifications, is found over a wide area among the Eskimo and may reach into Asia, for I obtained a specimen of it from one of the Diomede Islands. It connects directly with the Bering Sea Eskimo ivory adze and chisel. On the other hand the bi-edged ax appears, in various modifications, to extend widely over Indian Alaska.

The remaining stone implements need but little mention here. They will be studied and reported separately by our archeologist. A special note will, however, be necessary later about the very primitive stone industry of Bonasila, below Anvik. (See p. 144.)

Of pottery I have seen no example above Anvik, but this can not be taken as evidence of its absence above that point. At Anvik, Bonasila, and farther down the pottery is like that of the western Eskimo. It is coarse ware, hand shaped, and of rather poor quality. It consists of small round bowls to fairly large, more or less conical, jars. It is never painted but is frequently decorated with thumb marks and especially with grooves running parallel with the border.

Ivory implements were encountered first at Bonasila and consisted of a few fine long points barbed on one side, looking like those of the Eskimo and probably of Eskimo origin. There were also a few tools of bone, generally scrapers.

Russian beads, especially those of the large blue variety, are occasionally encountered, usually singly or in small numbers, especially in some spots.

A unique archeological specimen from the lower middle portion of the Yukon Valley is the large stone dish obtained by Mr. Müller, the trader at Kaltag. (See p. 34.)

Besides these random specimens, other cultural objects are found along the Yukon in connection with old burials. These consist of an occasional wooden dish, sharpening or polishing stones, rarely a figurine (doll?) in ivory, Russian snuffboxes, fire sticks, dishes of birch bark, etc. The cullings in this field are quite poor, but there has been no excavation of older burials that have been assimilated by the tundra and lie now in the earth beneath.

The archeology of the old habitation sites, on the other hand, particularly perhaps on the Shageluk and between Holy Cross and Marshall, is decidedly promising and invites careful excavation.

Location of Villages and Sites on the Yukon

Especial attention was given to the location of the numerous dead villages and older sites along the Yukon. This task was found, in most instances, fairly easy with villages that "died" since the Russo-American occupation, for mostly they still show plain traces and are generally remembered by the old Indians or even old white settlers. Their precise allocation on a map, however, is not always easy or certain. As to the prehistoric sites the search is much more difficult and depends largely on chance discoveries.

The villages still existing give only a partial clue, in many cases, to the old, even where these bore the same name, for on occasions a village changed its location, though remaining in the same general vicinity and retaining the same name. Thus there existed at different times apparently, between the earliest contacts with whites and the present, at least 2 Nuklukhayets, 2 Lowdens, 3 Nulatos, 3 Kaltags, 2 Anviks, etc.; besides which there were differences in recording the names and changes due to efforts at translation of the native term, or an application by the whites of a new name, often that of a trader or settler, to an old site.

In places even late village sites, in others burials, were witnessed being undermined by the river or the sea. Such sites with their contents will probably sooner or later be completely lost from this cause. Many doubtless have thus been lost previously.

The villages and sites located along the Yukon are here enumerated and as far as possible charted. Information about them was obtained from the older Indians or river Eskimo and from such whites as had direct knowledge in that line. Most of these sites were

a, My "spoils," loaded on sled, Point Hope. (A. H., 1926)

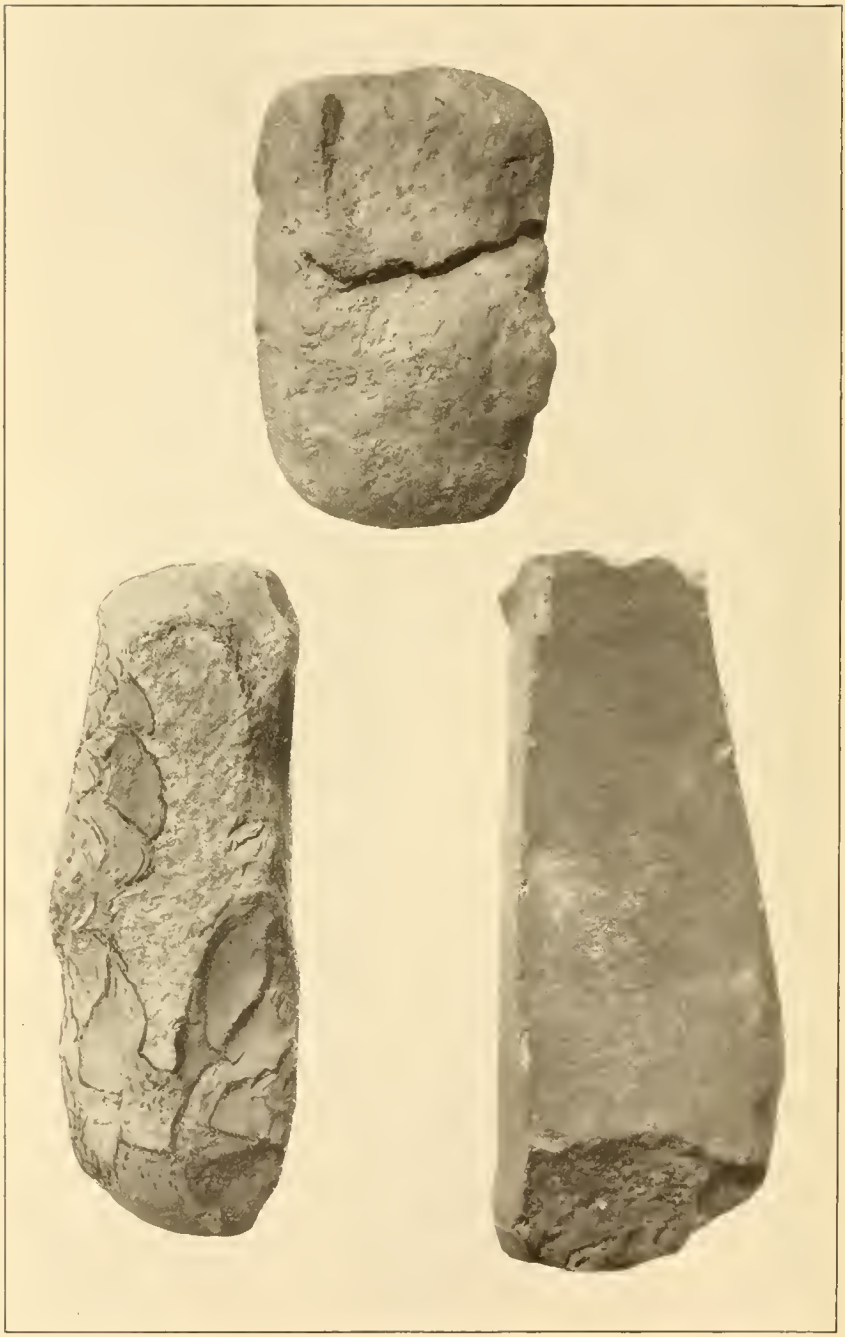
b, The load is heavy and sledding over sand and gravel difficult. (A. H., 1926)

CHARACTERISTIC STONE AXES, MIDDLE YUKON

(A. H. coll., 1926.)

CRUDE STONE ARTIFACTS, FOUND AT BONASILA, LOWER MIDDLE YUKON

(A. H. coll., 1926.)



CRUDE STONE ARTIFACTS, FOUND AT BONASILA, LOWER MIDDLE YUKON

(A. H. coll., 1926.)

examined personally, but in some instances this was impossible. The details concerning those seen will be found in the Narrative, but a few generalizations may here be useful.

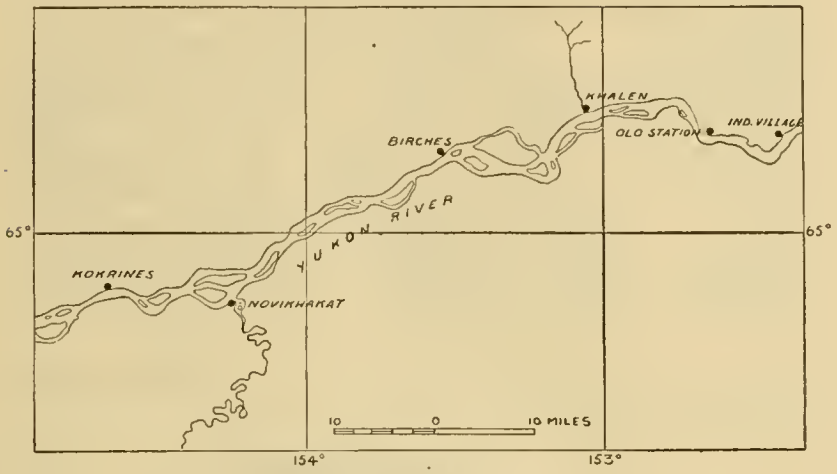


FIGURE 2.—The Yukon from Tanana to below Kokrines

The dead village sites are much alike along the whole river. They are generally located at the mouth of some inland stream that carries clear fresh water, particularly if on the other side there is the protection of a hill. The dwellings were invariably on a flat and were throughout semisubterranean and of the same general

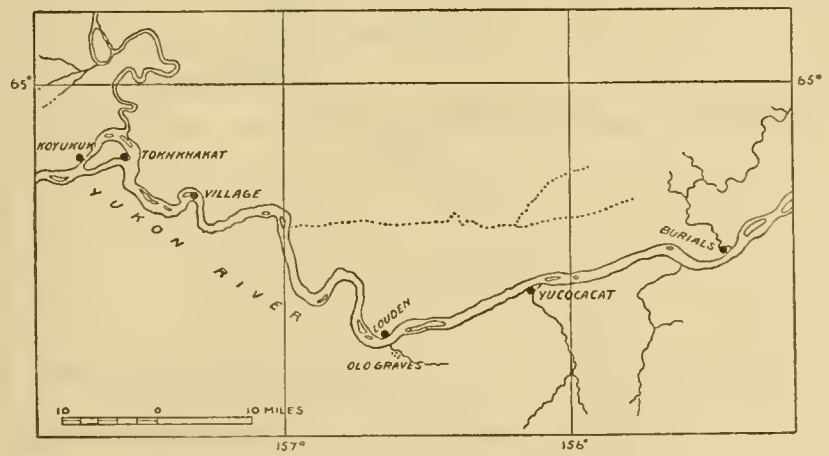


FIGURE 3.—The Yukon from below Kokrines to below Koyukuk

type; which applies also to the larger communal houses or "cashims." The sites can often be told from afar in summer by the rich grass that covers them.

The burials were as a rule not far from a village and preferably on the slopes of the nearest hill. They were mostly above ground, but under the influence of Russians there were also shallow-ground

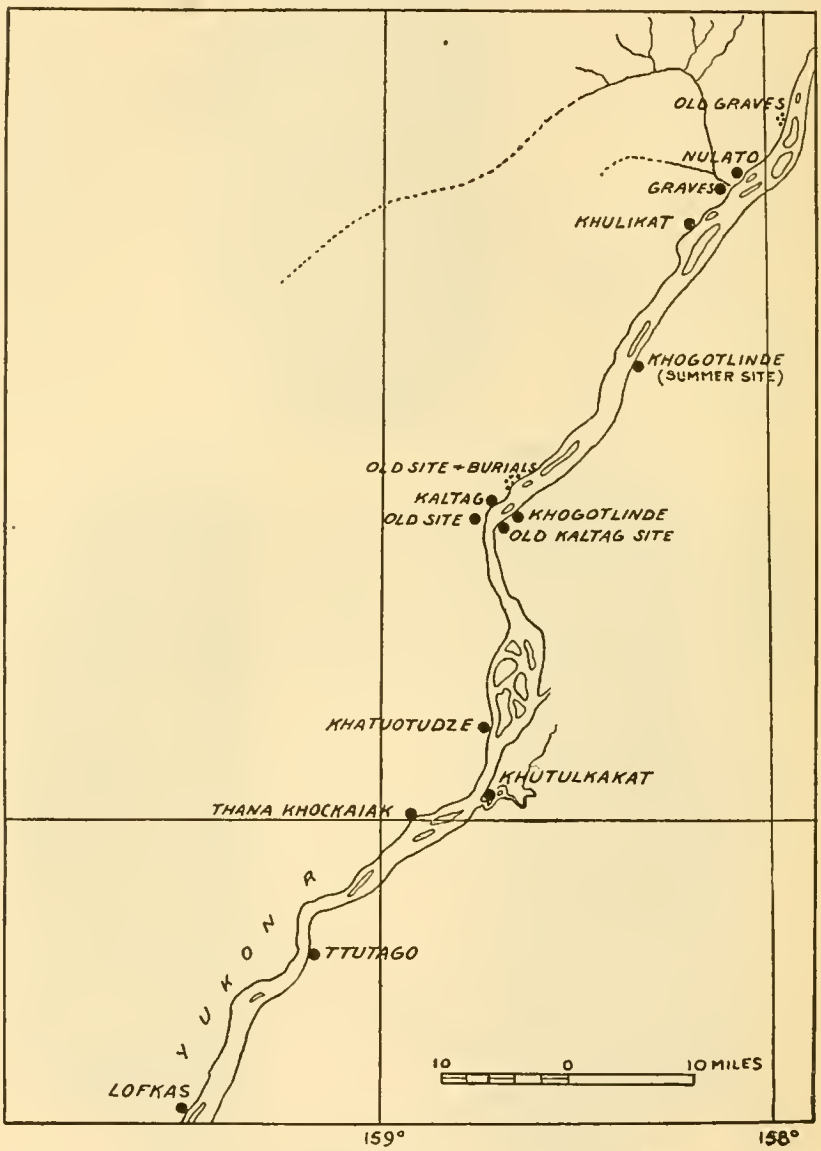


FIGURE 4.—The Yukon from below Koyukuk to Lofkas

burials. The latter can readily be told by the sawed planks of the coffins and the iron nails by which they are fastened. In many places no surface burials remain or there are mere traces. In

such places little mounds may betray old burials assimilated by the tundra. Trenching in likely spots would doubtless reveal others of which no trace remains on the surface.

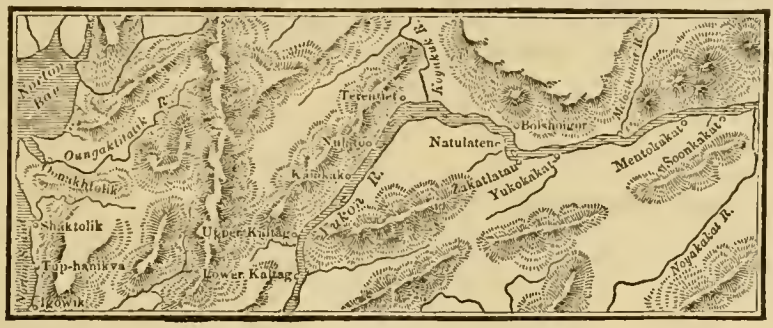


FIGURE 5.—Old map of the Nulato district

No excavations of any of these sites have ever been attempted, but many of the surface burials were disturbed or destroyed by seekers of relics and the curious vandal, who is present on the Yukon as in other parts of the country.

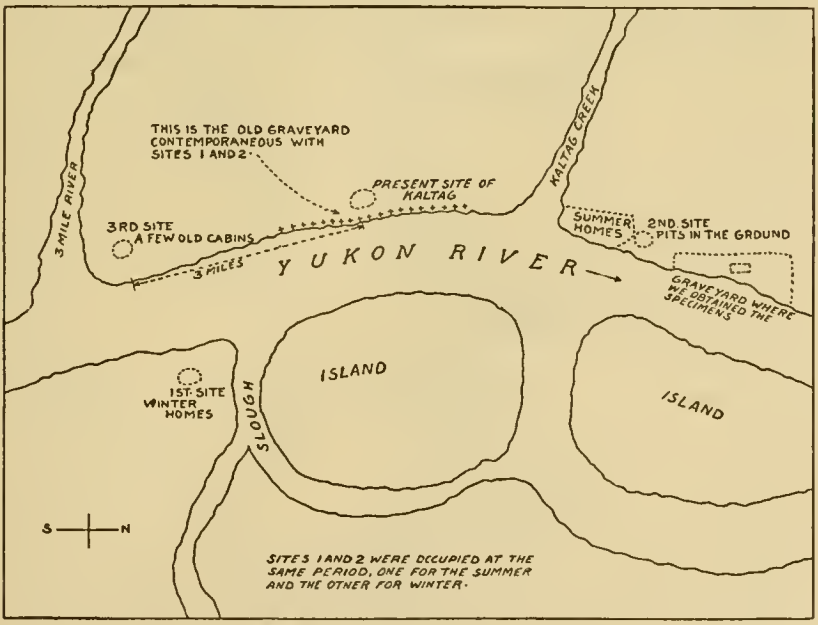


FIGURE 6.—Map of Kaltag and vicinity. (By McLeod)

The maps shown here were made under my direction on the basis of maps and charts provided by the Geological and Geodetic Surveys, in Washington. Additional old sites will doubtless be located in the future and may be added to these records.

Pre-Russian Sites

As already told in the Narrative, a search for truly ancient sites along the Yukon has proven largely negative. A more intense and prolonged archeological survey, with exploratory trenches wherever there is promise, may one day prove more fruitful. But, as pointed

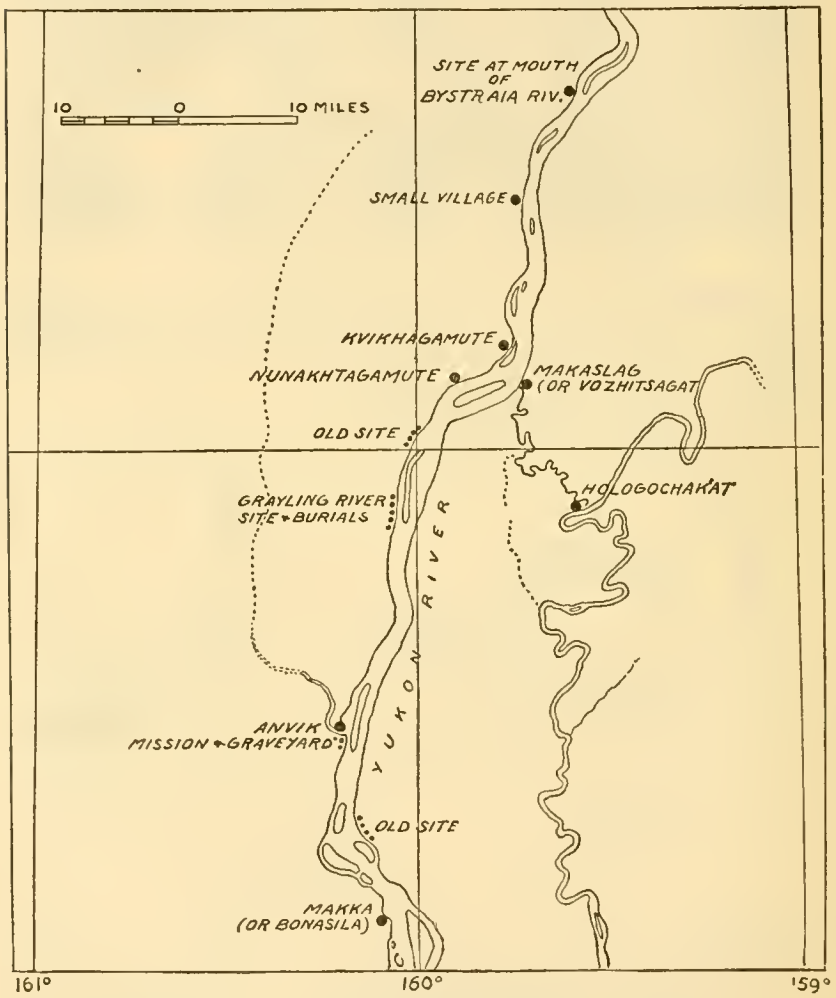


Figure 7.—The Yukon from Bystraia to below Holy Cross

out before, much can never be expected. Man could at no time have occupied the Yukon Valley and watershed in large numbers. He would not have found enough sustenance. Even with fair resources he would hardly have tarried in these inclement regions as long as the ways toward the south were open. He never built here of lasting materials and had little chance to develop or even keep up

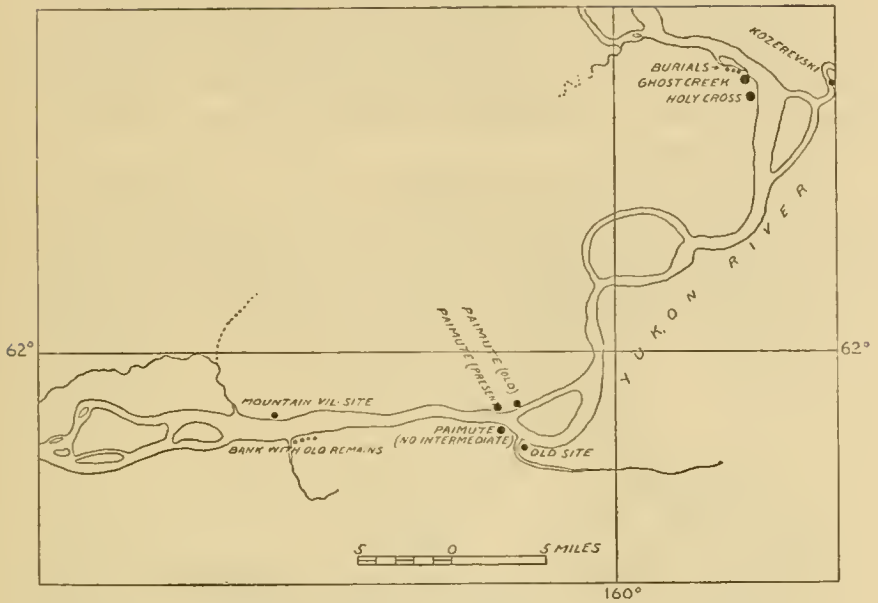


FIGURE 8.—The Yukon from above Holy Cross to below Mountain Village

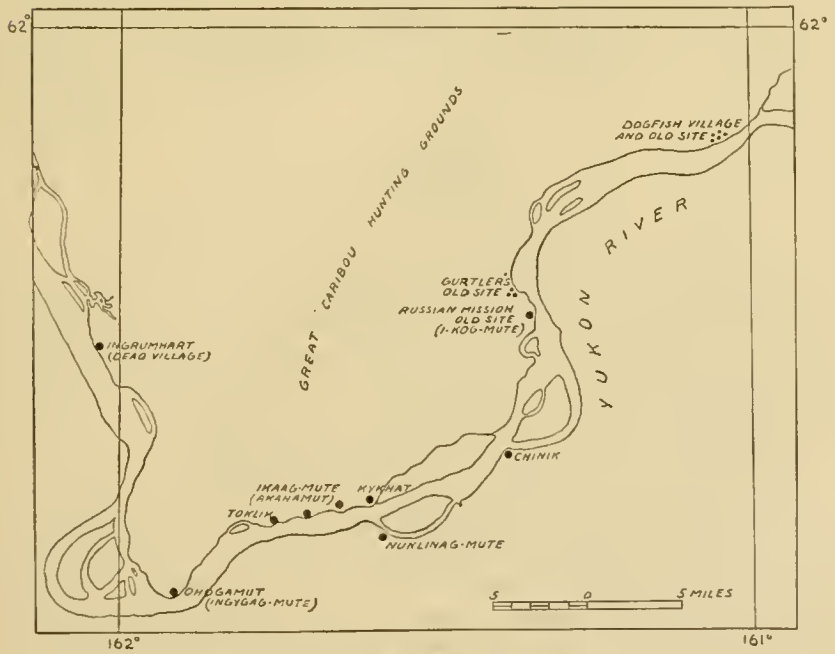


FIGURE 9.—The Yukon from below Mountain Village to near Marshall

any higher culture, and since he is gone the ever-cutting river has taken away whatever it could reach and scattered it through its silts and gravels. There is nevertheless a number of small elevated plateaus along the right bank that ought to be sounded by exploratory pits or trenches, particularly perhaps where there are traces of later habitations.

There are, of course, some sites that are older than others. The most interesting of these was found at Bonasila, beneath the old site of Makki or Magimute, 18 miles downstream from Anvik. (See Narrative.) The main facts concerning this site are as follows:

At the above distance from Anvik, on the right bank of the river and following a wooded hill, is a low flat backed by rising ground

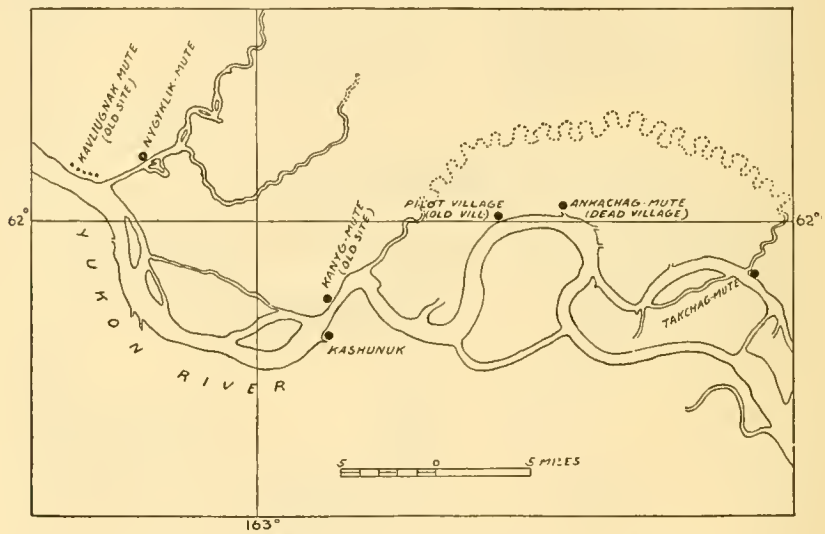


FIGURE 10.—The Yukon from near Marshall to below Kavlingnak

and cut across by a little stream. The flat is narrow, at present about 300 feet; and the part above the stream is deeply pitted by the remains of semisubterranean houses of a "dead" native village, which I believe is identifiable with the Magimute of the Russians. On the slope behind the village were still about a score of old surface burials, with an article here and there of Russian derivation.

The bank of the flat rises at present only about 4 feet above the beach of the river, but the flat behind is higher. The bank itself contains many specimens showing human workmanship, consisting of objects of stone, birch bark, bone, and rarely also of ivory, besides many fragments of pottery, many bones of wild Alaskan animals, and here and there a human skeleton. Some of these objects are low down in the bank. All the bones from the bank, including the human, and even the rare points of ivory, are semifossilized; the

FIGURE 11.—From above Kobolunuk to mouth of river

stone industry is peculiar; and the human remains differ plainly from both those of the later Yukon Indian and from those of the Eskimo. They are apparently Indian (see section on physical characteristics), but a tall Indian of a type that now is only met with much farther south.

The stone industry from the bank appeared at first sight so primitive that even the term "paleolithic" would not fit and the only term that seemed to meet the situation was "protolithic." It consists predominantly of scrapers and knockers, with here and there a tool sharpened for cutting. The scrapers look especially crude. They consist simply of pieces of smaller or larger andesite-like volcanic slabs broken to the desired size and chipped more or less roughly along what was to be the scraping edge. A closer examination of the stones, which were obtained from a base of a cliff farther down the river, showed, however, that they were of material which is hard to work, and that the chipping, under the circumstances, was not really bad. (Pls. 11, 12.) Pottery must have been fairly plentiful and quite up to the average of the river, both in make and decoration.

Two fine long, partly fossilized ivory points picked up formerly on the site were obtained from Mr. Lawrence. They are handsomely barbed on one side and show a high grade of skill. They must have come from the Bering Sea and may belong to the old fine ivory culture of the western part of that region, of which more later.

There are also some fairly ancient sites farther down the river (see Narrative), but just what they are and how old remains to be determined.

A report on the archeological remains from the bank of Bonasila by Mr. H. W. Krieger, one of the curators of the Department of Anthropology, United States National Museum, follows:

ARCHEOLOGY OF CENTRAL ALASKA

Ancient Stone Culture

"Until the results of Doctor Hrdlička's Alaskan reconnaissance were first made known to science it had been generally assumed that Alaskan and Canadian subboreal regions were archeologically barren. It had been currently accepted that only as one approached the great river valleys of the Skeena, the Fraser, and the Columbia could anthropological exploration be conducted to advantage. One might expect to uncover cemeteries and ancient village sites only there where a dense and sedentary population had long been established. Through the discovery of ancient village sites and centers

of population in the lower and middle Yukon River Valley, Doctor Hrdlička has extended the northern archeological horizon into the sub-Arctic.

"Of the many sites examined, the old village site at Bonasila, 18 miles below the confluence of the Anvik and Yukon Rivers, yielded the most interesting data. Crudely flaked implements of trap rock with cutting edges showing evidence of chipping and grinding were uncovered. These implements are unique among Alaskan artifacts and have no relationship with known types of Eskimo or Indian stonework. In the shaping technic employed by their aboriginal makers: in form, and in type; and, generally, in their undeveloped character, the stone artifacts from Bonasila and other ancient archeological sites on the middle Yukon may be classified as primitive neolithic.

"The stone implements uncovered at Bonasila are so crudely fashioned and are apparently of such an improvised nature as to suggest an extreme conservatism in culture development, or perhaps a degeneration, due largely to lack of better materials. Due to the lack of basalt, jadeite, or other hard stone in the valley of the lower middle Yukon, recourse was had to sandstone and trap rock by the primitive makers of stone axes and celts.

"Crude pottery vessels and potsherds were discovered associated with the objects of stone. This ware incorporates elementary decorative designs distinct from the known historic Eskimo or Indian types of pottery decoration. There can be no intimation that this ware is archaic or that it belongs to any archaic culture offshoot from farther south. It therefore becomes a question of some unknown earlier Asiatic culture connection that manifested itself in crude forms of flaked and ground stone implements and in unique pottery forms. It is uncertain that the ancient fossil ivory culture of northwest Alaska, of which Doctor Hrdlička has brought in some excellent examples, is in any manner associated with the primitive neolithic stone and pottery forms uncovered at Bonasila. It is established, however, beyond a doubt that both cultures and types of artifacts are Asiatic in origin and have little or no connection with the culture of the western Eskimo.

"The Eskimos of the lower Yukon Valley made extensive use of slate and of jadeite in the production of their polished knives and celts. Slate knives and polished celts of jadeite are characteristic of Eskimoan culture throughout the whole of its extent in Alaska. Each of these materials as well as the finished products shaped from them were subjects of native barter. Eskimos often undertook long journeys for their procurement. It is therefore noteworthy that no

single object fashioned from slate or jadeite and but few points of fossilized ivory were recovered at any of the sites characterized by the primitive stone culture and pottery of the Bonasila type.

"The most characteristic finds at Bonasila are the crudely flaked implements of stone, some of which show incipient chipping and grinding. The coarse type of pottery is unlike that of the modern Eskimo in tempering, firing, and decorative design.

"The stone culture of the site, although rich in forms, is deficient in technical development and is scarcely worthy of being classed as neolithic. There were found in numbers the following types of artifacts: Circular, discoidal stone pebbles with rim fractures due to use; river wash pebbles of irregular form used as improvised scrapers and hammerstones; basaltic, discoidal hammerstones with abraded edges and pitted at the center; large flake saws of trachyte (trap rock) triangular in section but provided with sharply fractured cutting edges; slender flaked fragments of trap rock tapered to the form of wedges with intentionally worked end sections and cutting edges; crudely flaked stone knives with evidence of secondary chipping at cutting edges; other knives of thin slabs of trap rock with flaked and bilaterally ground beveled cutting edges; oblong axes of flaked sandstone with hafting notches struck off at the edges midway from the base; abrading tools of sandstone; celts of sandstone with ground and beveled working edge and notched for hafting as an ax; stone scrapers with ground and beveled cutting edges; fragmentary perforators of stone; rechipped, flaked knives shaped by grinding; roughly worked, multiple-grooved hammers or mauls; and many stone objects unformed and unworked but classified generally as hammerstones.

THE POTTERY

"About a hundred pottery shards and smaller pottery vessels were recovered from the site at Bonasila. Pottery vessels representative of the Bonasila culture were shaped out of the solid and show no trace of coiling. In this respect they conform to the generalized north Asiatic and Eskimo ware. There is, however, no check stamp decorative design that is applied with a paddle by the Eskimo nor evidence that pottery vessels had been built up about a basketry base. The paste is light buff or gray in color, the buff ware being better fired and of the same color on the inside, while the gray ware is either gray or black on the inner surface. A well-defined unfired area covers one-half of the sectional diameter. Both buff and gray wares show evidence of better firing than in modern Eskimo pottery. Tempering

is of coarse fragments of steatite, which is much more durable than tempering materials such as blood, feathers, and ashes formerly employed by the primitive Eskimo potter.

"The pottery from Bonasila is utilitarian and consists of shallow spherical lamps, globose bowls, and cooking pots without feet or bases. The ware is coarse, side walls and bottom varying from 1 to 2 centimeters in sectional thickness. This type of pottery is practically duplicated in shards recovered by Doctor Hrdlička from what is now Eskimo territory in the Yukon Valley near the Russian Mission. It is probable that further search would bring to light an extensive region yielding this type of ancient pottery of distinctive design and unrelated either to Tinné or Eskimo ware.

"Decorative attempts consist of bold incised parallel transverse lines on the upper sector of the outer surface of the vessel. Deep corrugations appear on the inside of the rim flare. Both corrugations and incised line decorations were made with a paddle or wood splinter shaped for the purpose. Some of the shards have deeply incised punctations irregularly encircling the outer surface of the vessel just below the rim extension.

"Shallow spherical pottery lamps accompanied surface burials at Bonasila. These lamps have a less durable tempering material than the other pottery fragments recovered. The paste is porous and is poorly fired. Decorative designs incised on the interior surface of the lamps are reminiscent of typical Eskimo punctate designs as traced on the inner circumference of rectilinear or curvilinear etchings on ivory and bone. It is very probable that these pottery lamps are of a later date and are of Eskimoan handicraft.

THE ALASKAN GROOVED STONE AX

[Pl. 10]

"The grooved stone ax is a typical New World implement. Its distribution is limited to tribes of the eastern maize area, the Pueblo tribes of the Southwest, the Athapascans, and the northern woodlands tribes. Elsewhere in America grooved stone implements of any description are rare, although not unknown. The groove for the attachment of cord or sinew binding is common also to the stone adze, which is characteristic of Indian tribes of the Pacific Northwest and of the Eskimo of Arctic America. The distribution of the stone adze is more intensive but is much less extensive than is that of the grooved stone ax and appears to be an environmental form borrowed from the Arctic tribes by the Indian of southeast Alaska and of British Columbia.

"The double-bitted, multiple-grooved stone ax has two areas of distribution in North America. One of these is the country of the northeastern woodlands Indians, extending as far south as the Central Atlantic States. The other area of distribution is the extreme northwest, or the mainland of Alaska.

"In the collection brought to the National Museum from Alaska by Doctor Hrdlička are eight grooved stone implements. All but one of these have cutting edges for use as axes or adzes. The exception, Cat. No. 332809, U.S.N.M., is a grooved spherical stone maul or club 9.5 centimeters (3.7 inches) long and 7.5 centimeters (2.9 inches) in sectional diameter. This grooved object was found near Tanana on the beach of the Yukon River. Like the grooved stone axes in Doctor Hrdlička's collection, the groove is incomplete. A flattened space of approximately 2 centimeters is left ungrooved for the hafting of a flat surfaced handle end with binding, which is passed around the transverse groove and then through a hole in the wooden handle.

"Three single-grooved, double-bitted stone axes were collected from various points on the Yukon River. These are of interest because of their similar grooving and double cutting edges. Each is identical in form, each has been shaped by pecking, except in the sector near the cutting edges where they have been sharpened and polished by grinding. Between the raised borders of the centrally pecked groove and the cutting edges the surface has been shaped to a slight concavity by pecking. In Cat. No. 332805, U.S.N.M., this concavity is replaced by a well-defined convex bevel. The pecked groove is at right angles to the longitudinal axis and is comparatively shallow but has a wide diameter of 2 centimeters or more. The material is uniformly of basalt. The axes are 20 centimeters or more long, while the sectional diameter varies from 6 to 10 centimeters according to whether the ax is flattened or oval in section.

"Grooved, double-bitted stone axes similar to those collected by Doctor Hrdlička from the Middle Yukon region have since become known also from stations farther south in Alaska. One was plowed up in a field near Matanuska and is now in the chamber of commerce exhibit at Anchorage, while another was collected in 1927 by the writer from near Chitna, Alaska. This Alaskan type of grooved ax is practically identical with that of the central Atlantic seaboard States, as figured by Walter Hough in the Proceedings of the United States National Museum, volume 60, article 9, page 14.

"Another grooved type of stone object brought to the National Museum by Doctor Hrdlička is a stone war club of unusual type. It was found on the Yukon River beach 1½ miles below the Mis-

sion at Tanana. It is 20 centimeters (7.9 inches) long and is slender, the maximum sectional diameter being but 3.5 centimeters (1.4 inches). Like the single-grooved axes, it was shaped by pecking, but much of the surface was also ground. The reverse or hafting surface is flat; the obverse is convexly tapered to sharp cutting edges which are at right angles to the haft. The material is basalt. The hafting grooves, two in number, are comparatively deep and closely spaced. As to form this stone weapon is unique, appearing, so far as is known to the writer, nowhere else on the American Continent. It has been entered on the records of the National Museum as Cat. No. 332807, U.S.N.M.

"One form of the double-bitted, multiple-grooved stone axes resembles closely ivory forms made from walrus tusks in the Bering Sea region. This form also gives evidence of secondary modification, specimens having been broken intentionally to reduce the tool to a simple adze. The material is basalt and its range in the north is limited to the Eskimo area, but becomes widespread to the south in southeastern Alaska and in British Columbia. The form of this widely diffused stone adze is approximated in a series of broken stone axes collected by Doctor Hrdlička. Two such broken and originally double-bitted axes, Cat. Nos. 332806 and 332810, U.S.N.M., were collected from the banks of the Yukon at an old village site below Anvik. These axes are broken with a crude irregular fracture just above the upper transverse groove. Another stone ax, Cat. No. 332812, U.S.N.M., is from Ruby, Alaska, and is practically identical with the double-bitted but single-grooved stone ax from Tanana.

"It would appear from this brief presentation that there is a remarkable similarity of form, approaching identity, in the ancient stone axes from the river valleys of central Alaska. Whether the particular ax has one cutting edge or is double-bitted; whether it is provided with one or with two parallel transverse hafting grooves, the general identity of form remains. The striking thing about the presence of the double-bitted ax among archeological finds from central Alaska is that we do not find it represented in such numbers anywhere until it again reappears in the Atlantic seaboard States. The very interesting cultural objects discovered by Doctor Hrdlička and supplemented by my collection in 1927 show that Alaska is far from sterile or fully known archeologically and make further exploration both promising and important."

ANTHROPOLOGY OF THE YUKON

Notes on the physique of the Yukon natives are found in the reports of all the explorers of the river, but they are imperfect and of little scientific value; the principal ones are given below.[23] Anthropometric observations on the living people of the middle and lower Yukon, with its tributaries, are nonexistent.[24] As to crania, there are a few measurements on two "Yukon Indian" skulls (No. 7530, and probably No. 7531), and on three crania of the Yukon Eskimo, by Jeffries Wyman (Proc. Bost. Soc. Nat. Hist., 1868. XI, 452); on one "Ingaleet" and three "Mahlemut" or Norton Sound Eskimo skulls by George A. Otis (List of Specimens, etc., 35); and on four skulls collected by Dall, one from Nulato and the rest presumably from St. Michael, by Hrdlička (Catal. of Crania, p. 30, Nos. 242925, 242899, 242901, 242936).

The Living Indian

Notes on the living Indians of the Yukon have already been given in the Narrative. They will be briefly summarized in this place. Measurements of the living were impracticable during the journey.

Pure bloods.—The Yukon Indians are a sparse and largely mixed

[23] Glazunof (Wrangell, Stat. und Ethnog. Nachr., 146–147): "The men are big, brunette, with bristly black hair."

Zagoskin (pt. II, 61–62): "The Tinneh belong in general to the American family of redskins, but marked external differences are perceptible in those who are mixed with the Eskimo. The Tinneh are of medium stature, rather dry but well shaped, with oblong face, forehead medium, upright, frequently hairy, nose broad and straight, hooked, eyes black and dark brown, rather large * * * expression intelligent, in those of more distant tribes somber, roving; lips full, compressed; teeth white, straight; hair straight, black to dark brown, fairly soft; many of the men hairy over the body and with fairly thick, short mustache and beard; hands and feet medium, calves small; in general lively, communicative, cheerful, and very fond of pleasure and song."

Dall, William H., Alaska and Its Resources, 53–54: "The Ingaliks are, as a rule, tall, well made, but slender. They have very long, squarely oval faces, high, prominent cheek bones, large ears, small mouths, noses, and eyes, and an unusually large lower jaw. The nose is well formed and aquiline, but small in proportion to the rest of the face. The hair is long, coarse, and black, and generally parted in the middle. * * * Their complexion is an ashy brown, perhaps from dirt in many cases, and they seldom have much color. On the other hand, the Koyúkuns, with the same high cheek bones and piercing eyes, have much shorter faces, more roundly oval, of a pale olive hue, and frequently arched eyebrows and a fine color. They are the most attractive in appearance of the Indians in this part of the territory, as they are the most untamable. The women especially are more attractive than those among the Ingaliks, whose square faces and ashy complexion render the latter very plain, not to say repulsive." (Some of these statements were evidently somewhat in error.—A. H.)

Schwatka, F. (Milit. Reconn. (1883), Comp. Narr. Explor. Alas., 350): "As regards these Ingaliks as a class, they are, as a rule, of average height, tolerably well built, but slender, differing in this respect from the natives farther down the river. They have long black hair and a complexion brown by nature, but often verging toward black on account of a liberal covering of dirt."

See also Richardson, J. (Arctic Search. Exp., I, 379). Jones, S., The Kutchin Tribes (Smiths. Rept. for 1866, 320–327). Whymper, F., Travel and Advent., etc.; and later writers (including Bancroft's "Native Races," etc., I, 127 et seq.).

[24] Ten (8 m. 2 f.) Loucheux, or Kucha-Kuchin, from the upper Yukon, were measured by A. J. Stone and reported by F. Boas (Bull. Am. Mus. Nat. Hist., New York, vol. XIV, pp. 53–68, 1901).

TANANA INDIAN WOMAN

CHIEF SAN JOSEPH, NEAR TANANA VILLAGE, ON THE YUKON

(A. H., 1926.)

a, Jacob and Andrew, Yukon Indians at Kokrines. Jacob probably has a trace of white blood. (A. H., 1926.)

b, Yukon Indians at Kokrines. (A. H., 1926.)

a, Marguerite Johnny Yatlen, Koyukuk village. (A. H., 1926)

Lucy John, Koyukuk, daughter of a former chief. (A. H., 1926)

YUKON INDIANS

a, George Halfway, Nulato, on the Yukon. (A. H., 1926)

b, Jack Curry, of Nulato, 41 years old. (Now at Ruby, Middle Yukon; Eskimoid physiognomy)

c, Arthur Malamvot, of Nulato

YUKON INDIANS

a, Indian children, Mission School at Anvik, Lower Middle Yukon

b, Indian children, Mission School at Anvik, Lower Middle Yukon

c, Two women of Anvik, on the Yukon, somewhat Eskimoid

population. The mixture is especially evident in the children and the younger generation. It is mainly that with whites, but in the lower settlements there is also a good deal of older mixture with the Eskimo. There is fortunately as yet no Negro admixture.

General type.—The full bloods are typically Indian, though not of the pronounced plains type. The type is fairly uniform, but there is not seldom, even up the river, as elsewhere in Alaska, a suggestion of something Eskimoid in the physiognomy.

Color.—The color in general is near medium brown, ranging to lighter rather than darker. The hair is the usual full black of the Indian.

Stature and strength.—The stature and build are generally near medium, rather slightly below than above.

Head form.—The head is generally moderately rounded high meso- to moderately brachycephalic. The face is medium Indian.

Body.—The body proportions seldom impress one with unusual strength, yet some of the men are by no means weaklings. The most fitting term by which to characterize conditions in this respect is again "medium," with an occasional deviation one way or the other.

Photographs.—The accompanying photographs, taken by the writer from Tanana to Anvik, show a few of the physiognomies. Some of the girls and women, as well as boys and men, are quite good looking. (Pls. 13–18.)

From Anvik downward along the river the type of the people becomes plainly more Eskimoid and on the whole more robust. But as one can frequently meet farther up the river individuals who remind one more or less of the Eskimo, so here it is frequent to see faces that look like Indian. Whether due to old mixture or to other reason, the fact is that there is no line of somatological demarcation in the living populations of the river, and the same applies, as will be seen later, to the skulls.

Skeletal Remains of the Yukon

The first Yukon Indian skull measured was that of a half-chief of the Nulato group, collected in the early sixties by William H. Dall. There are now three records of this skull, originally and again now a Smithsonian specimen, one in Wyman ("Observations on Crania," Proc. Bost. Soc. Nat. Hist., 1868, XI, 452, No. 7530), one in the Otis "Catalogue" (35, No. 259), and one in Hrdlička's "Catalogue of Human Crania in the United States National Museum Collections" (p. 30, No. 242925). It is a normal, well-developed male skull, which gives no suggestion of mixture. The true measurements of this "type" specimen, taken by present-day instruments and methods, are as follows:

Yukon Indian skull No. 242925

Vault:	
Length—cm—	18.4
Breadth—cm—	14
Height to bregma—cm—	13.8
Cranial index—	*76.1*
Mean height index—	*85.2*
Height-breadth index—	*98.6*
Cranial module (mean diameter)—cm—	15.40
Cranial capacity—c. c—	1,520
Face:	
Menton-nasion (teeth but slightly worn)—cm—	12.1
Alveolar point-nasion—cm—	7.3
Diameter bizygomatic maximum—cm—	14
Facial index, total—	*86.4*
Facial index, upper—	*52.1*
Facial angle—	69°
Alveolar angle—	53.5°
Orbits:	
Right—	
Height—cm—	3.25
Breadth—cm—	4.2
Left—	
Height—cm—	3.45
Breadth—cm—	4
Mean index—	*81*
Nose:	
Height—cm—	5.1
Breadth—cm—	2.5
Index—	*49*
Upper alveolar arch:	
Length—cm—	5.7
Breadth—cm—	6.7
Index—	*85.1*
Basio-facial diameters:	
Basion-alveolar point—cm—	10.6
Basion-subnasal point—cm—	9.4
Basal-nasion—cm—	10.5

The skull is seen to be mesocephalic, rather high, and of good brain capacity; the face is of medium Indian proportions; the orbits are unequal, rather low; the nose is of medium height and breadth; the upper dental arch, the basio-facial diameters, and the facial and alveolar angles, are all near medium Indian.

There was another Indian skull in the five Wyman reported, but its identity is uncertain. A later collection by Dall included three Indian female crania from Alaska, but their exact provenience is uncertain; their measurements are given in my catalogue.

On the 1926 trip I succeeded in collecting directly from the burials along the lower middle Yukon 17 adult skulls and skeletons. Such material is both scarce and difficult to obtain, due to the attitude of the Indians. All the specimens in the collection are from the Russian times on the river. A few of the skulls show traces of Eskimoid in their features, but none offer a suspicion of a mixture with the whites. The measurements are given below. They partly agree, partly disagree, with those of the Nulato skull. The vault, the breadth of the nose, the dimensions of the dental arch, are much alike, but the height of the face, nose, and orbits in the Nulato specimen is somewhat lower. These may be tribal but also simply individual differences. We may generalize by stating that the lower middle Yukon Indian was mesocephalic, with a fairly high vault, and moderate capacity. The face was of relatively good height but moderate breadth, resulting in a high upper facial index. Facial and alveolar prognathism and other features approach the prevalent Indian medium.

LOWER MIDDLE YUKON INDIAN CRANIA

SEX: MALE

Catalogue No.	Collection	Locality	Approximate age of subject	Vault: Diameter antero-posterior maximum (glabella ad maximum)	Diameter lateral maximum	Basion-bregma height	Cranial index	Mean height index	Height-breadth index	Cranial module	Capacity in c. c. (Hrdlička's method)
332512	A. Hrdlička	Magi (Bonasila)	Adults	18.4	13.8	14.0	*75.0*	*87.0*	*101.4*	15.40	1,480
332517	do	Ghost Creek, near Holy Cross.	do	18.1	13.8	13.4	*76.2*	*85.8*	*97.1*	15.10	1,375
332514	do	do	do	18.0	13.9	14.0	*77.2*	*87.5*	*100.7*	15.30	1,425
332503	do	Greyling River (above Anvik).	do	[1](17.3)	(13.4)	(12.7)	*77.5*	*82.5*	*94.8*	(14.47)	(1,220)
332507	do	Ghost Creek	do	18.2	14.1	13.2	*77.5*	*81.5*	*93.6*	15.17	1,480
332526	do	do	do	18.5	14.4	13.7	*77.8*	*83.5*	*95.1*	15.53	-------
339752	H. W. Krieger	do	do	17.5	13.9	13.5	*79.4*	*86.0*	*97.1*	14.97	1,515
332502	A. Hrdlička	do	do	17.8	14.2	13.3	*79.8*	*83.1*	*93.7*	15.10	1,370
				(7)	(7)	(7)	(7)	(7)	(7)	(7)	(6)
Total				126.5	98.1	95.1	----	----	------	106.57	8,645
Average				*18.07*	*14.01*	*13.59*	*77.5*	*84.7*	*96.9*	*15.22*	*1,441*
Minimum				17.5	13.8	13.2	*75.0*	*81.5*	*93.6*	14.97	1,370
Maximum				18.5	14.4	14.0	*79.8*	*87.5*	*101.4*	15.53	[6] 1,515

Catalogue No.	Teeth: Wear menton-nasion height (a)	Alveolar point-nasion height (b)	Diameter bizygomatic maximum (c)	Facial index, total $\left(\frac{a\times100}{c}\right)$	Facial index, upper $\left(\frac{b\times100}{c}\right)$	Basion-alveolar point	Basion-subnasal point	Basion-nasion	Facial angle	Alveolar angle	Height of symphysis
332512	[1] 12.3	7.5	13.4	*91.8*	*56*	10.2	8.9	10.2	68.5	51	3.9
332517	-------	7.4	13.4	----------	*55.2*	10.2	8.9	9.7	64.5	51.5	4
332514	[2] 13	7.7	13.3	*97.7*	*57.9*	10.2	9.4	10.4	69	63.5	4.5
332503	[3] 12.8	8.1	13.6	*94.1*	*59.6*	10.5	9.5	10.4	66.5	59.5	3.7
332507	[4]	-------	14.1	----------	----------	-------	8.6	10	-------	-------	3.7
332526	-------	-------	----------	----------	----------	-------	-------	10.4	-------	-------	-------
332552	[5]	-------	13.6	----------	----------	-------	8.8	10.1	-------	-------	3.8
332502	[1] 13	8.1	14.1	*92.2*	*57.4*	10.4	9.2	9.7	62	53	4.2
	(4)	(5)	(5)	(4)	(5)	(5)	(7)	(8)	(5)	(5)	(7)
Totals	51.1	38.8	67.8	----------	----------	51.5	63.3	80.9	-------	-------	27.8
Averages	*12.78*	*7.76*	*13.56*	*93.9*	*57.2*	*10.3*	*9.04*	*10.11*	*66*	*55*	*3.97*
Minimum	12.3	7.4	13.3	*91.8*	*55.2*	10.2	8.6	9.7	62	51	3.7
Maximum	13	8.1	14.1	*97.7*	*59.6*	10.5	9.5	10.4	69	63.5	4.5
			(7)	----------	----------	-------	-------	-------	-------	-------	-------
Totals	-------	-------	95.5	----------	----------	-------	-------	-------	-------	-------	-------
Averages	-------	-------	*13.64*	----------	----------	-------	-------	-------	-------	-------	-------
Minimum	-------	-------	13.3	----------	----------	-------	-------	-------	-------	-------	-------
Maximum	-------	-------	14.1	----------	----------	-------	-------	-------	-------	-------	-------

[1] Premature occlusion of sagittal and subdevelopment of vault; probably a moron, facial and skeletal parts all normal.
[2] Medium.
[3] Slight.
[4] Moderate.
[5] Cons.
[6] Unknown; all lost.

LOWER MIDDLE YUKON INDIAN CRANIA—Continued

SEX: MALE—Continued

Catalogue No.	Orbits: Height, right, left	Breadth, right, left	Orbital index, mean	Nose: Height	Breadth, maximum	Nasal index	Palate: External length (a)	External breadth, maximum (b)	Palatal index $\left(\frac{b \times 100}{a}\right)$
332512	3.65 / 3.65	3.8 / 3.8	*96*	5.3	2.55	*48.1*	5.5	6.4	*85.9*
332517	3.35 / 3.45	3.9 / 3.8	*88.3*	5	2.6	*52*	5.6	6.5	*86.2*
332514	3.5 / 3.5	3.7 / 3.7	*94.6*	5.5	2.3	*41.8*	5.3	7	*75.7*
332503	3.65 / 3.6	4 / 3.95	*91.2*	5.7	2.45	*43*	5.4	6.3	*85.7*
332507	3.75 / 3.7	3.85 / 3.95	*95.5*	5.2	2.5	*48.1*	------	------	------
332526	------	------	------	------	------	------	------	------	------
332552	3.5 / 3.5	3.9 / 3.9	------	5.35	2.5	------	------	------	------
332502	3.45 / 3.4	4.15 / 4	*84*	5.8	2.95	*50.9*	5.9	6.5	*90.8*
Right	(7)	(7)	(7)						
Left	(7)	(7)	(7)	(7)	(7)	(7)	(5)	(5)	(5)
Totals r.	24.85	27.30	------	37.85	17.85	------	27.7	32.7	------
Totals l.	24.80	27.10							
Averages r.	*3.55*	*3.90*	*91*	*6.41*	*2.55*	*47.2*	*5.54*	*6.54*	*84.7*
Averages l.	*3.54*	*3.87*	*91.5*						
Minimum r.	3.35	3.7	------	5	2.3	*41.8*	*5.3*	6.3	*75.7*
Minimum l.	3.4	3.7							
Maximum r.	3.75	4.15	------	5.8	2.95	*52*	5.9	7	*90.8*
Maximum l.	3.7	4							

SEX: FEMALE

Catalogue No.	Collection	Locality	Approximate age of subject	Vault: Diameter antero-posterior maximum (glabella ad maximum)	Diameter lateral maximum	Basion-bregma height	Cranial index	Mean height index	Height-breadth index	Cranial module	Capacity, in c. c. (Hrdlička's method)
332506	A. Hrdlička	Magi (Bonasila)	Adult	18.2	13.4	13.1	*73.6*	*82.9*	*97.8*	14.90	1,400
332520	do	Ghost Creek	do	17.9	13.2	12.7	*73.7*	*81.4*	*96.2*	14.60	1,335
332508	do	Magi	do	17.2	12.8	13.1	*74.4*	*87.8*	*102.3*	14.37	1,225
332519	do	Ghost Creek	do	16.2	12.3	12.3	*75.9*	*86.6*	*100.0*	13.60	1,070
332510	do	Magi	do	17.6	13.5	13.2	*76.7*	*84.6*	*97.8*	14.77	1,375
332504	do	do	do	17.9	13.8	13.5	*77.1*	*85.4*	*97.8*	15.07	1,355
332525	do	Ghost Creek	do	17.4	13.5	12.5	*77.6*	*81.2*	*92.6*	14.47	1,260
332525	do	Magi	do	17.2	13.4	12.6	*77.9*	*82.4*	*94.0*	14.40	1,230
332522	do	Novi River	do	16.7	13.4	12.8	*80.2*	*85.3*	*95.5*	14.30	1,210
339751	H. W. Krieger	Magi	do	16.4	13.4	12.6	*81.7*	*84.6*	*94.0*	14.13	1,210
				(10)	(10)	(10)	*(10)*	*(10)*	*(10)*	(10)	(10)
Totals				172.7	132.7	128.4	------	------	------	144.6	12,670
Averages				*17.27*	*13.27*	*12.84*	*76.8*	*84.1*	*96.8*	*14.46*	*1,267*
Minimum				16.4	12.3	12.3	*73.6*	*81.2*	*92.6*	13.60	1,070
Maximum				18.2	13.8	13.5	*81.7*	*87.8*	*102.3*	15.07	1,400

LOWER MIDDLE YUKON INDIAN CRANIA—Continued

SEX: FEMALE—Continued

Catalogue No.	Teeth: Wear menton-nasion height (a)	Alveolar point-nasion height (b)	Diameter bizygomatic maximum (c)	Facial index, total $\frac{(a\times100)}{c}$	Facial index, upper $\frac{(b\times100)}{c}$	Basion-alveolar point	Basion-subnasal point	Basion-nasion	Facial angle	Alveolar angle	Height of symphysis
332506	[1] 12.1	7.5	12.7	*95.3*	*59.1*	9.9	8.8	−10	−69	−54	3.8
332520	----------	6.9	13.3	----------	*51.9*	10.6	9.4	9.7	−63	−52	-------
332508	[2] 10.8	−7	12.6	*85.7*	*55.6*	9.6	8.5	9.9	−71	−51	−3
332519	----------	6.7	12.1	----------	*55.4*	9.3	7.8	8.8	64.5	42.5	-------
332510	+11.6	−7	−12	*96.7*	*58.3*	9.7	8.4	9.5	−67	−51	3.7
332504	[1] 13.1	−8	13.6	*91.8*	*56*	10.4	9.1	10.5	−68	54.5	3.9
332525	([3])	-------	12.9	----------	----------	-------	8.7	9.9	-------	-------	3.6
332505	[4] 11.8	6.8	12.8	*92.2*	*53.1*	9.5	8.4	9.6	−70	−51	3.7
332522	----------	7.1	13.3	----------	*54.1*	9.2	8.6	−10	74.5	−64	-------
332751	[4] 11	6.7	13.1	*−84*	*51.1*	9.6	8.5	9.3	−67	48.5	3.35
	(6)	(9)	(10)	(6)	(9)	(9)	(10)	(10)	(9)	(9)	(7)
Totals	70.4	63.7	128.4	----------	----------	87.8	86.2	97.2	-------	-------	25.05
Averages	*11.73*	*7.08*	*12.84*	*91.7*	*55.1*	*9.76*	*8.62*	*9.72*	*−68*	*−52*	*3.58*
Minimum	10.8	6.7	−12	*−84*	*51.1*	9.2	7.8	8.8	−63	42.5	−3
Maximum	13.1	−8	13.6	*96.7*	*59.1*	10.6	9.4	10.5	74.5	−64	3.9

Catalogue No.	Orbits: Height, right, left	Breadth, right, left	Orbital index, mean	Nose: Height	Breadth, maximum	Nasal index	Palate: External length (a)	External breadth, maximum (b)	Palatal index $\left(\frac{a\times100}{b}\right)$
332506	3.55 3.6	3.8 3.8	*94.1*	5.5	2.2	*40*	5.2	6.1	*85.2*
332520	3.3 3.4	3.7 3.7	*90.5*	4.75	2.4	*50.5*	5.4	6	*90*
332508	3.7 -------	4 ----------	*92.5*	5.2	2.5	*48.1*	5.2	5.8	*89.7*
332519	3.4 3.5	3.7 3.65	*93.9*	4.7	2.3	*48.9*	5.4	5.5	*98.2*
332510	3.3 3.2	3.55 3.55	*91.6*	4.7	2.3	*48.9*	5.3	6.4	*82.8*
332504	3.7 3.65	3.95 4.05	*91.9*	5.4	2.15	*39.8*	5.7	6.7	*85.1*
332525	----------	----------	*85.5*	5.15	2.2	*42.7*	-------	----------	----------
	3.25	3.8							
332505	3.8 3.6	3.95 3.85	*94.9*	4.9	2.35	*48*	5.3	5.8	*91.4*
332522	3.7 3.6	3.95 3.95	*92.4*	5.45	2.3	*42.2*	5	6.6	*75.8*
332751	3.1 3.2	3.8 3.7	*84*	5	2.4	*48*	5.3	6.5	*81.5*
Right	(9)	(9)	(9)						
Left	(9)	(9)	(9)	(10)	(10)	(10)	(9)	(9)	(9)
Total r	31.55	34.4	-------	50.75	23.1	-------	47.8	55.4	----------
Total l	31	34.05							
Average r	*3.51*	*3.82*	*91.7*	*5.07*	*2.31*	*45.5*	*5.31*	*6.16*	*86.3*
Average l	*3.44*	*3.78*	*91*						
Minimum r	3.1	3.55	-------	4.7	2.15	*39.8*	5	5.5	*75.8*
Minimum l	3.2	3.55							
Maximum r	3.8	4	-------	5.5	2.5	*50.5*	5.7	6.7	*98.2*
Maximum l	3.65	4.05							

[1] Slight. [2] Cons. [3] Medium. [4] Moderate. [5] U. medium; l. mod.

Skeletal Parts

There are seven adult skeletons of males and seven of females. For present purposes it will suffice to take the males alone and to restrict consideration to the long bones. The essential data on these are given on page 160, where they are contrasted with those of North American Indians in general, and with those of the western Eskimo.

The bones show both relations to as well as differences from the bones of Indians in general and fair distinctness from those of the Eskimo.

Contrasted with the long bones of miscellaneous North American tribes taken together, the Yukon Indian bones show absolutely slightly shorter humerus (or arm), somewhat shorter radius (or forearm), a slightly shorter femur (or upper part of the leg), and a plainly shorter tibia. These Indians had therefore relatively somewhat shorter forearm and especially the leg below the knees than their continental cousins. These facts are plainly evident from the radio-humeral and tibio-femoral indices of the two groups. In this relative shortness of the distal parts of the limbs the Yukon Indian approaches the Eskimo, standing near midway between the Indian in general and the Eskimo. There might be a ready temptation to attribute this to a mixture with the Eskimo; but an examination of the records will show that the same condition, so far at least as the upper limb is concerned (lower?), is already present in the old Bonasila skeleton, which gives no suggestion of an Eskimo mixture. It is more likely, therefore, that these are generalized characteristics of functional origin such as a considerable use of the small canoes. This view seems to be supported by the relative strength of the bones. In the Yukon Indian the humerus is stouter, the femur of the same strength, and the tibia very perceptibly weaker than they are in Indians in general. In the Eskimo, with even greater dependence on the canoe, both the humerus and the femur are notably stouter, while the tibia is weaker, than are similar bones in the Indians in general.

The humero-femoral index in the Yukon Indians is unusually high, indicating a relative shortness of the femur. This character is not present in the Eskimo, nor in the continental Indian. It is probably also of old functional origin, though this for the present must remain a mere suggestion.

All of this shows clearly the interest and value of other skeletal parts than the skull, and particularly of the long bones, for anthropological studies.

Skeletal Remains from the Bank at Bonasila

The skeletal material from the bank at Bonasila consists now of portions of three adult skulls, one male and two females, and of 13 bones of the male skeleton. All the specimens are more or less

stained by manganese and iron and all are distinctly heavier than normal, showing some grade of fossilization. They closely resemble in all these respects the numerous animal bones from the bank and in all differ from the later surface burials of the place.

THE CRANIA

The male skull, No. 332513, is represented by the frontal bone united with a larger part of the face, a separated left temporal, and the right half of the lower jaw. A large Inca bone, recovered from the beach a year later, may also belong to the same specimen. The missing parts are probably still somewhere in the sands of the beach where there is going on a very instructive scattering and redeposition on a 4 to 6 feet lower level of the contents of the old bank.

The skull is that of a male of somewhat over 50 years of age, judging from the moderate to marked wear of the remaining teeth. It is a normal undeformed specimen, and the same applies to the bones of the skeleton.

Notes and measurements.—The frontal shows a medium development, no slope. The supraorbital ridges are rather weakly developed for a male, leaving the upper borders of the orbits rather sharp.

	Cm.
Diameter frontal minimum	9.75
Diameter frontal maximum	11.8
Diameter nasion-bregma	11.5

The skull as a whole was evidently mesocephalic, and neither low nor very high. The thickness of the frontal is about medium for an Indian.

The face is of medium proportions and strength, with rather large orbits, good interorbital breadth, medium malars, medium broad nose, and but moderate alveolar prognathism. The nasal bridge is not high, nasal bones fairly broad, spine moderate, lower borders well defined though not sharp. The submalar (canine) fossae are shallow.

Measurements

Alveolar point-nasion height	cm	7.8	
Facial breadth about medium for an Indian.			
Nose:			
Height	cm	5.5	
Breadth, near	cm	2.75	
Index		*50*	
Left orbit:			
Height	cm	3.75	
Breadth	cm	4	
Index		*93.7*	
Minimum interorbital distance	cm	2.6	
Upper dental arch:			
Length, approximately	cm	5.6	
Breadth, approximately	cm	7	
Index, approximately		*80*	
Lower jaw:			
Height at symphysis approximately	cm	4.1	
Thickness at M_2 (with the tooth held midway between branches of compass)	cm	1.5	
Height of asc. ramus	cm	6.9	
Breadth minimum of asc. ramus	cm	3.7	

The condyloid process of the lower jaw is high, mandibular notch deep. The whole jaw is strong but not thick or massive. It is Indianlike, not Eskimoid, in all its features. The teeth are of good medium size.

Skull No. 333383.—Of this skull I brought the right parietal with about one-third of the frontal; Mr. Krieger, a year later, the remainder of the frontal. Other parts are missing.

The specimen was evidently a good-size female skull, normal, undeformed, probably mesocephalic in form, and moderately high. The thickness of the bones is not above moderate.

	Cm.
Diameter frontal minimum	9.7
Diameter frontal maximum	12.5
Diameter nasion-bregma	11.1

Skull No. 333950.—Of the third skull, recovered from the sands of the beach at low water in 1927 by Mr. Lawrence, there are only the two parietals. The specimen is that of a young adult female. The bones, rather submedium in thickness, indicate a skull of slightly smaller size and slightly shorter than the preceding but of much the same general type.

The skeletal parts of male No. 332513.—Humeri: The long bones all give the impression of straightness, length, and of a certain gracility of form combined with strength, but without massiveness. The right humerus presents a small but distinct supracondylar process, a rarity among Indians. The fossæ are not perforated. Measurements:

Length, maximum:		
Right	cm.	35.8
Left	cm.	35.3
Major diameter at middle:		
Right	cm.	2.5
Left	cm.	2.4
Minor diameter at middle:		
Right	cm.	1.65
Left	cm.	1.6
Index at middle:		
Right		*66*
Left		*66.7*
Type of shaft at middle, prismatic:		
Right	cm.	1
Left	cm.	1
Right radius:		
Length, maximum, near	cm.	27
Radio-humeral index, approximately		*75.5*

The shaft approaches type IV (quadrilateral). There is but small curvature.

Right ulna: Lacks the olecranon; shaft prismatic, with anterior and posterior surfaces fluted; but a moderate curvature backward upper third.

Femora:	
Length, bicondylar, right ---------- cm	48.2
Humero-femoral index	74.3
Diameter antero-posterior maximum at middle—	
Right ---------- cm	3.05
Left ---------- cm	3.2
Diameter lateral maximum at middle—	
Right ---------- cm	2.5
Left ---------- cm	2.65
Index at middle—	
Right	82
Left	82.8
Femora—Continued.	
Diameter maximum at upper flattening—	
Right ---------- cm	3.5
Left ---------- cm	3.7
Diameter minimum at upper flattening—	
Right ---------- cm	2.1
Left ---------- cm	2.25
Index at upper flattening—	
Right	60
Left	60.8
Type shaft at middle—	
Right	1
Left, near	1

The bones, especially the right, are remarkable for their graceful form and approach to straightness. The linea aspera is high but not massive or rough.

Right tibia: Length (?), extremities wanting. A moderate physiological curvature forward, middle third.

Diameter antero-posterior at middle, right ---------- cm	3.25
Diameter lateral at middle ---------- cm	1.95
Index at middle	60

The bone is distinctly platycnaemic, as the femora are platymeric and the humeri platybrachic, a harmony of characters which is often met with in the continental Indian.

ADDITIONAL PARTS

These include four ribs, the atlas and two lumbar vertebræ. The first rib approaches the semicircular in type and is rather large, indicating a spacious chest. Otherwise there is nothing special.

A comparison of the long bones of this interesting skeleton with those of the later Indians from the same and near-by localities as well as with those of the western Eskimo (see table, p. 160) shows a number of striking conditions. The length of the bones of the skeleton is far above the mean of both those of Indians and the Eskimo, indicating a stature of at least 10 centimeters (4 inches) higher. In none of their characteristics are the bones near to those of the Eskimo, making it doubly certain that the subject was not of that affiliation. Compared with those of the later Indians of the same territory, the bones show in one line remarkable differences, in another remarkable likenesses. The differences concern all the relative proportions of the shafts—the bones of the old skeleton give without exception indices that are markedly lower; they are distinctly more platybrachic, platymeric, and platycnaemic. But the more basic humero-femoral and radio-humeral indices are practically

the same; showing fundamental identity. The humero-femoral index is especially important in this case. It is exceptionally high in the Yukon Indians, due to a relatively long humerus, and the same condition is seen in the old skeleton. It seems safe, therefore, to conclude that the owner of the old skeleton was not only an Indian but an Indian of the same physical stock from which were derived the later Indians of the Yukon; but he was evidently of an earlier and different tribe or of a purer derivation than those who followed. To more fully establish and then trace this type, both as to its derivation and extension, will be tasks of future importance.

YUKON INDIANS: MAIN LONG BONES

SEX: MALES [1]

Paired bones	Yukon Indians		Miscellaneous North American Indians	Western Eskimos
	Older skeleton at Bonasila	From Russian times		
Humerus:	(2)	(10)	[2] (378)	[3] (76)
Mean length	35.55	31.17	31.8	30.88
At middle—				
Diameter, major	2.45	2.38	2.22	2.42
Diameter, minor	1.68	1.67	1.63	1.82
Index	*66.4*	*70*	*73.1*	*75.2*
Radius:	(1)	(10)	(378)	(76)
Mean length	n. 27	23.61	24.7	22.85
Radio-humeral index	n. *75.5*	*75.7*	*77.7*	*74*
Femur:	(2)	(14)	[2] (902)	(84)
Mean length (bicondylar)	48.2	41.92	42.7	42.70
Humero-femoral index	*74.3*	*74.5*	n. *72.5*	n. —*72*
At middle—				
Diameter, antero-posterior, maximum	3.12	2.96	2.95	3.03
Diameter, lateral	2.57	2.58	2.58	2.71
Index	*82.4*	*87.1*	*87.3*	*89.5*
At upper flattening—				
Diameter, maximum	3.60	3.25	3.27	3.37
Diameter, minimum	2.18	2.30	2.42	2.48
Index	*60.4*	*70.7*	*74*	*73.5*
Tibia:	(1)	(14)	(324)	(84)
Mean length		34.19	36.9	33.61
Tibio-femoral index		81.5	84.4	78.7
At middle—				
Diameter, antero-posterior, maximum	3.25	3.04	3.28	3.10
Diameter, lateral	1.95	2.	2.16	2.12
Index	*60*	*66*	*65.8*	*68.5*

[1] See also data in writer's "Physical Anthropology of the Lenape," etc., Bull. 62, Bur. Amer. Ethn., Washington, 1916; and his "Anthropology of Florida," Fla. Hist. Soc. Pub. No. 1, Deland, Fla., 1922.

[2] These numbers apply to length only; under the other items the numbers are in some cases smaller, in some larger. The differences are due to defects in some of the old bones.

[3] See also data on p. 165.

The Yukon Eskimo

THE LIVING

As with the Indians farther up the river, the necessities of the writer's journey did not permit more than visual observations, but in 1927 Henry B. Collins, jr., succeeded in measuring six adult males at Marshall.

In general, the people of the Yukon delta and from this to Paimute are true Eskimo. By this is meant that in the majority of individuals they can readily be told as a type apart from the Indian and belonging plainly to that of the extensive family of the Eskimo. But when the differences are to be defined the task is not easy; some of the distinguishing marks, though well appreciated, are somewhat intangible.

The physical differences are essentially those of the physiognomy. The head is neither narrow nor scaphoid, or even very high. The Indian face is more prominent and more sculptured; that of the Eskimo appears fuller, especially in the lower part, and flatter. Part of this is due to the bony structure, part to the differing amounts of fat. An eversion of the angles of the lower jaw, which is relatively frequent and sometimes excessive in the Eskimo male while almost absent in the Indian, may give the Eskimo face almost a square appearance. Take with this the seemingly somewhat low Eskimo forehead, the not very widely open and somewhat on the whole more slanting eye, and the characteristic Eskimo nose with its rather narrow and not prominent nasal bridge, the ridiculous monklike cut of the hair (in the older males), the often rather full lips with, in the males, a tuft of sparse mustache above each corner of the mouth; add to all this a mostly smiling or ready-to-smile "full-moon" expression, and it would be impossible to take the subject for anything else than an Eskimo. The Indian's face is more set, less fat, in the males at least, less broad below, with seemingly a higher forehead, sensibly made-up hair, not seldom a bit more mustache, and a nose that generally is both broader and more prominent.

But the differences are less marked in the women and still less so in the children, especially where similarly combed and clothed. And there are, particularly on the Yukon, not a few of both Indian and Eskimo who even an expert is at a loss where to class. They may be due to old mixtures; no new ones are taking place; but it seems that there may be present another important factor, that of a far-back related parentage.

In the color of the skin and eyes, in the color and nature of the hair, there is no marked difference between the two peoples of the Yukon. In stature the Eskimos are slightly higher.

MEASUREMENTS ON LIVING YUKON ESKIMO

The exact provenience of the six men measured at Marshall is uncertain, but they seemingly were all from the lower Yukon and all were apparently full-blood Eskimo. But the measurements are rather peculiar. They are given, for comparison, with those of the western Eskimo in general (p. 165). They approach nearest to those of the Togiak Eskimo, well down below the Kuskokwim. They show a higher stature than all of their relations farther south, except the Togiaks, and they have a rounder head. They are, in fact, moderate brachycephals, a very unexpected form in this strain of people. The Togiaks also are brachycephalic. The vault is relatively somewhat higher than it is in the other groups, though the height is not excessive. The nose is slightly lower as well as narrower than it is in all the other contingents. The face is close to those of St. Lawrence Island. The ear is perceptibly smaller and especially narrower than elsewhere, but perhaps the age factor enters into the case. The hand is much like that of Togiak and St. Lawrence, the index being identical.

The brachycephaly of the group for the present is hard to explain. It can not be ascribed to a mixture with the river Indians, for these, as has been seen from the skulls, were meso- rather than brachycephalic. There is need here for further inquiry.

SKELETAL REMAINS OF YUKON ESKIMO

As with the Indian, such remains are still rare. Some measurements of three "Smithsonian Mahlemute" skulls from the Yukon, collected by William H. Dall, are given by Jeffries Wyman, and probably the same specimens appear in the Otis Catalogue, the measurements in which are regrettably not very reliable. These specimens can not now be located, and the scarce data are of but little value. The three skulls examined by Wyman were all mesocephalic.

It is now possible to report on 40 adult skulls from the lower Yukon and the delta. An abstract of the measurements is given in the next table. The data indicate a considerable local variation. All the skulls, or very nearly all, are mesocephalic; but they differ considerably in height and in all the facial features. The Pilot Station group, from the apex of the delta, and hence the midst of the Eskimo territory on the Yukon, is especially peculiar. Both the vault and the face, in the series as a whole, range from low to high, and much the same is true of the height of the nose and that of the orbits, while the palate is exceptionally broad, giving a low index, all of which would seem to indicate instability or conditions in

change, together probably with admixtures from farther up the river. We need more material, particularly from the stretch of the river between the apex of the delta and Paimute.

YUKON ESKIMO CRANIA

UNITED STATES NATIONAL MUSEUM

	17 males				23 females			
	Pilot Station	"Lower Yukon"	Kashunok (of Yukon)	Kotlik and Pastolik	Paimute	Pilot Station	Kashunok mouth	Kotlik and Pastolik
Number of adult skulls	(3)	(1)	(2)	(11)	(1)	(3)	(1)	(18)
Collector		(1)	(2)	(3)	(3)		(2)	(3)
Vault:								
Length	18.90	18.8	18.45	18.44	18.7	17.80	18.7	17.72
Breadth	15.07	14.2	14.10	13.90	14	14	13.9	3.62
Height	13.77	13.7	13.65	13.60	n.13.5	13.20	12.4	13.04
Module	15.91	15.57	15.40	15.31	15.40	15	15	14.81
Capacity	1,660	1,535	1,468	1,486		1,442		1,359
Cranial index	*79.7*	*75.5*	*76.4*	*75.4*	*74.9*	*78.7*	*74.3*	*76.8*
Mean height, index	*81.6*	*83*	*83.9*	*84.1*	*n.82.3*	*83*	*76.1*	*88.2*
Height-breadth, index	*91.4*	*96.5*	*96.8*	*97.8*	*n.96.4*	*94.3*	*89.2*	*96.8*
Face:								
Menton-nasion	12.40			12.67		11.90		11.82
Alveolar point-nasion	7.85	7.1	8.25	7.78		7.40		7.49
Diameter bizygomoticmaximum	14.97	14.4	14.25	14.13		13.47	13.90	13.26
Facial index, total	*82.4*			*90.1*		*89.1*		*89*
Facial index, upper	*52.2*	*49.3*	*57.9*	*55*		*55*		*56.5*
Orbits:								
Mean height	3.58	3.55	3.80	3.67		3.54	3.50	3.62
Mean breadth	4.07	4	3.91	3.98		3.89	3.80	3.86
Mean index	*87.7*	*88.7*	*97.1*	*92.3*		*91*	*92.1*	*94.1*
Nose:								
Height	5.27	5.05	5.65	5.53		5	5.50	5.19
Breadth	2.57	2.15	2.28	2.51		2.33	2.45	2.31
Index	*48.7*	*42.6*	*40.3*	*45.4*		*46.7*	*44.5*	*44.5*
Upper alveolar arch:								
Length	5.70	5.4	5.4	5.57		5.40		5.45
Breadth	7.40	6.6	6.65	6.70		6.60		6.38
Index	77	*81.8*	*81.2*	*83.4*		*81.8*		*85.4*
Basi-facial diameters:								
Basion-alveolar point	10.35	n.10.3	10.15	10.40		10.17		10.09
Basion-subnasal point	9.07	9.4	9.10	9.17		8.80	8.90	8.86
Basion-nasion	10.60	10.8	10.15	10.41		9.97	10.20	9.98
Facial angle	70	74	66	68		67		67
Alveolar angle	55	60	60	52		52		53
Height of lower jaw at symphysis	3.63			3.75		3.67		3.56

[1] Howgate & Schwatka Exp. [2] Rev. P. I. Delon. [3] A. Hrdlička.

SKELETAL PARTS OF THE YUKON ESKIMO

The next table gives the measurements of the long bones in both sexes in the Yukon Indian (for comparison), in the Yukon Eskimo, and in the western Eskimo, the latter coming mainly from the coast

south of the Yukon and from the Nunivak and St. Lawrence Islands. The Yukon Eskimo material, collected from intact burials by the writer, is unfortunately limited to the northern mouth of the river. The skeletons from St. Lawrence Island were collected on the Smithsonian expedition to the place in 1912 by Riley D. Moore, 1927 expedition by H. B. Collins, jr., and T. D. Stewart, all of the National Museum.

The Yukon Eskimo show perceptibly longer bones than do either the Indians or the southeastern and midwestern Eskimo, indicating a somewhat taller stature.

The humerus in the males is less broad than either in the Indians or the midwestern and southwestern Eskimo and has as a consequence high shaft index; but in the females the index in the Yukon and western Eskimo series is identical. The radius is relatively even shorter in the Yukon that it is in the other Eskimo, giving low radio-humeral index.

The femur is notably less platymeric in the male and slightly less so in the female Yukon Eskimo than it is in both the Indians and the rest of the southwestern and midwestern Eskimo, giving a higher index at the upper flattening. The meaning of these facts is not obvious and they may undergo some modification with more material.

As to strength, measured by the mean diameter of the shafts, the Yukon Eskimo in comparison to the southwestern and midwestern show a slightly weaker humerus, and in the males a slightly weaker femur at middle, but in the males again, a slightly stronger tibia. If, however, the mean diameters of the bones are taken in relation to the length of the bones, then in both sexes and in all the parts the southwestern and midwestern Eskimo are slightly stronger. This would seem to indicate more exertion, with harder life, among the coastal and insular than among the river Eskimo. As a matter of fact Kotlik and the near-by Pastolik, from which our skeletons came, were favorably situated at the northern mouth of the river.

The Yukon Eskimo females, as compared with the males, have a somewhat weaker and especially somewhat flatter humerus, with a consequently lower shaft index; they have relatively even a shorter radius, giving a lower radio-humeral index; their humerus itself is relatively short, giving a lower humero-femoral index; their femur is relatively somewhat flatter at the upper flattening, giving a lower index of platymery; while their tibia is relatively less strong antero-posteriorly, resulting in an index that is more than four points higher than that of the males.

YUKON INDIAN, YUKON ESKIMO, AND WESTERN ESKIMO LONG BONES [1]

Paired bones of the two sides	Male			Female		
	Yukon Indian	Yukon Eskimo	Southwestern and midwestern Eskimo	Yukon Indian	Yukon Eskimo	Southwestern and midwestern Eskimo
Humerus:	(10)	(16)	(143)	(4)	(16)	(136)
Mean length (rigbt and left)	31.17	32.10	30.69	28.12	28.31	28.40
At middle—						
Diameter, major	2.38	2.33	2.40	1.90	2.07	2.10
Diameter, minor	1.67	1.80	1.80	1.40	1.51	1.54
Index	*70*	*78.2*	*75.1*	*73.7*	*73.2*	*73.2*
Radius:	(10)	(16)	(98)	(4)	(16)	(109)
Mean length	23.61	23.44	22.90	21.10	20.18	20.50
Radio-humeral index	*75.7*	*73*	*74.5*	*75*	*71.3*	*72.2*
Femur:	(14)	(22)	(195)	(8)	(27)	(132)
Mean length (bicond.)	41.92	43.78	42.50	40.15	41.11	39.36
Humero-femoral index	*74.5*	*n. 73*	*72.2*	*73*	*n. 69*	*72.2*
At middle—						
Diameter antero-posterior maximum	2.96	3.05	3.08	2.59	2.74	2.69
Diameter lateral	2.58	2.67	2.70	2.45	2.44	2.46
Index	*87.1*	*87.6*	*87.6*	*94.7*	*88.8*	*91.5*
At upper flattening—						
Diameter, maximum	3.25	3.31	3.35	2.84	3.02	3.02
Diameter, minimum	2.30	2.57	2.51	2.16	2.27	2.26
Index	*70.7*	*77.4*	*75*	*75.8*	*75.4*	*74.5*
Tibia:	(14)	(22)	(141)	(8)	(27)	(147)
Mean length (I. A.)	34.19	35.14	33.86	31.97	32.01	31.32
Tibio-femoral index	*81.5*	*80.3*	*79.7*	*79.6*	*79.8*	*79.6*
At middle—						
Diameter, antero-posterior maximum	3.04	3.16	3.12	2.72	2.61	2.71
Diameter, lateral	2	2.15	2.12	1.82	1.90	1.89
Index	*66*	*68.3*	*67.9*	*66.9*	*72.8*	*69.9*

[1] See also data on p. 160.

NOTES ON THE ARCHEOLOGY OF THE WESTERN ESKIMO REGION

Archeological work in the vast area of the western Eskimo is still in its infancy. Until the 1926 Smithsonian expedition nothing whatever had been done in this line in the Eskimo parts of the southwestern coasts of Alaska [25] or on the Kuskokwim or Yukon Rivers.

Some time between 1877 and 1881 E. W. Nelson made limited excavations on St. Michael Island [26] (see p. 170) and also dug on Whale Island.

[25] Dall, W. H., and Jochelson, W., made, as is well known, valuable excavations in the Aleutian Islands; but the Aleuts were not Eskimos. (See Cat. of Crania, etc., U.S.N.M., 1924, 39.)

[26] Nelson, E. W., The Eskimo About Bering Strait; Eighteenth Ann. Rept. Bur. Amer. Ethn., pt. 1, Washington, 1899, p. 263.

In 1912 V. Stefánsson excavated at Barrow.[27] Having two months to spend at this place he engaged numerous Eskimo of the village and had them excavate the native village sites in the neighborhood. He says (p. 388): "It was a small army that turned out to dig wherever there was a ruin or a kitchen midden, and they worked energetically and well. While the excavations were not done as methodically and scientifically as could have been wished, still we were able to get from them a collection of over 20,000 archaeological specimens within the space of six weeks. This collection (which is now safely stored in the American Museum of Natural History) brings out many significant and some revolutionary ideas with regard to the prehistoric history of the Eskimo. My method was to dig as much as possible myself, and to go around as best I could to see the others at work. In many cases I was able to see the exact position from which the important finds were taken." The specimens have since in part been described by Wissler.[28] Stefánsson brought also some archeological specimens from Point Hope, where, however, no excavations were made; and collected a valuable series of crania from Point Barrow.

In 1917–19 excavations near Barrow were conducted by W. B. Van Valin, leader of the John Wanamaker expedition to northwestern Alaska, for the University Museum at Philadelphia. The excavations were made in some mounds located about 8 miles southwest of Barrow and about 1,000 yards back from the beach on the tundra, and uncovered six old igloos containing, aside from many cultural objects, the skeletal remains of 83 individuals. These remains have since been found to be those of an intrusive group of people and to be of special interest.[29]

In 1924 Rasmussen during the last parts of his great journey gathered numerous archeological specimens at Point Hope and from other localities along the west coasts of Alaska.

In 1926, finally, the year of my survey, some careful initial excavations, with very interesting results, were carried on at Wales and on the Little Diomede Island by Dr. D. Jenness, of the National Museum of Canada, Ottawa. A preliminary report on the results of this work has been published in the annual report of the National Museum of Canada for 1926.

Besides such more professional work a good deal of archeological collection has been done in the regions under consideration by local people, particularly traders and teachers; and the demand for speci-

[27] My Life with the Eskimo, N. Y., 1913, 387, 388. See also his The Stefánsson-Anderson Arctic Expedition: Preliminary Ethnological Report. Anthrop. Papers Am. Mus. Nat. Hist., XIV, N. Y., 1914.

[28] Wissler, Clark, Harpoons and Darts in the Stefánsson Collection. Anthrop. Papers Am. Mus. Nat. Hist., N. Y., 1916, XIV, 401–443.

[29] See section devoted to this find, p. 318.

mens has made assiduous excavators of some of the Eskimo themselves, particularly at Point Hope and at St. Lawrence Island.

Beginning with the north, the first white man to be mentioned in this connection is Charles Brower, the well-known trader at Barrow. Mr. Brower has not only aided all the explorers who have reached this northernmost point, but he has also been directly instrumental in excavating and the making of archeological collections, though, regrettably, some of these have been scattered.

During 1925–26 there lived at Point Hope a very active and interesting man, sent there by the Fox Film Co. to photograph the Eskimo—Mr. Merle La Voy. La Voy, whom I met at Point Hope and who for a time became our fellow-passenger on the *Bear*, had not only succeeded remarkably in his own line, but had also amassed during his stay a large archeological collection. He did not excavate himself, and unfortunately paid no attention to the scientific side of the case; but by offering the natives sugar, tea, chocolate, chewing gum, tobacco, etc. in exchange for specimens, he so stimulated them that they engaged most assiduously in the excavation, or rather picking over as they thawed, of their old ruins, and brought him thousands of objects, some of which are of considerable interest. At the time of my visit there were several barrels full of specimens, largely of stone and ivory. Skulls and bones, regrettably, were neglected and reburied in the débris. Later this collection was transported to San Francisco, where it remains at the date of this writing, in Mr. La Voy's possession.

At Kotzebue Mr. Tom Berryman, the trader, has made some collections of Eskimo archeological material, from which I benefited for the National Museum; and the local teacher, Mr. C. S. Replogle, informed me that he had a large collection at his home in the States.

At Nome I found a valuable lot of specimens in fossil ivory, pottery, and stone, in the possession of the well-known Lomen brothers, members of one of the foremost families in Alaska. The best parts of this collection I was fortunate to secure for exhibit in the United States National Museum.

A large and valuable collection of western Eskimo archeological material was made some years ago by Dr. Daniel Neuman. A part of this collection is in the museum at Juneau; the whereabouts of the rest and of Doctor Neuman himself I was unable to discover. There are several collections of archeological material from the western Eskimo region at Seattle and San Francisco, but none represents scientific excavation.

The names of Joe Bernard, Prof. H. N. Sverdrup, and O. W. Geist should be mentioned in this connection, all having collected archeological objects in the western Eskimo region. Many speci-

mens of value collected by these men and others are in various museums or in private hands in Fairbanks, along the west coast or in Europe.

My own small part in the archeology of Bering Sea and the northwestern coast of Alaska was, as already stated, mainly that of making a survey of conditions. The object was to obtain a good general view of what there was in the line of archeological sites and remains, and thus help to lay a foundation for more organized research in the future. In addition all possible effort was made to collect and obtain specimens of distinct archeological value. Both of these endeavors met with results of some importance.

Old Sites in the Region of the Western Eskimo

The shores of the Alaska rivers, the littoral parts of Alaska, the more northern Bering Sea islands, and those portions of the Asiatic coast that were once or are still occupied by the Eskimo, are strewn with "dead" villages and old sites. Many of these dead villages or sites are historic, having been abandoned, or very nearly so, since the coming of the whites; some are older, in instances doubtless considerably older. Collectively they offer a large, almost wholly virginal and highly important field to American archeology. They may contain much of the secrets of Eskimo origin and of his cultural, as well perhaps as physical, evolution. But these secrets are not to be given up easily. They are held within a perpetually frozen ground, which on one hand preserves everything, but on the other will not yield its contents except to assiduous and prolonged labor.

Ruined or "dead" villages began to be encountered by the earliest Russian and other explorers. Beechey (1826) tells us that between approximately the latitude of Nelson Island and Point Barrow (60° 34′ to 71° 24′ N.) they noticed 19 (Eskimo) villages, some of which were very small and consisted only of a few huts, and others appeared to have been deserted a long time.[30]

Hooper, in 1884, reports Eskimo ruins on the Asiatic side:

"Near the extremity of the cape [Wankarem] we found the ruins of houses similar to those now in use by the Innuits, half underground, with frames of the bones of whales. Probably they were former dwellings of Innuits, who for some reason crossed the straits and attempted to establish themselves on the Siberian side. These houses have been found by different travelers at many places along this coast, and various causes assigned for the abandonment of the attempt to settle here by the Innuits. * * *

[30] Beechey, F. W., Narrative of a Voyage to the Pacific and Bering's Strait. Phila., 1832, 474.

"At Cape Wankarem and at other places on the Siberian coast we found the ruins of houses similar to those now in use by the Innuits. These houses, which have been found by different travelers at many places along that coast, are not at all like those used by the Tchuktchis, which, on account of the migratory habits of the reindeer tribes, are so constructed that they can be taken down and put up again at will." [31]

Ray and Murdoch both speak of old sites. The very spot they selected for their observatory at Barrow was one of these. Ray says of it:

"A point about 12 feet above the sea level, lying between the sea and a small lagoon three-fourths of a mile northeast from Uglaamie, was finally selected. The soil was firm and as dry as any unoccupied place in that vicinity, and as it was marked by mounds of an ancient village would be free from inundation." [32]

And farther on:

"That the ancestors of those people have made it their home for ages is conclusively shown by the ruins of ancient villages and winter huts along the seashore and in the interior. On the point where the station was established were mounds marking the site of three huts dating back to the time when they had no iron and men 'talked like dogs'; also at Perigniak a group of mounds mark the site of an ancient village. It stands in the midst of a marsh; a sinking of the land causing it to be flooded and consequently abandoned, as it is their custom to select the high and dry points of land along the seashore for their permanent villages. The fact of our finding a pair of wooden goggles 26 feet below the surface of the earth, in the shaft sunk for earth temperatures, points conclusively to the great lapse of time since these shores were first peopled by the race of man." [33]

The village of Sidaru, southwest of Cape Belcher, which in Ray's time had a population of about 50, has since gone "dead."

The most direct attention to this subject has been given by Nelson. In his excellent large memoir on "The Eskimo about Bering Strait" [34] he states as follows:

"Ruins of ancient Eskimo villages are common on the lower Yukon and thence along the coast line to Point Barrow. On the Siberian

[31] Hooper, C. L., Report of Arctic Cruise of the Revenue Steamer *Corwin*, 1881. Washington, 1884, 63, 99.

[32] Ray, Lieut. P. H., Report of the International Polar Expedition to Point Barrow, Alaska. Washington, 1885, 22.

[33] Ray, P. H., Ethnographic Sketch of the Natives. Report of the International Polar Expedition to Point Barrow, Alaska. Washington, 1885, 37.

[34] Eighteenth Ann. Rept. Bur. Amer. Eth., pt. 1, Washington, 1900, 263 et seq.

shore they were seen from East Cape along the Arctic coast to Cape Wankarem. . . .

"On the shore of the bay on the southern side of St. Michael Island I dug into an old village site where saucer-shape pits indicated the places formerly occupied by houses. The village had been burned, as was evident from the numerous fragments of charred timbers mixed with the soil. In the few cubic feet of earth turned up at this place were found a slate fish knife, an ivory spearhead, a doll, and a toy dish, the latter two cut from bark. The men I had with me from the village at St. Michael became so alarmed by their superstitious feelings that I was obliged to give up the idea of getting further aid from them in this place. I learned afterward that this village had been built by people from Pastolik, at the mouth of the Yukon, who went there to fish and to hunt seals before the Russians came to the country.

"On the highest point of Whale Island, which is a steep islet just offshore near the present village of St. Michael, were the ruins of a kashim and of several houses. The St. Michael people told me that this place was destroyed, long before the Russians came, by a war party from below the Yukon mouth. The sea has encroached upon the islet until a portion of the land formerly occupied by the village has been washed away. The permanently frozen soil at this place stopped us at the depth of about 2 feet. Here, and at another ancient Unalit village site which was examined superficially, we found specimens of bone and ivory carvings which were very ancient, as many of them crumbled to pieces on being exposed.

"Along the lower Yukon are many indications of villages destroyed by war parties. According to the old men these parties came from Askinuk and Kushunuk, near the Kuskokwim, as there was almost constant warfare between the people of these two sections before the advent of the Russians.

"Both the fur traders and the Eskimo claim that there are a large number of house sites on the left bank of the Yukon,[35] a few miles below Ikogmut. This is the village that the Yukon Eskimo say had 35 kashims, and there are many tales relating to the period when it was occupied. At the time of my Yukon trips this site was heavily covered with snow, and I could not see it; but it would undoubtedly well repay thorough excavation during the summer months. One of the traditions is that this village was built by people from Bristol Bay, joined by others from Nunivak Island and Kushunuk. One

[35] This is the "village of 32 kashims," which I mention in the Narrative and of which I heard independently (p. 71). The present Eskimo claim that it existed on the right bank, about 12 miles below Russian Mission (Ikogmut). My visit and subsequently that of Mr. Chris Betsch, the kind and interested trader at Russian Mission, the latter with an old Eskimo, failed to definitely locate the site, but further efforts are desirable.

informant said that a portion of this village was occupied up to 1848, when the last inhabitant died of smallpox, but whether or not this is true I was unable to learn.

"Another informant told me that near the entrance of Goodnews Bay, near the mouth of the Kuskokwim, there is a circular pit about 75 feet in diameter, marking the former site of a very large kashim. A few miles south of Shaktolik, near the head of Norton Sound, I learned of the existence of a large village site. Both the Eskimo and the fur traders who told me of this said that the houses had been those of Shaktolik people, and that some of them must have been connected by underground passageways, judging from the ditchlike depressions from one to the other along the surface of the ground. The Shaktolik men who told me this said that there were many other old village sites about there and that they were once inhabited by a race of very small people who have all disappeared.

"From the Malemut of Kotzebue Sound and adjacent region I learned that there are many old village sites in that district. Many of these places were destroyed by war parties of Tinné from the interior, according to the traditions of the present inhabitants.

"On Elephant Point, at the head of the Kotzebue Sound, I saw the site of an old village, with about 15 pits marking the locations of the houses. The pits sloped toward the center and showed by their outlines that the houses had been small and roughly circular, with a short passageway leading into them, the entire structure having been partly underground.

"The Eskimo of East Cape, Siberia, said that there were many old village sites along the coast in that vicinity. These houses had stone foundations, many of which are still in place. There is a large ruined village of this kind near the one still occupied on the cape.

"On the extreme point of Cape Wankarem, and at its greatest elevation, just above the present camp of the Reindeer Chukchi, a series of three sites of old Eskimo villages were found."

To this, on pages 269 et seq., Nelson adds an account of the villages that "died" on St. Lawrence Island during the winter of 1879–80. Capt. C. L. Hooper, in the "Cruise of the Corwin in 1881, Notes and Observations" (published in Washington, 1884, p. 100) gives the date as 1878–79, and adds further details about these villages.

Present Location of Archeological Sites

Through personal visits, wherever possible, and through information from all available sources, an effort was made to locate and learn the character of as many of the old sites as could be traced. In this endeavor I was aided by many whose services are hereby gratefully acknowledged. Especial thanks are due to Captain Cochran

with the officers and men of the *Bear*, particularly Boatswain H. Berg; to the Lomen brothers and their esteemed father, at Nome; to Father B. La Fortune and the Reverend Baldwin at Nome; to Mr. Sylvester Chance, superintendent of the northwestern district, Bureau of Education; to Mr. Charles D. Brower, trader at Barrow; to Mr. Jim Allen, trader at Wainwright; and to Dr. E. P. Walker, head of the Biological Survey of Alaska. The list to follow, supplemented by maps, will give in brief the name, location, and description of the remains.

The old sites occur, (1) in the form of refuse heaps; (2) as late village sites, smaller or larger areas of ground covered with mostly circular elevations and depressions, with occasionally the wooden remains of igloos or kashims, or only partly ruined dwellings; such remains are the most common; (3) as old village sites in the form of a long irregular ridge mound or of more or less separate heaps; (4) as heaps or "mounds" of individual structures. And as "passed" sites, covered completely by sand or silt and unknown until uncovered through the washing away by the sea or rivers of some of the deposits.

In addition there are the remains of burial grounds which are occasionally marked by small low mounds or hummocks produced by decayed burials that have been more or less assimilated by the tundra. Stony beaches with chips, implements, etc., such as are found off old sites on the Yukon, have not been seen in the region now dealt with in any instance.

The ruined dwellings and communal houses throughout this region, with a few minor exceptions, were of one general type. They were circular, yurta-shaped, semisubterranean structures, with a more or less subterranean tunnel approach, built of hewn driftwood and earth. These dwellings, when the wood decays and the dome falls in, leave characteristic saucer-and-handle-like depressions. But where such dwellings were close, and especially where they were heaped up or superimposed on older ones, the remains, together with the refuse, may form an irregular elevated ridge or a large irregular mound.

On the Diomede Islands the dwellings are built of stone, and ruins of stone houses have been reported to me from inland of the westernmost parts of the Seward Peninsula. Stone dwellings were also known on Norton Sound.

Some of the ridges and heaps, as at Shishmaref, Point Hope, one of the Punuk Islands, etc., are large and may be up to 15 feet and over in depth, but mostly the remains are of moderate to small size. The latter sometimes could easily be confounded with natural formations. The older remains may superficially be indistinguishable even to an

experienced observer; and if there is anything still more ancient, it lies somewhere in the old sands and beaches where, except through some fortunate accident, it can not be discovered. Except for their surface, the remains are generally frozen hard, and no excavation is possible except through gradual exposure and the melting of layer after layer by the warmth of the sun or a melting of the ground with water or by some other artificial means.

Some at least of these ruins are rich archeologically. They greatly exceed in this respect a large majority of village ruins and mounds in the interior of the continent. This appears from their gradual excavation by the natives at Barrow, Point Hope, St. Lawrence Island, and elsewhere. The natives have now for many years been selling thousands of articles thus obtained to traders, teachers, and crews of visiting vessels. A regular and growing trade detrimental to archeology is now being carried on in "fossil ivory," which generally consists of pieces showing human workmanship and occasionally includes specimens of rare beauty and importance.

The archeological contents of such old sites as that near Savonga on the St. Lawrence Island, or those at Wales, Point Hope, Barrow, etc., are varied, and in instances exceedingly interesting. They comprise a large variety of objects of stone, ivory, bone, and wood, while in the more superficial layers are also found occasionally glass beads or objects of metal. Some ruins, such as those at Point Hope and Kotzebue, are very rich in stone objects; others, as those at the St. Lawrence Island, are rich in articles of ivory and bone. Pottery is generally scarce. Articles of stone comprise mainly points, knives, adzes, and lamps; those of wood, goggles and masks; of bone, various parts of sleds, a large assortment of snow and meat picks, and scrapers; of ivory, barbed points, harpoons, and lance heads, and a large variety of tools, fetishes, and ceremonial objects; of clay, a few dishes and pots for culinary purposes. Traces of objects made of whalebone or even birch bark may also appear.

The stones used were mainly slate and flint, but there may also be met with quartz, quartzite, and especially the Kobuk "jade." The workmanship is as a rule good to excellent. The arrow points show a number of interesting, not yet fully known, types, the long blade with parallel sides predominating. The stone lamps and rare dishes also need further study. The knives all approach the Asiatic semilunar variety.

The bones and wooden objects and the pottery from this region are fairly well covered by the writings of Ray, Murdoch, Nelson, Rau, Thomas, and others; the masks need further study.

The most interesting archeological specimens from the region of the western Eskimo, however, are some of those in "fossil ivory," the term being applied to walrus ivory that through long lying in

the ground has assumed more or less of a pearly yellow, variegated, sepia-brown or black color. These objects are known as yet very imperfectly. They are scarce at and especially north of Point Hope, and again along the west coast south of Norton Sound. Their center of frequency comprises seemingly the St. Lawrence Island, some parts of the Asiatic coast, the Diomedes, and parts of the Seward Peninsula. But they occur at least up to Point Hope, while west of Bering Strait they are said to appear as far as the river Kolyma.

Some of the objects in fossilized ivory show the well-known Eskimo art, with geometrical design. But besides these there occur here and there beautiful specimens, harpoon heads, figures, needle cases, etc., which are of the finest workmanship and which both in form and design differ from the prevailing Eskimo types. They are examples of high aboriginal art; and their engraved decorative lines are not geometrical but beautifully curvilinear. (Fig. 12.) The accompanying illustrations of specimens I succeeded in obtaining from different sources will show the nature of this art. (Pls. 19–26.) Isolated specimens of this nature have been secured before by Nelson, Neuman, Sverdrup, Stefánsson, and others. Jenness in 1926 dug out a few from the old sites at Wales. There are several in the Museum of the American Indian in New York. But the largest and best collection of these remarkable articles is now that of the United States National Museum.[35a]

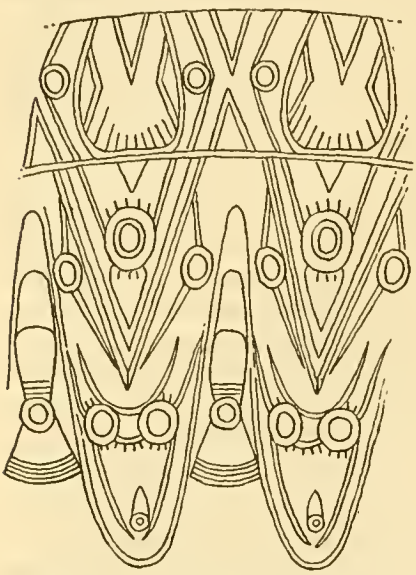
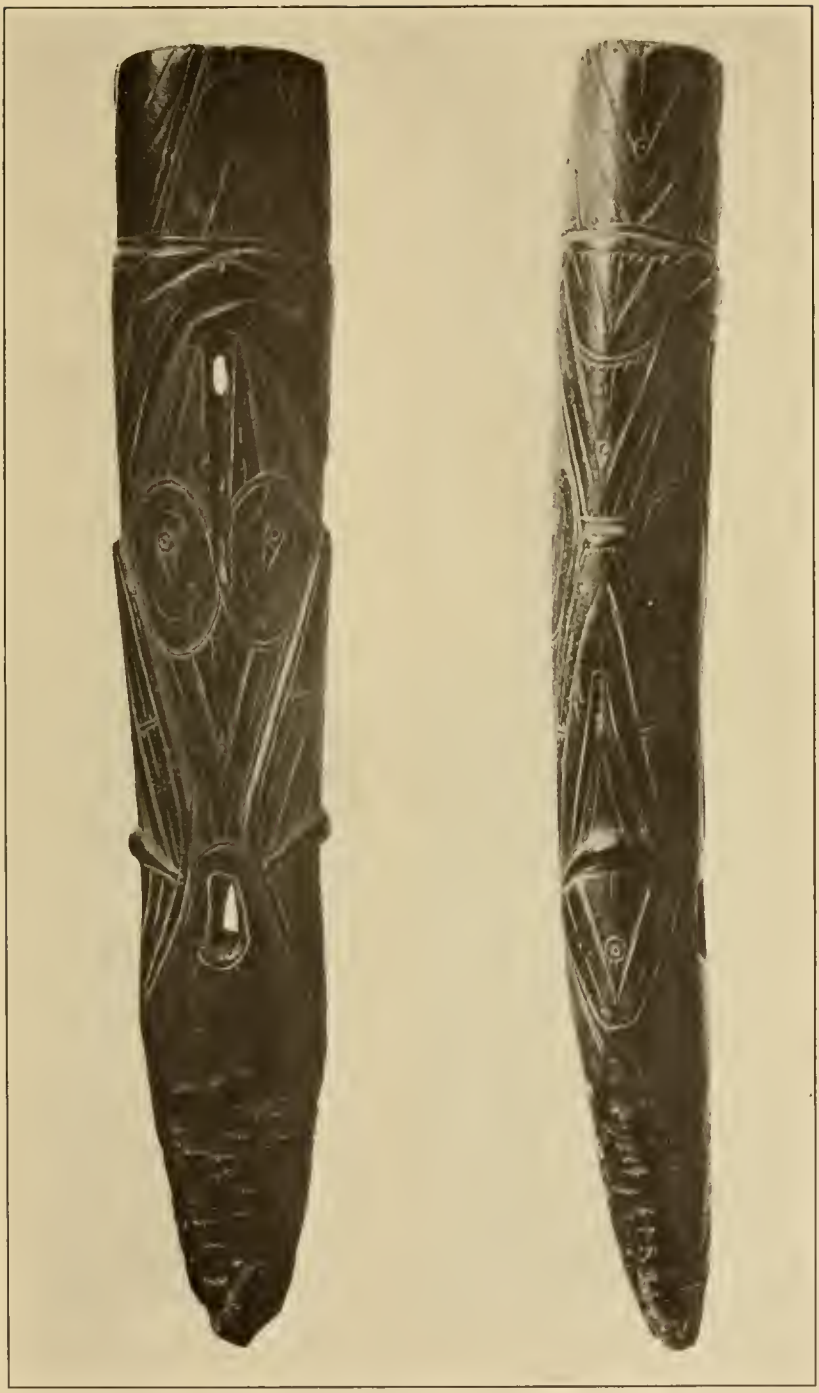


FIGURE 12.—Conventionalized design from fossil ivory specimen shown in Plate 19

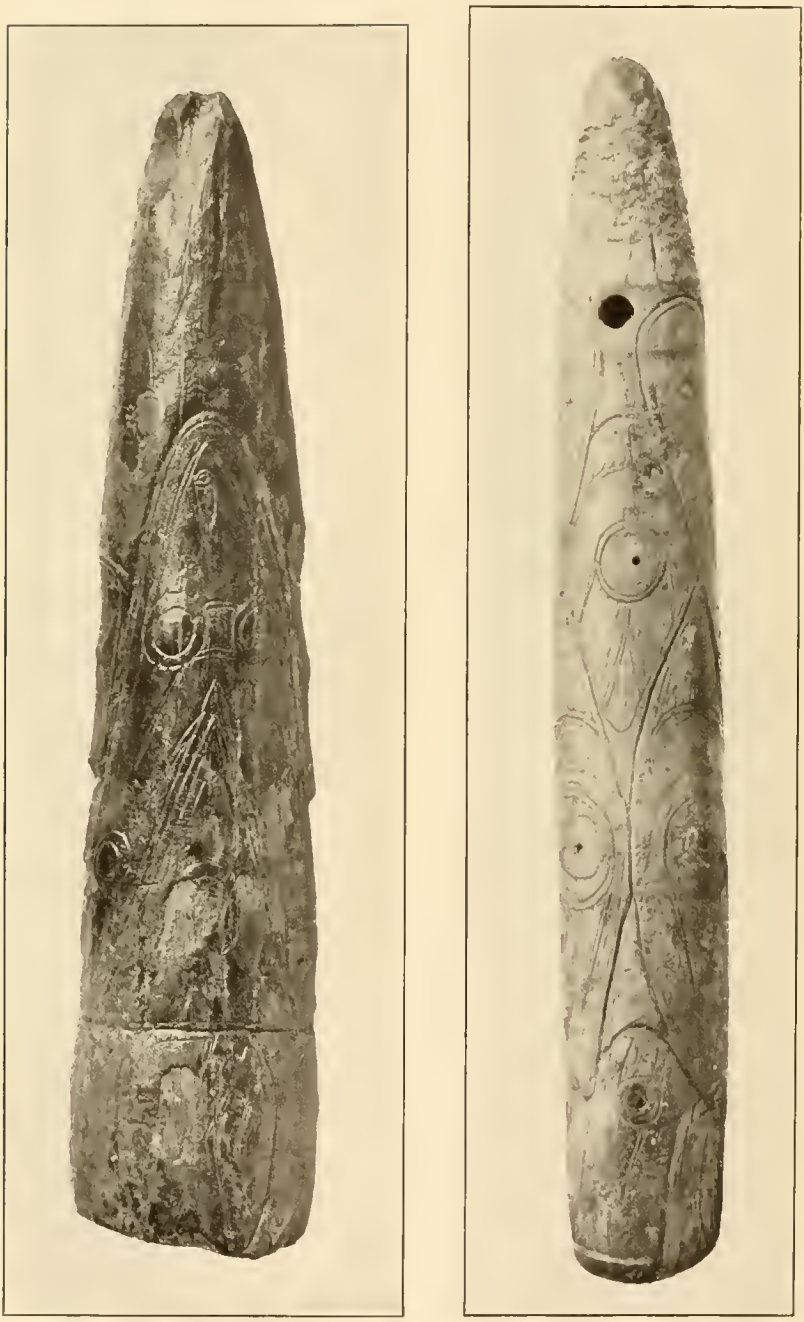
The large fossil ivory figure (20.3 cm. maximum length, pl. 26) collected by Mr. Carl Lomen and now in the National Museum is of special interest. It comes from the Asiatic side. It is a handsomely made piece, belonging in all probability to the high fossil ivory culture. Its peculiarity is the bi-bevel face, a face made by two planes rising to a median ridge. It is so far a unique specimen of its kind. But with the aid of Mr. H. W. Krieger, curator of ethnology, United States National Museum, we found similar bi-

[35a] MacCurdy described the first specimen of this kind in 1921 as "An Example of Eskimo Art," in Amer. Anthrop., vol. 23, No. 3, pp. 384–385. See also Collins (H. B., jr.), Prehistoric Art of the Alaskan Eskimo, Smith. Misc. Coll., vol. 81, No. 14, 52 pp., Washington, 1929.



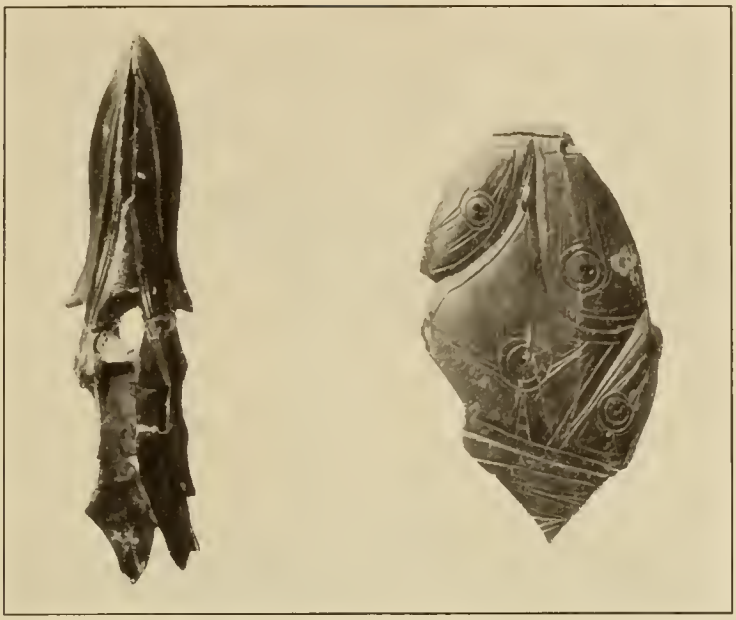
TERMINAL PIECE OF A LANCE OR HARPOON. NORTHERN BERING SEA

Black, high natural polish. Most beautiful piece of the fossil ivory art. (A. H., 1926, U.S.N.M.)



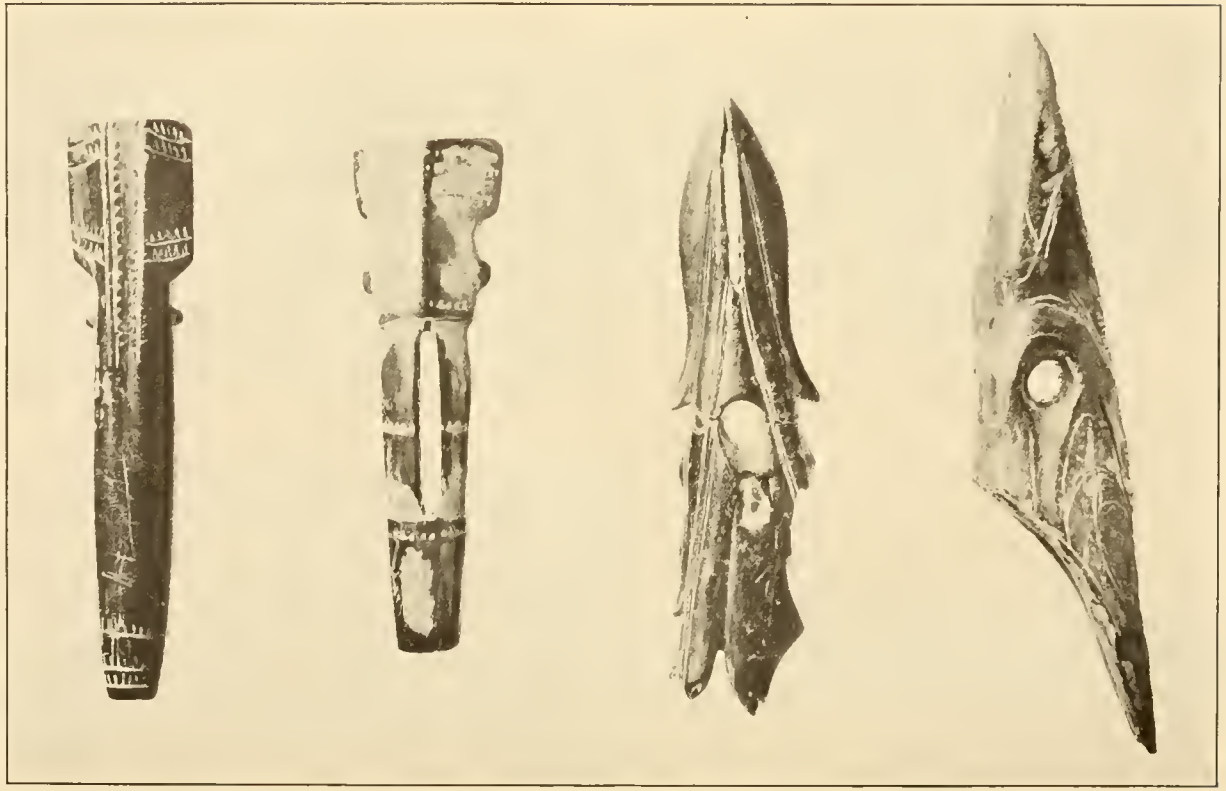
FOSSIL IVORY SPECIMENS SHOWING THE OLD CURVILINEAR DESIGNS. NORTHERN BERING SEA

(A. H. coll., 1926, U.S.N.M.)



OBJECTS SHOWING THE OLD FOSSIL IVORY ART. NORTHERN BERING SEA

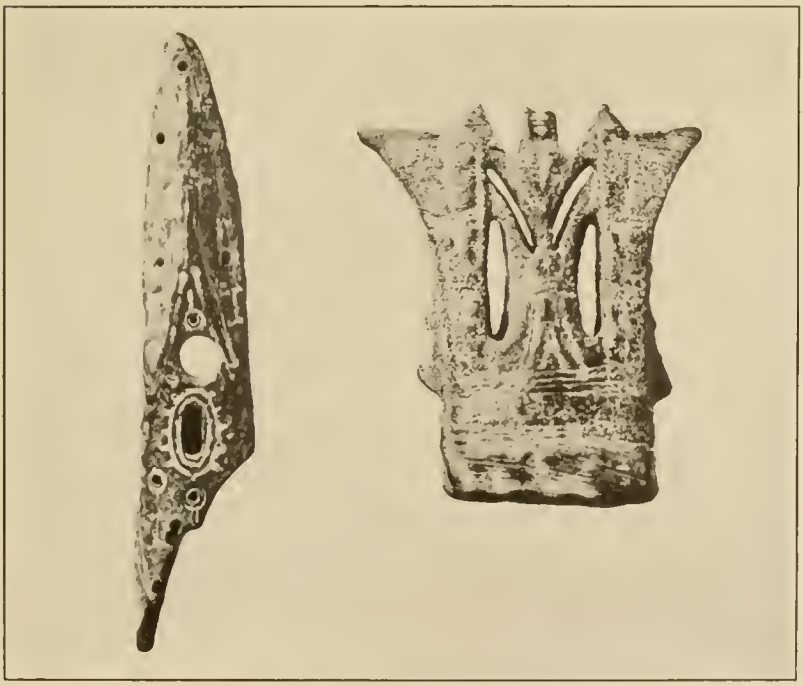
(U.S.N.M., Nos. 1 and 3, coll. A. H., 1926.)



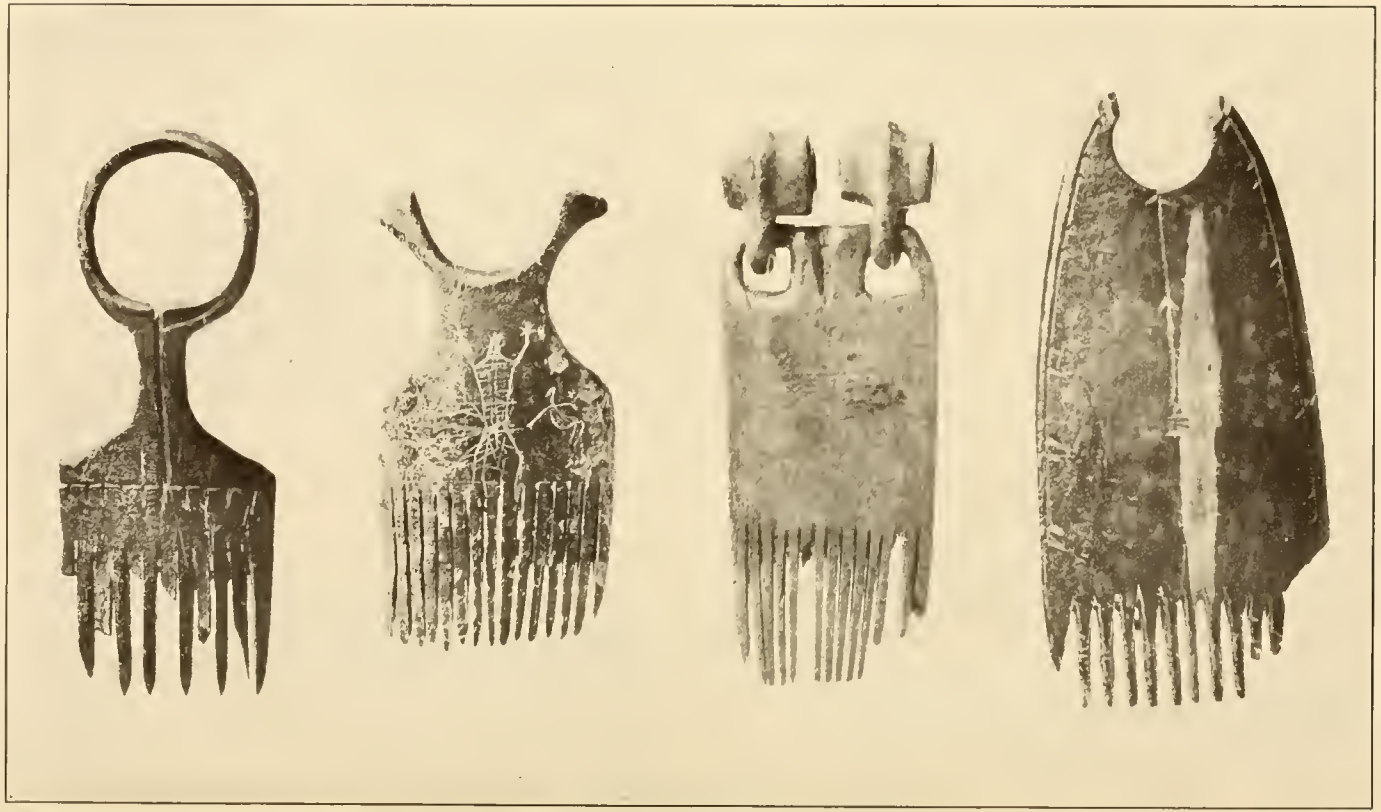
FOSSIL IVORY NEEDLE CASES AND SPEAR HEADS, NORTHERN BERING SEA, SHOWING FINE WORKMANSHIP

(A. H. coll., 1926, U.S.N.M.)

a, Small, finely made objects in fossil ivory and stone (the head), from the ruins at Point Hope (A. H. coll., 1926.)

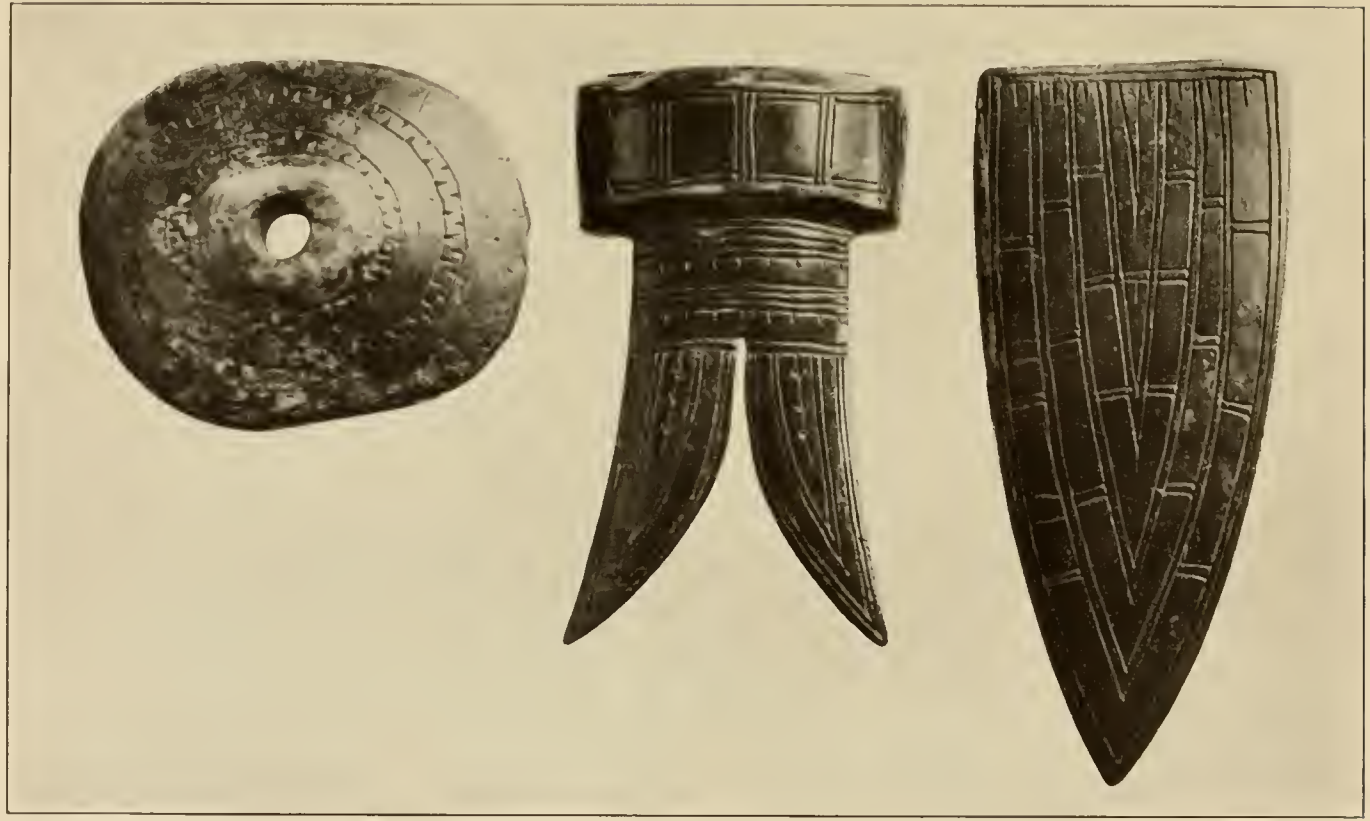


b, Old fossil ivory objects, northern Bering Sea. The article to the right is almost classic in form; it is decorated on both sides. (A. H. coll., 1926, U. S.N.M.)



FOSSIL IVORY COMBS. UPPER BERING SEA

(A. H. coll., 1926)



FOSSIL IVORY OBJECTS FROM THE UPPER BERING SEA REGION. TRANSITIONAL ART

(Museum of the Agricultural College, Fairbanks, Alaska.)

OLD BLACK FINELY CARVED FOSSIL IVORY FIGURE, FROM THE NORTHEASTERN ASIATIC COAST

(Loan to U.S.N.M. by Mr. Carl Lomen.)

WOODEN FIGURINES FROM A MEDICINE LODGE, CHOCO INDIANS, PANAMA

(U.S.N.M. colls.)

Top: Manche de poignard en ivoire, avec sculpture représentant un renne. Montastruc (Peccadeau de l'Isle; in de Quatrefages (A.), Hommes fossiles, Paris, 1884, p. 50)
Left: Two beautiful knives of fossil mammoth ivory lately made by a Seward Peninsula Eskimo. (Gift to the U.S.N.M. by A. H., 1926.)
Right: Two old ceremonial Mexican obsidian knives.

beveled faces in wooden figures from northeast Asia, in wooden Eskimo masks from the Yukon, and in wooden ceremonial figures from Panama. The latter are shown herewith. (Pl. 27.) The whole presents evidently a nice problem for the archeologist and student of culture.

I had further the good fortune to secure, through the kindness of Reverend Baldwin, two handsome and remarkable knives from fossil mammoth ivory. These knives were said to have been made recently by the Eskimo of the Seward Peninsula. They are shown in Plate 28. They each bear on the handle a nicely carved crouching animal figure. With them are shown, somewhat more reduced, two probably ceremonial knives from Old Mexico; and also the handle of a late palaeolithic poignard from France, illustrated by De Quatrefages.[36] Regarding the latter form we read the following in Mortillet:[37] "D'autres poignées de poignard, faites dans des données pratiques et artistiques analogues, ont été recueillies dans diverses collections. Les plus remarquables sont deux poignées en ivoire trouvées par Peccadeau de l'Isle, à Bruniquel. L'une se rattachait à la lame, comme dans la pièce précédente, par le train de derrière; l'antre, au contraire, par la tête." Knives with similar crouching animal figures on the handle are being made by the King Islanders.

Here, evidently, is one more interesting problem for the archeologists.

The art shown by these objects, the conventionalization, and especially the decorations, appear to show affinity on one hand to deeper eastern Asia and on the other to those of the American northwest coast and even lower. This may prove to mean much or little. The fact that these specimens establish beyond question is that at one time and up to a few hundreds of years ago there existed in the lands of the northern Bering Sea native art superior to that existing there later and at the present, and comparable with the best native Siberian or American.

The meaning of this fact seems to me to be of importance. The evidence suggests, aside from other things, that American cultural developments may after all not have been purely local or even American, but that they may, in part at least, have been initiated or carried from Asia. In view of these and other recent developments it seems rational to consider that America may have been peopled by far eastern Asiatic groups that not merely carried with them differences in language and physique but also in some cases relatively high cultural developments. But these for the present are mere hypotheses.

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[36] Quatrefages, A. de., Hommes fossiles et hommes sauvages. Paris, 1884.

[37] Mortillet, G. de., Le préhistorique origine et antiquité de l'homme. Paris, 1900, 206–207.

There is no definite indication as yet that the people of the high fossil ivory art in the northern Bering Sea and neighboring parts were any others than the ancestors of the Eskimo. The skeletal remains from these regions, as will be shown later, rather support this view. But those ancestors may not yet have represented the characteristic present type of the people. Here, too, nothing definite can be said before the results of sufficient scientific excavations become available.

Sites and Villages

The location of the western Eskimo villages has received more or less attention by most of the explorers in their region from the Russian time onward; but such efforts are generally limited to the living villages in the area visited by the observers.

Perhaps the earliest Russian map of value in this connection on the Bering Sea region is that which I find in Billings and Gall's Voyage or "Putĕshestvie" of 1791, printed in St. Petersburg 1811. The map bears no date, but is evidently quite early. It gives three villages on the western point and north coast of the Seward Peninsula, namely Kiemile (later Nykhta, now Wales), Chegliukh, and Tykiak. (Pl. 29.)

The most notable and valuable of the Russian contributions to this subject is that of Zagoskin. This refers to the period of 1842–1844 and is contained partly in his "Peshechodnaia Opis," etc. (St. Petersburg, 1847), but especially on his maps. There are, I find, two of these maps—the "Merkatorskaia Karta Časti Sieverozapadnago Berega Ameriky" and the "Merkatorskaia Generalnaia Karta Časti Rossijskich Vladĕnii v Amerikĕ." I came across the first in one copy of Zagoskin's invaluable account, which should long ago have been translated into English, and the other in another copy. Part of the second is here reproduced. (Pl. 30.) Both bear the statement that they were made by Zagoskin as the result of his explorations on the Yukon in 1842–1844. The second ("general") map is much the clearer and richer. Both maps, but especially the second, give a good number of villages, especially about Norton Sound and along the southern shore of Seward Peninsula. The orthography differs somewhat on the two charts.

The Tebenkof Atlas of 1849 includes a remarkably good map of the St. Lawrence Island. As on other Russian maps it gives the Punuk Islands, that later are lost by most map makers, and indicates the location of what probably were all the living settlements of that time, except on the Punuk. (Fig. 27.)

Finally, in 1861, Tikhmenief, in his "Istoričeskoie Obozrenie" (history of Russian America) gives a detailed map with many locations of Eskimo villages.

The Aleutian Islands and Kodiak are excellently dealt with by Veniaminof and also Tikhmenief, though little special attention is given to the location of the settlements.

None of the Russian explorers, regrettably, report verbally on the deserted sites or ruins. But their registration and location of many villages that have since become "dead" is of much historical as well as anthropological value.

Of later and particularly American authors who gave attention to the location of the western Eskimo settlements, the foremost is E. W. Nelson. Beginning in 1877 with the St. Michael Island and ending with the cruise of the *Corwin* in 1881, Nelson made trips down the coast to the Kuskokwim, up the Yukon to Anvik, over the Bering Sea, the St. Lawrence Island and parts of the Chukchee Peninsula,

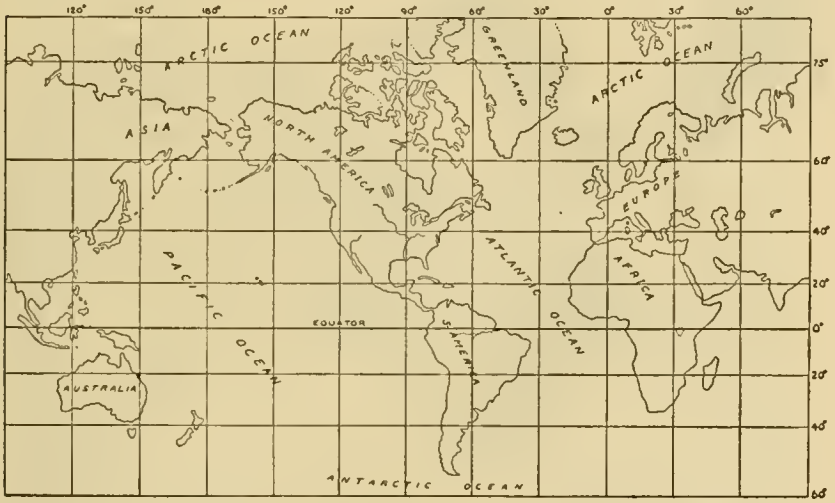


FIGURE 13.—World map

and finally, with the *Corwin*, along the northern coasts to Point Barrow. And these journeys were devoted largely to biological and ethnological observations and collections, the latter including the location of the western Eskimo habitations of that time. His locations are given on the accompanying map (fig. 15) taken from his classic memoir, "The Eskimo about Bering Strait," published in 1900 in the Eighteenth Annual Report of the Bureau of American Ethnology. This memoir contains a section of "Ruins" (pp. 263–266), a brief account of the recently dead villages on St. Lawrence Island (p. 269), and an instructive section on Eskimo burials (pp. 310–322). Nelson brought also the first more substantial collection of Eskimo crania.

The next deserving man in these connections is Ivan Petrof. Of Russian-American extraction, Petrof was charged in 1880 with the

census enumeration of the natives in Alaska, and he later published [38] a valuable report on his work, together with detailed demographic data and a map on which are given all the living settlements of his time. Nelson's map is partly based on Petrof's data.

Since Nelson and Petrof but little has been done in this field. But the maps of these two observers have been utilized more or less by the map makers of the United States Coast and Geodetic Survey, the Geological Survey, and other Government agencies concerned with Alaska. The result is that some of these charts are exceptionally useful to the anthropological explorer in Alaska; nevertheless the data they carry are incomplete and the locations or names

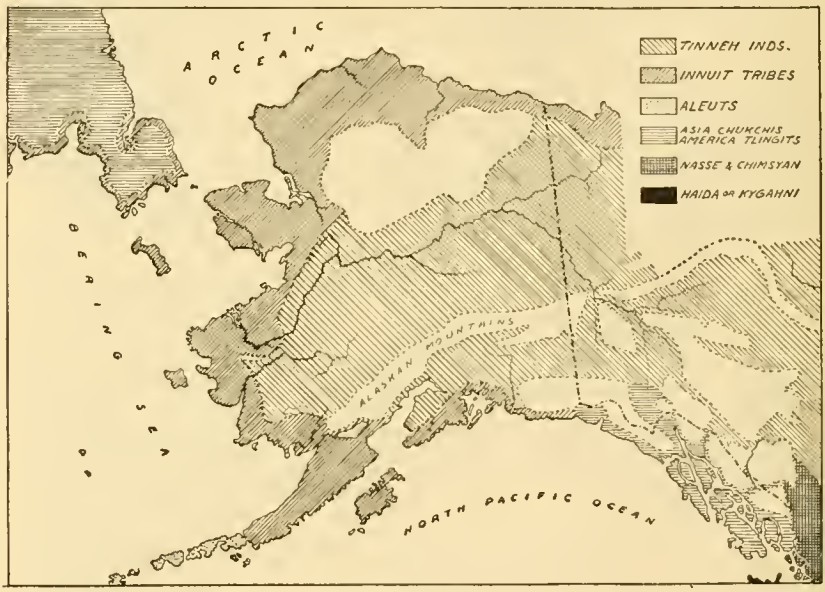
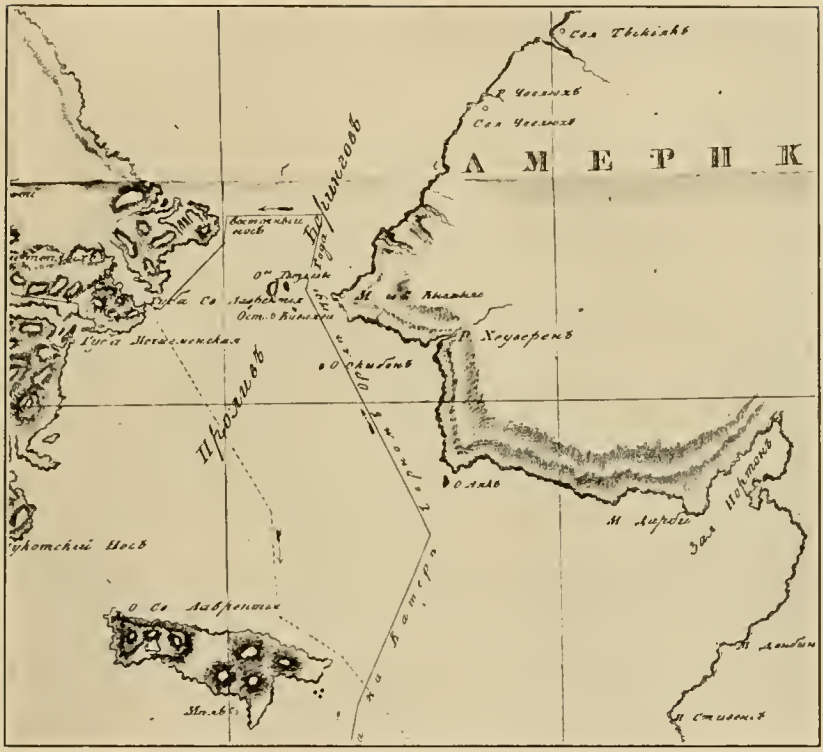


FIGURE 14.—Dall's map of the distribution of the tribes of Alaska and adjoining territory, 1875

are not always exact, a good many of the villages shown are now dead, and old ruins, as usual, have received no attention.

A very valuable supplement to all the maps has in 1902 been published by the United States Geological Survey. It is the Geographic Dictionary of Alaska, by Marcus Baker. This volume, besides brief but serviceable historical data, gives in alphabetical order nearly all the then-known names of localities in Alaska, including those of the Eskimo and Indian settlements; and each name is accompanied by brief but in many instances most helpful information. This highly deserving volume, indispensable

[38] Tenth Census, VIII; reprinted in Compilation of Narratives of Explorations in Alaska. U. S. Senate Rept. 1023, Washington, 1900, 55–281.



BILLINGS AND GALL'S MAP OF BERING STRAIT AND NEIGHBORING LANDS, 1811

ESKIMO VILLAGES AND SITES, NORTON SOUND AND BAY AND SEWARD PENINSULA, AND THE KOTZEBUE SOUND, FROM ZAGOSKIN'S GENERAL MAP, 1847

to every student of Alaska, has for many years been out of print, but it is understood that a new revised edition is slowly being prepared.

FIGURE 15.—Nelson's map. (Eighteenth Ann. Rept. Bur. Amer. Ethn., 1898)

Other useful publications in these connections are the United States Coast Pilots of Alaska, the various accounts of travelers, explorers, and men in collateral branches of science (geology, biology,

etc.), the publications of the Alaska Division of the United States Department of Education, the annual reports of the Governor of Alaska, and the decennial reports on Alaska of the United States Census.

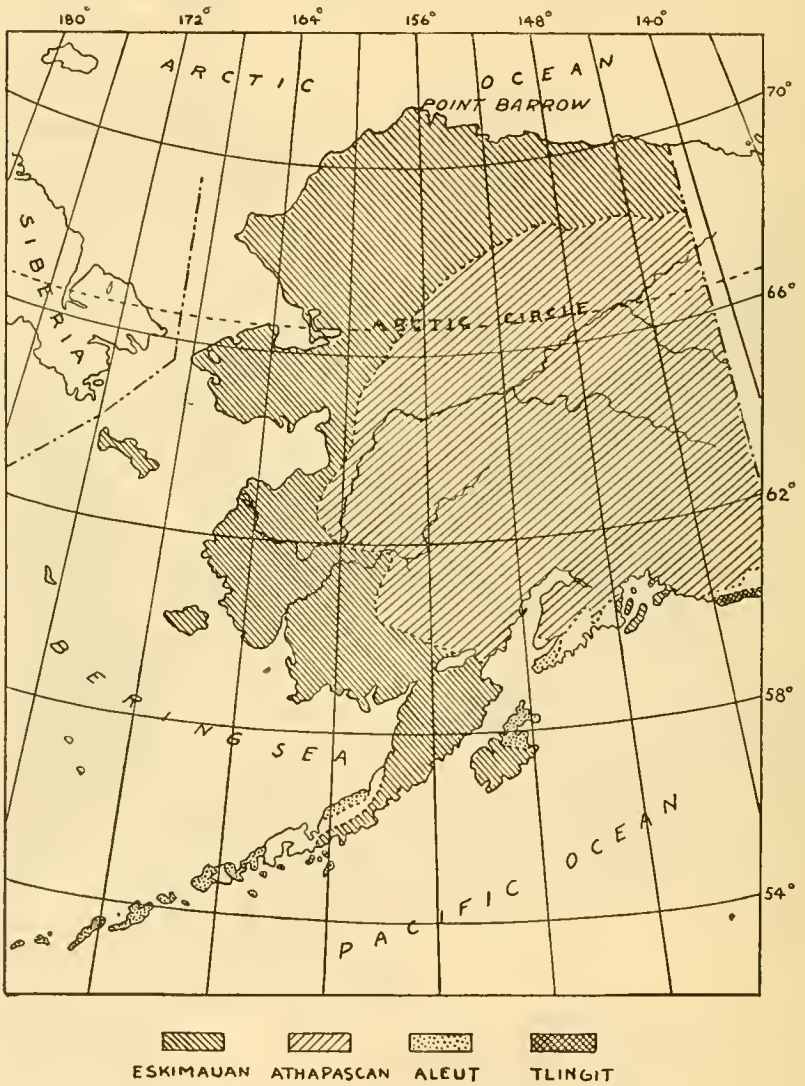


FIGURE 16.—Linguistic map, United States census, 1920

The object of the following notes and data is some measure of usefulness to future anthropological and archeological workers in Alaska. They are surely incomplete and very imperfect, yet they may be of some service.

Archeological and anthropological research in the highly important western Eskimo region is bound to develop in a not far distant future; for this is the region through which in all probability America was peopled. It is this region that promises to solve the problem of the antiquity of the Eskimo and may throw much light upon the origin of these people, and one that, as shown above, has begun to reveal highly interesting old cultural conditions. And it is a region in which destruction of the remains by nature, but most so recently by the natives themselves, proceeds at an alarming pace.

The information on which these notes and the accompanying charts are based has been obtained largely from the Russian and other maps, from local traders, teachers, missionaries, and natives, and from a few explorers.[39] Only in a minority of cases was it possible to visit the places in person; to have visited all would have been a task of pleasure, but would have required a staunch boat of my own and at least three full seasons.

Many of the sites to be given are now "dead" and there may be several old sites in the vicinity of a living village. Others combine ruins with present habitations. Still others are partly or even wholly abandoned a part of the year when the inhabitants go camping or hunting, and are partly or wholly occupied during the rest of the year. Finally, there are some new settlements, with modern dwellings and ways, and their number will increase, the Eskimo taking kindly to civilization and individual property.

The data to be given here are limited to the Eskimo territory in southwestern and western Alaska, leaving out those in Siberia where much is uncertain. Due to the uncertainties of the Prince William Sound region they will begin with Kodiak Island. There are also on hand, principally due to Dr. E. P. Walker, numerous locations of old sites and villages in the Indian parts of southern and southeastern Alaska, but these will best be reserved for another occasion.

The Eskimo area will be roughly seen from the accompanying map published on the basis of the enumeration by the Fourteenth United States Census of 1920. A very great part of the territory allotted to the Eskimo, as well as that of the Indian, is barren of any popu-

[39] I am especially indebted to the two maps of Zagoskin (one prepared by himself, one from his data); to the 1849 Russian map of the St. Lawrence Island; to the various maps of the U. S. Geological Survey and the U. S. Coast and Geodetic Survey; to the maps and data of W. H. Dall, E. W. Nelson, and Ivan Petrof; to the various reports of the *Corwin* and other voyages in the Bering Sea and the western Arctic; to the Geographic Dictionary of Alaska, by Marcus Baker, and to the U. S. Coast Pilots of Alaska; to the data of the Alaska Division, U. S. Department of Education; to Dr. E. P. Walker, of the Biological Survey; to Father La Fortune, the Reverend Baldwin, and to Mr. Carl J. Lomen at Nome; to Mr. Sylvester Chance, superintendent in 1926 of the schools of the Kotzebue district; to Messrs. James Allen at Wainwright and Charles Brower at Barrow; and to numerous other friends who aided me in this direction.

lation or its traces; the divisions represent the hunting grounds or grounds claimed by each people, not an occupied territory. The data will be given in south-to-north order.

Nearly all the settlements in these regions are now, and have evidently always been, on the shores of the seas and bays, as close to the water as safety would permit. A few villages and sites occur also, however, on inland lakes and rivers. The favored locations have been an elevated flat near the mouth of a fresh-water stream or the outlet of a lagoon, a sufficiently elevated spit projecting into the sea, or an elevated bar between the sea and an inland lake. The essentials were an elevated flat, a supply of fresh drinking water, and a location favorable for fishing and hunting; if there was some natural protection, so much the better. There were no inland settlements except on the lakes and rivers. In a few cases, as at the Kings and the Little Diomede Islands, very difficult locations were occupied only because outweighed by other advantages.

Caves throughout the occupied region north of the Aleutian chain are absent, and there was therefore no cave habitation.

None of the settlements were very large, though a few were much larger than others. They ranged from one or two family camps or houses to villages of some hundreds of inhabitants. A large majority of the settlements had from but two or three to approximately a dozen families.

There were two main types of dwellings, the semisubterranean sod houses for the winter and the skin tents for summer. In some places the two were near each other; in others the summer dwellings were in another and at times fairly distant locality.

The "zimniki" (in Russian) or winter houses were throughout the region of one general type. They were fair-sized circular semisubterranean houses, made of driftwood and earth, and provided with a semisubterranean entrance vestibule. Their remains are characterized everywhere by a circular pit with a short straight trench depression, the same pot-and-handle type as found along the Yukon. Rarely for the construction of the houses, where driftwood did not suffice, recourse was had to whale ribs and mandibles. The "letniki," or summer houses, were constructed on the surface of wood, sod and skins, or of whale ribs and skins, approaching on one hand the summer huts of various continental tribes and on the other the "yurts" of the north Asiatic peoples. The "kashims," or communal houses, were built, much as on the Yukon, like the family dwellings, but occasionally quadrilateral and much larger. Smaller semisubterranean storage houses of driftwood and sod near the winter dwellings were seemingly general.

Ruins of stone dwellings, without mortar, are said to exist in places on Norton Sound and Bay and on a lagoon near the western

end of the Seward Peninsula. The few houses on the Little Diomede are made of loose unhewn stone slabs. The dwellings of the King Islanders are built on the rocky slope of the island on platforms supported by poles, all of driftwood.

There is as a rule an absence of separate refuse heaps near the villages. The refuse apparently has been dumped about and between the houses rather than on separate piles.

Dead villages abound. On consulting the older Russian records, however, it is seen that nearly all were still "living" as late as the early forties of the last century. Yet there are sites that were "dead" already when the Russians came, and the accumulations in other cases denotes a long occupation.

The site of a dead village, in summer, is generally marked by richer and greener vegetation; same as on the Yukon. The site itself is usually pitted or humped in a line forming a more or less elevated ridge, or the pits may be disseminated without apparently much order. And there may be irregular moundlike heaps without external traces of any structure.

In the older sites no trace of wood is visible; in the later rotten posts, crosspieces, parts of the covering of the house or tunnel, or even a whole habitation may be present. In the old sites the wood is hewn with stone axes; in the later it is sawed, and there may be nails.

Older accumulations lie occasionally beneath more recent ones, though no interruption of continuity may be traceable. Of a superposition of villages no trace was observable.

Burial Grounds

Due to the impossibility of digging sufficiently deep into the frozen ground the western Eskimo buried their dead near or on the surface or among rocks. Occasionally they utilized also, it seems, old dwellings for this purpose, and in more recent times at least the surface burials, wherever there was driftwood, would be protected by heavy rough-hewn planks put together in the form of boxes or by driftwood. They bear close fundamental resemblance to those of the Yukon. On the Nunivak Island occur graves made of rough stone slabs piled up without much order. (Pl. 31, *a*, *b*.)

Throughout the region the burials were located near the village, but the distance varied according to local conditions and habits. In some of the Eskimo villages of the lower Yukon, as at Old Hamilton, some burials were close to the houses of the living. In the Bering and Arctic regions the burial grounds, though sometimes of necessity not far from the houses, as at the Little Diomede, in other places, as at Point Hope and Barrow, were at a distance extending to beyond a mile and a half from the village.

As a rule the wood of burials older than about 80 years was found fully decayed with the bones secondarily buried. Of earlier burials there is generally no trace on the surface, but on excavation skeletal remains are found at various depths below the surface. These characteristic self-burials, or rather tundra burials, may prove of much importance to anthropology in the future. As outlined before (see Narrative, pp. 77, 79) the process is a decay of the wood; the sagging down of the bones, covered more or less by the decayed material; an encroachment of moss or other vegetation on the little mound thus produced; and gradual accumulation through wind or water carried materials of more covering over the bones, until the mound disappears and the remains, generally still in good condition, are buried as if intentionally inhumed.

The Eskimo everywhere were found to be exceedingly sensible about the older, and even recent, skeletal remains, and assisted readily in their collection, as well as in excavation, offering thus the best possible conditions for anthropological and archeological work in these regions.

The notes, charts, and a detailed list of the sites and villages follow. In numerous cases it was found impossible to say whether a site was completely "dead" or still occasionally partly occupied, so that distinctive markings had to be abandoned.

Prince William Sound, Kodiak Island, Alaska Peninsula

Very largely still a terra incognita for anthropology and archeology. Partly occupied by Indians (Prince William Sound, Kodiak Island?), partly by mix-blood Aleut (parts of Peninsula, and of Kodiak), partly by Eskimo. There is but little skeletal or archeological material from the whole extensive territory.

KODIAK ISLAND AND NEIGHBORHOOD

[FIG. 17]

1. *Litnik* (probably the Russian "Lietnik," the name for a summer village).—Indian village on Afognak Bay, Afognak Island. This name is found on a map made by the Fish Commission in 1889. Apparently it is the Afognak of other maps (G. D. A.).[40]

2. *Afognak*.—On the southwestern part of Afognak Island. Village or row of scattered dwellings on shore of Afognak Bay, in southwestern part of Afognak Island. Population in 1890, 409. (G. D. A.) According to Walker, "an important, occupied native

[40] G. D. A.: Geographic Dictionary of Alaska, by Marcus Baker, U. S. Geol. Surv., Washington, 1902.

village which has probably been occupied for a long time. No doubt there are other native villages in this immediate vicinity."

3. *Spruce Island.*—Ouzinkie, or Uzinki; an occupied native village and cannery. (E. P. W.).[41]

FIGURE 17.—Villages and sites on Kodiak Island

4. *Eagle Harbour or Ugak Bay.*—Possibly the native village "Orlova" of the Russians. (G. D. A.)

5. *Kiliuda.*—Native village, on the north shore of Kilinda Bay, Kodiak. Has been generally written Killuda. (G. D. A.)

[41] E. P. W.: Dr. E. P. Walker.

6. *Nunamiut.*—Native village, on the shore of Three Saints Harbor, Kodiak. (G. D. A.) Better known locally as Three Saints Bay. There was formerly an old native and Russian settlement at this point and vicinity, and fishing operations are frequently now conducted here. (E. P. W.)

7. *Kaguyak.*—Village, at Kaguyak Bay, on the southwestern shore of Kodiak. It may be identical with the Kaniag-miut of the Russian-American Co., in 1849. (G. D. A.) An old native village at present occupied by only one or two families. Possibly an old site. (E. P. W.)

8. *Aiaktalik.*—Village on one of the goose islands, near Kodiak. Population in 1890, 106. (G. D. A.) An occupied native village consisting of about a dozen houses, but which has probably been occupied for a long time. (E. P. W.)

9. *Akhiok.*—Native village on the northern shore of Alitak Bay, Kodiak. Native name from Petrof, 1880. Apparently identical with Oohaiack of Lisianski in 1805. (G. D. A.) An occupied native village consisting of about a couple of dozen houses. This or possibly other villages in the vicinity have undoubtedly been occupied for a long time. It is possible that there was a native settlement at Lazy Bay near this point, for Lazy Bay was formerly a native headquarters for sea otter hunting. (E. P. W.)

10. *Karluk.*—Village at mouth of Karluk River, Kodiak. Native name from the Russians. (G. D. A.)

11. *Uyak.*—Bay indenting the northwestern coast of Kodiak; also a village. Native name from the Russians. Lisianski, 1805, spells it Oohiack and the village Ooiatsk. Petrof, 1880, writes it Ooiak. Has also been written Uiak. (G. D. A.)

12. *Larsen Bay.*—A cannery has been located at this point for a number of years, and there is an old native trail from Larsen Bay to Karluk River, so presumably natives have frequented this section and no doubt have at some time had settlements there. Definite information regarding this is not available. (E. P. W.)

13. *Uganik.*—Native village at head of Uganik Bay. Shown by Lisianski, 1805, who spells it Oohanick. (G. D. A.) An occupied native village and one which has apparently been in use for a considerable period. (E. P. W.)

ALASKA PENINSULA

[FIGS. 18, 19]

Native settlements or old villages at one or more points in Kamishak Bay, Ursus Cove, or Iliamna Bay are reported, but there is nothing definite on the subject. (E. P. W.)

14. *Iliamna.*—An occupied native village, and undoubtedly there are various village sites on Iliamna Lake regarding which information could be obtained from parties in Iliamna. (E. P. W.)

15. *Ashivak.*—Native village (population 46 in 1880), near Cape Douglas, Cook Inlet. Native name reported by Petrof in 1880. (G. D. A.)

16. *Kayayak.*—Village, on Svikshak Bay, Shelikof Strait, about 25 miles southwest of Cape Douglas. Tebenkof, 1849, has Kaiaiak

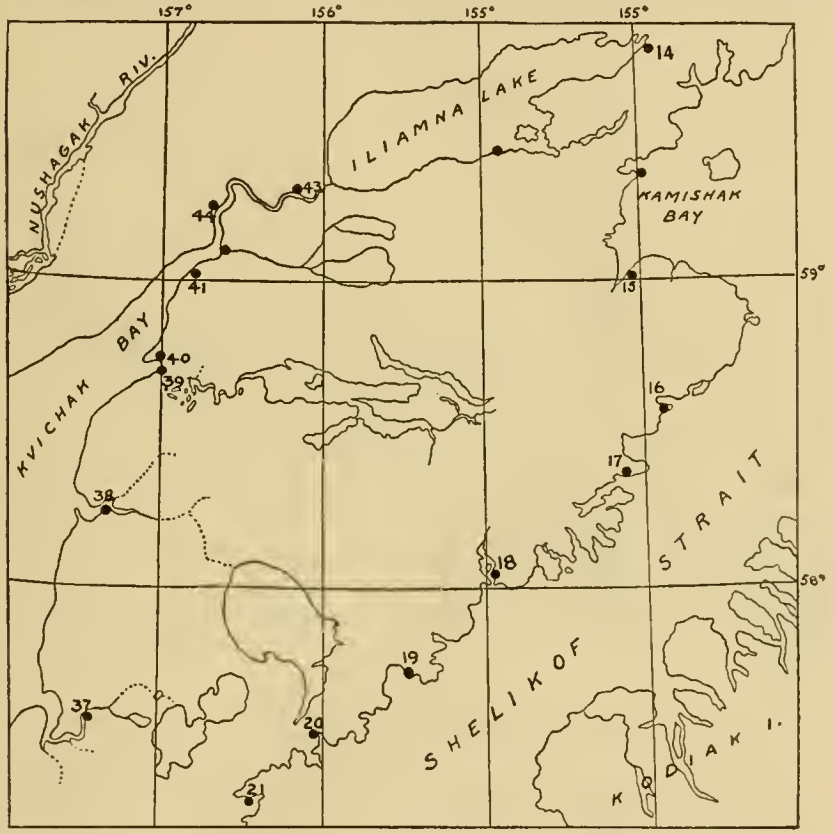


FIGURE 18.—Villages and sites on the proximal half of Alaska Peninsula

settlement, which has on many charts appeared as Kayayak. (G. D. A.)

17. *Kukak.*—Native village, on Kukak Bay. Lutke, 1835, has Koukak Bay and village. (G. D. A.)

18. *Katmai.*—Village, on Katmai Bay, Shelikof Strait, northwest of Kodiak. This is one of the most important of the native villages. Population in 1880, 218; in 1890, 132. (G. D. A.) A native village which was occupied up to the time of the Katmai eruption but was abandoned at that time. (E. P. W.)

19. *Cold Bay.*—Small village.

20. *Kanatak.*—A native village consisting of about half a dozen houses until in 1922, when oil activity in the vicinity caused a small white settlement to locate at this point. This, however, has since been almost entirely abandoned by whites. (E. P. W.)

21. *Kuiukuk.*—Small village.

22. *Chignik.*—Fishing station on Chignik Bay, Alaska Peninsula. Population in 1890, 193. (G. D. A.) There are three canneries in this immediate vicinity, a number of natives, and undoubtedly some native villages and probably old village sites. (E. P. W.)

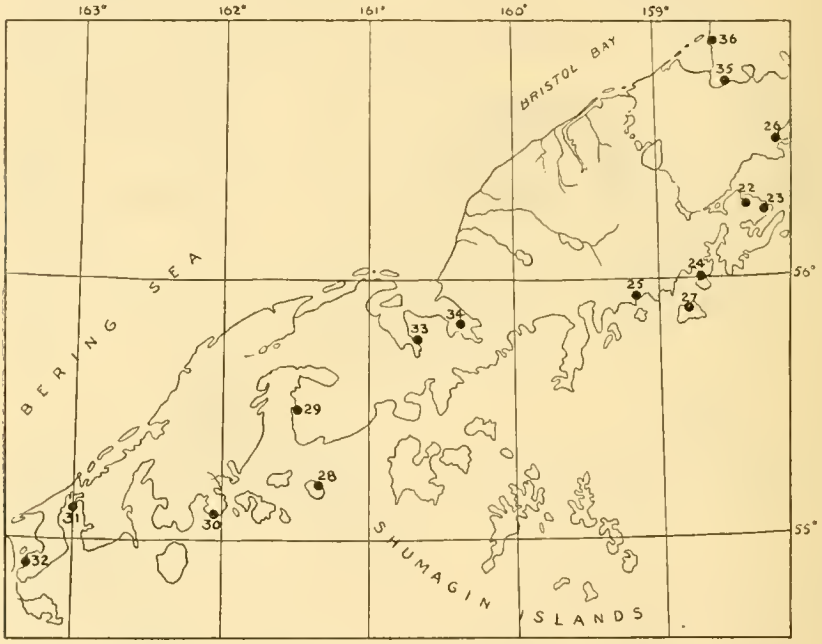


FIGURE 19.—Villages and sites on the distal half of Alaska Peninsula

23. *Kaluiak.*—Native village, on the southern shore of Chignik Bay, Alaska Peninsula. So given by Petrof in 1880 and the Fish Commission in 1888. (G. D. A.)

24. *Mitrofania.*—An old native village which has recently been abandoned or practically abandoned; was apparently a rather important village at one time. (E. P. W.)

25. *Perryville.*—A recently established native village consisting of natives from various points along the Alaska Peninsula who were moved there primarily by the Bureau of Education since the Katmai eruption. (E. P. W.)

26. *Kujulik.*—Walker has been informed that there is an old village site of that name either in this bay or on Kumlik.

27. Old village mentioned on this island; uncertain.

28. *Wosnesenski.*—An old village site on this island reported. (E. P. W.)

29. *Pavlof.*—Rev. D. Hotvoitzky, of Belkofski, informed Walker that there is a very old abandoned village site at the head of this bay.

30. *Belkofski.*—Bay, cape, and village on south coast of Alaska Peninsula. Named by the Russians as early as 1835 and probably earlier. (G. D. A.) The most important occupied native village on the Alaska Peninsula. Quite an old village and a former headquarters for sea-otter hunting. (E. P. W.)

31, 32. *Morzhovoi.*—Native village at western end of Alaska Peninsula. Named Morzhovoi (Walrus) by the Russians. Variously spelled. There are or were two villages, one called Old Morzhovoi, the other New Morzhovoi, being about 12 miles apart. Old Morzhovoi was at the head of Morzhovoi Bay; New Morzhovoi is on Traders Cove, which opens into Isanotski Strait. The Greek church here is named Protassof, and Petrof, 1880, called the settlement Protassof. (G. D. A.) An occupied native village. The natives from this village also live during the canning season at the cannery in False Pass directly across the strait from Morzhovoi and at Ikatan a short way to the south. (E. P. W.)

33. *Herendeen.*—Walker has been informed that there are some shell mounds or kitchen middens about this bay. Walter G. Culver, formerly an employee of the Bureau of Education, but who is at present in Anchorage in care of the Alaska Railway, can give information regarding this and can also give information regarding most of the other native villages along the Alaska Peninsula. (E. P. W.)

34. *Port Moller.*—Eskimo site somewhere in this vicinity; name and exact location uncertain.

35. *Unangashik.*—A native village, or portage, near Port Heiden.

36. *Meshik.*—A village on Port Heiden.

37. *Ugashik.*—A native village on the Ugashik River. Reported by Petrof, 1880.

38. *Igagik* (*or Egegik*).—A village at the mouth of the Egegik River.

39. *Kiniak* (*or Naknak, or Suvorof*).—A village (of "Aleuts," Sarichef) at mouth of Naknak River, Bristol Bay, south side.

40. *Pawik* (*or Pakwik*).—Eskimo village, at mouth of Naknak River, Bristol Bay, north side.

41. *Kogiunk.*—Eskimo village at mouth of Kvichak River, Bristol Bay. Native name, reported in 1880 by Petrof, who spelled it Koggiung. (G. D. A.)

42. *Lockanok.*—Small village.

43. *Kashanak.*—Small old village.

44. *Kvichak.*—Old Eskimo village on river of same name between Kvichak Bay and Iliamna Lake.

Bristol Bay to Cape Romanzof

From the northern part of Bristol Bay to Cape Romanzof a partial survey of the coast was made in 1927 by Collins and Stewart (U. S. National Museum Expedition). In these regions and on the Nunivak Island it was possible to locate a series of villages some of which are still "living," others in ruins. In the late seventies of the last century, as stated before, the coast between Kuskokwim Bay and St. Michael Island was visited and its villages recorded by Nelson. A detailed archeological survey of this coast remains for the future. Doctor Romig, formerly a medical missionary at Bethel, told me of a number of old sites on the river. Some notes of interest by T. D. Stewart are given in the details. Mr. F. W. Bundy, for a time my companion on the *Bear*, told of an old site on the Kuskokwim. In March, 1927, H. W. Averill, writing from Bethel, tells of a deep-lying old site on the southern coast of the Kuskokwim Bay. (See details.) And later the same year Father Philip I. Delon, of the Holy Cross Mission, sent in three skulls from Kashunuk, in the Yukon delta, with information of much additional material in that locality.

45. *Nushagak.*—Old Russian post, "Alexandrovsk." Eskimo village, a few whites; a number of old native sites scattered about head of Nushagak Bay.

46. *Ekuk.*—Eskimo settlement near the mouth of Nushagak River. Name from Lutke, 1928, who spelled it Ekouk. Has also been written Yekuk. (G. D. A.)

46a. Reported site of Eskimo village.

47. *Ualik.*—Native village, on the western shore of Kulukak Bay, Bristol Bay, Bering Sea. Given by Petrof, 1880, as Ooallikh and by Spurr and Post as Oallígamut; i. e., Oallik people. (G. D. A.)

48. *Togiak.*—Old Eskimo settlement.

49. *Ekilik.*—Possibly the same as Togiakmute, reported in 1880 by Petrof. Eskimo village on the west bank of Togiak River, about 10 miles from its mouth. Eskimo name obtained by Spurr and Post, in 1898, who write it Ekilígamut; i. e., Ekilik people.

50. A small Eskimo village.

51. *Mumtrak.*—Eskimo village at head of Goodnews Bays, Bering Sea. Population in 1890, 162. Name from Petrof, 1880, who spelled it Mumtrahamute. (G. D. A.) Visited 1927 by Collins and Stewart; collections.

52. Site of a village, at junction of Bessie Creek and Arolic River.

53. *Arolik.*—A village. H. W. Averill of Bethel writes me under date of March 3, 1927, as follows: "I am sending you some old stone pieces that came from the Aralic River, a tributary of the lower Kuskokwim River, that were washed up by a bend in the river from an old village that is now 6 feet underground."

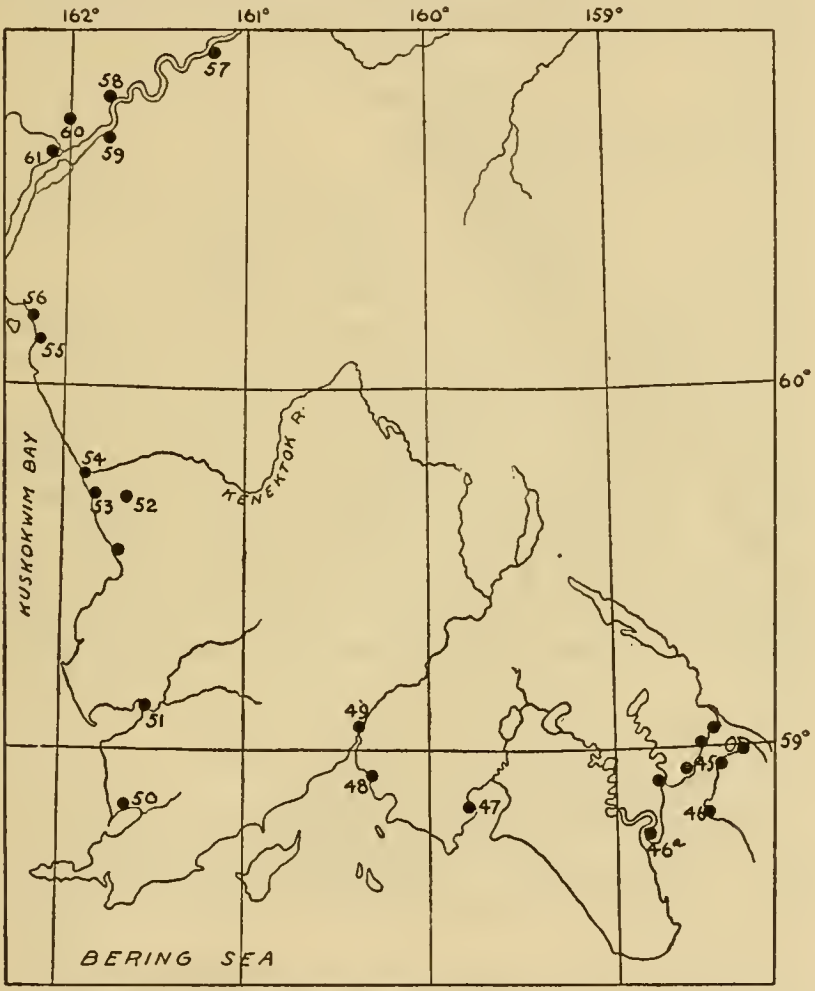


FIGURE 20.—Eskimo villages and sites on Nushagak Bay to Kuskokwim Bay

54. *Kwinak.*—Eskimo village on the eastern shore of Kuskokwim Bay, at the mouth of the Kwinak or Kanektok River, Bering Sea. So given by Sarichef, 1826, and Tebenkof, 1849. Petrof, 1880, writes it Quinehahamute, or, omitting the termination *mute*, meaning *people*, it would be Quene-a-ak. (G. D. A.)

55. *Apokak.*—Eskimo village on the eastern shore of Kuskokwim Bay, at the mouth of Apoka River. According to Nelson, 1878–79,

its native name is Apokagamute; i. e., Apokak people. In the Eleventh Census, 1890, it is called Ahpokagamiut. (G. D. A.)

56. *Eek.*—Eskimo village at mouth of Eek River.

57. *Akiak.*—Eskimo village on the right bank of the Kuskokwim, about 30 miles above Bethel. Petrof, 1880, wrote its name Ackiagmute; i. e., Akiak people. Spurr and Post, 1898, write Akiagmut, following Missionary J. H. Kilbuck. (G. D. A.) Reindeer camps in vicinity.

58. *Bethel.*—White and Eskimo settlement and mission at or near the old Eskimo village Mumtrelega.

59. *Napaiskak.*—Eskimo village on the left bank of the Kuskokwim, about 4 miles below Bethel. According to Nelson, 1878–79, its native name is Napaskiagamute, and according to Missionary Kilbuck, 1898, it is Napaiskagamut; i. e., Napaiskak people.

60. *Old sites.*—Mr. Bundy, my companion for a time on the *Bear*, gives the following details: "Specimens found about 12 miles below Bethel, Alaska, at the mouth of the Kuskokwim River, beneath about 10 or 12 feet of alluvial soil deposits of sand and clay.

"Mr. Jack Heron, of Bethel, first noted the presence of old implements, and upon returning with him about August 1, 1923, we found the river had cut into the bank quite a bit and had brought to view, after the high waters had receded, additional specimens.

"Those found included: A large copper kettle of perhaps 8 gallons capacity of early Russian pattern, several arrowheads of slate or dark gray flint, and two spearheads of bone with several broken knife blades of slate and one or two small ivory ornaments resembling birds."

61. *Napakiak.*—Eskimo village on the right bank of the Kuskokwim, about 10 miles below Bethel. Nelson, 1878, reports the native name as Napahaiagamute. (G. D. A.)

62. *Kinak.*—Eskimo village on right bank of the lower Kuskokwim. Visited by Nelson in January, 1879, who reported its native name to be Kinagamiut; i. e., Kinak people. Its population was at that time about 175. Population in 1880, 60; 1890, 257. (G. D. A.)

63. Village site (?).

64. *Kuskovak.*—Eskimo village, on the right bank of the Kuskokwim River, near its mouth. Name from Nelson, who passed near it in January, 1879, and who writes it Kuskovakh. (G. D. A.)

65. *Popokak.*—Native village.

66. *Kulvagavik.*—Eskimo village, on the western side of Kuskokwim Bay, Bering Sea. Visited by Nelson in January, 1879, and its native name reported by him to be Koolvagavigamiut. (G. D. A.)

67. *Kongiganak.*—Eskimo village (of about 175 people in 1878) on north shore of Kuskokwim Bay. Visited by Nelson in December, 1878. (G. D. A.)

68. *Anogok.*—Eskimo village, on the mainland shore just west of Kuskokwim Bay, Bering Sea. Visited by Nelson in December, 1878. (G. D. A.)

69. *Chalit.*—Eskimo village, of about 60 people in 1878, on left bank of the Kuguklik River, northwest of Kuskokwim Bay. Visited by Nelson in December, 1878. (G. D. A.)

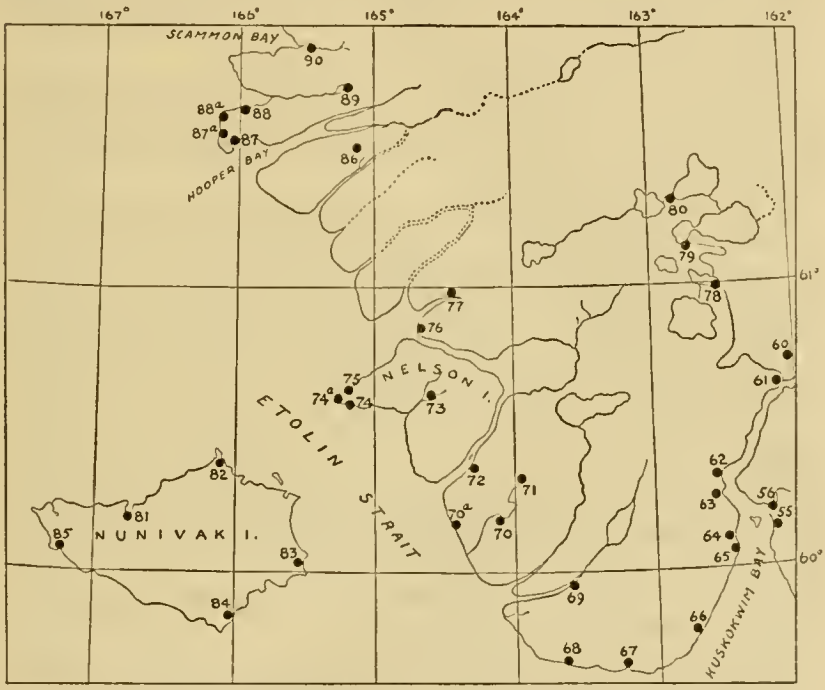


FIGURE 21.—Eskimo villages and sites, Kuskokwim Bay to Scammon Bay

70. *Chichinak.*—Eskimo village on the mainland, east of Nunivak Island, Bering Sea. Visited by Nelson in December, 1878. (G. D. A.)

70a. Old village site.

71. *Sfaganuk.*—Eskimo village, on the mainland, east of Nunivak Island, Bering Sea. Visited by Nelson in December, 1878 (G. D. A.)

72. *Agiukchuk.*—Eskimo village, on the mainland, east of Nunivak Island, Bering Sea. Visited by Nelson in December, 1878. (G. D. A.)

73. *Kashigaluk.*—Eskimo village, on Nelson Island, Bering Sea. Visited by Nelson in December, 1878. (G. D. A.)

74. *Kaliukluk.*—Eskimo village, on Nelson Island, near Cape Vancouver, Bering Sea. Visited by Nelson in December, 1878. (G. D. A.)

74a. Old village site.

75. *Tanumak.*—Eskimo village, at Cape Vancouver, Nelson Island, Bering Sea. Name from Nelson, who visited it in December, 1878. Visited 1927 by Collins and Stewart; collections.

75a. Village site.

76. *Ukak.*—Eskimo village, in the Yukon Delta, on shore of Hazen Bay. Visited by Nelson in December, 1878, and its name reported by him as Ookagamiut; i. e., Ukak people. Petrof, 1880, calls it Ookagamute. (G. D. A.)

77. *Unakak.*—Eskimo village, in the Yukon Delta, near Hazen Bay. Nelson, who visited it in December, 1878, reports its name to be Oonakagamute; i. e., Unakak people. Petrof, 1880, calls it Oonakagamute. (G. D. A.)

78. *Kvigatluk.*—Eskimo village, in the Big Lake country, between the Yukon and Kuskokwim. Nelson in 1879 passed near it and reports its name to be Kvigathlogamute. (G. D. A.)

79. *Nunochok.*—Eskimo village, in the Big Lake region. Visited by Nelson in January, 1879, who reports its native name to be Nunochogmute; i. e., Nunochok people.

80. *Nanvogaloklak.*—Eskimo village, in the Big Lake country. Visited by Nelson in January, 1879. Population in 1880, 100; in 1890, 107. (G. D. A.)

81. *Nash Harbor.*—Living village, Nunivak Island; school; Collins and Stewart, 1927, anthropometric data, collections (also from other parts of island).

82. *Koot.*—Village, Nunivak Island, near Cape Etolin; partly occupied. Population in 1890, 117.

83. *Inger.*—(In Eleventh Census: Ingeramiut.) Dead village, in southeast part of Nunivak Island. Population, 1890, 35.

84. *Kvigak* (*or Kwik*).—Dead village, southern part of Nunivak Island.

85. *Tachikuga.*—Dead village, Nunivak Island, below Cape Mohican.

86. *Kashunuk.*—Eskimo village; some collections; skeletal material in vicinity reported 1927 by Father Delon, of the Holy Cross Mission, Yukon.

87. *Askinuk.*—Eskimo village on the southern shore of Hooper Bay, Yukon Delta. Native name, from Nelson. Population 1878, 200. (G. D. A.)

87a. Village site.

88. *Agiak.*—Eskimo village on promontory north of Hooper Bay.

88a. Village site.

89. *Igag.*—Small village.

90. *Kut* (*Kutmiut*).—Small village on Kut River, head of Scammon Bay.

Cape Romanzof to Northern (Apoon) Pass of the Yukon and Northward

On this coast there is little information since the time of Nelson. There are a number of occupied villages as well as of old sites. The region is bleak and the Eskimo there are reported to live miserably.

The principal Eskimo villages and sites along the lowermost branch of the Yukon have been given previously. (Fig. 11.)

From the northernmost pass of the Yukon to St. Michael Island the coast is poor in Eskimo remains. A site of interest here is the old camping ground, with a few permanent houses, of Pastolik, and there are two small sites farther up the coast. Pastolik to the writer's visit was still occasionally occupied by a few Eskimo families. There are only three houses, but a relatively large and old cemetery speaks of a larger population, probably camping here in tents during the summer seasons of the past. The burial grounds were found to be rather extensive and give indications of containing human bones as well as artifacts below the present surface (buried by the tundra). The main part of the burial grounds may well repay an excavation.

St. Michael Island.—Eskimo remains exist on the northeastern point of the island beyond the present white man's village, and also on the rock (Whale Island) opposite this point. During my visit the ground was so overgrown by high weeds that details were hidden. On this same northeastern point near the extension of the white settlement is a small living Eskimo village, most of the inhabitants of which are now of mixed blood. Across St. Michael Bay are said to be some old traces of Eskimo, and Nelson reported an old site in the southern part of the island. Finally at Cape Stephens, in the western extremity of the island, there is "Stebbins," another living village. Nothing could be learned of any human remains on the opposite Stuart Island.

Norton Sound.—North of St. Michael Island is Norton Sound and Norton Bay. Along the east coast of the Sound there are three villages still occupied, but with old accumulations. It is reported that in this region there are some ruined houses in which mammoth tusks had been used in the construction, but nothing definite could be learned as to the location of these houses and the whole may be but a story. The village of Unalaklik was of importance in the past and its older remains would probably repay excavation. Old

sites are reported from the vicinity of Shaktolik and at Cape Denbigh.

The Norton Bay region (fig. 22), now almost depopulated, had in 1840 a whole series of moderate-sized living Eskimo settlements, both on the east and the west shore. These shallows are but little visited, and it is probable that the remains of the villages and some at least of the skeletal material of their burying grounds are well preserved. They call for early attention.

To the west of Norton Bay, on the southern coast of Seward Peninsula, is Golovnin[42] Bay. On the eastern shore of this bay are now, as there were in Russian times, two settlements, but the name of one has been misplaced. On Zagoskin's map it is clearly seen that the village Ching or Chinig corresponds in location to what now is the mission, while what is now called "Cheenik" was in 1840 Ikalik or Ikalikhaig. There will soon be seen another instance of such a misapplication of the original names.

To the west Golovnin Bay is bounded by a large promontory ending in Rocky Point. To the east of this point is a shallow bay, where I found a late Eskimo house and on the elevated shore a little to the left four fairly recent adult burials. Farther down the bay was an Eskimo camp, without signs of anything older; but Zagoskin's map gives a settlement, probably also a camp, at this place, named Knikhtak. From this a rocky point projects eastward into the bay. Behind this point is a shallow cove with elevated ground above the beach, and at the inland end of this bay I found the remains of a small old village. Traces of burials were seen on the elevated ground but skeletal remains were absent.

On the southwestern shore of the promontory that bounds Golovnin Bay on the west the Russians (Zagoskin) recorded two villages, the one near to Rocky Point being Chiukak, that on a point farther northwest being named Chaimiut. Later the name Chiukak became applied to the former Chaimiut, while Chiukak proper was dead and forgotten. On latest maps, such as Chart 9302 United States Coast and Geodetic Survey, neither of the old names appears. The name Bluff denotes a small settlement in about the location of the former Chaimiut. Some Eskimo met in Golovnin Bay said that there are skeletal remains near the original Chiukak, but an attempt to reach the place failed through rough water.

South Shore of Seward Peninsula West of Bluff

A number of dead villages are found along this coast. The first and largest is located a few miles west of Port Safety, 18 miles east

[42] This is the correct orthography. See Russian maps.

of Nome. This was a large village extending for a considerable distance along the elevated beach separating an inland lagoon from the sea. The depressions of the dwellings, of the usual dipper-with-handle type, are very plain. Old settlers at Nome remember when the village was still occupied. Nearer the sea the beach is said to have been lined with burials, but the storm of 1913 took or covered everything. (See Narrative, p. 90.)

A small Eskimo settlement existed on a rocky elevation east of Cape Nome. There are some house sites, but the place gives little promise of archeological importance. We found evidence that the site must have been occupied until fairly recently. Among the bowlders were found two skeletons.

A larger dead village is located near the mouth of a little stream west of Cape Nome. It is doubtless the Azachagiag of the Zagoskin general map. It gives no great promise archeologically.

From Nome to Point Spencer there are several old sites, all "dead"; and there are one or two recently "dead" villages on Sledge (the old Aiak or Aziak) Island. Of the coast sites, the most important is reported to be that at Cape Woolley. It is said to have been the stopping point of the King Islanders and may have been their old mainland village.

A number of old sites and burial grounds have been seen or learned of in Port Clarence and Salt Lake. They are marked on the map, and those of the lake have been discussed in the Narrative (p. 117). Those on Salt Lake (Imuruk Basin) deserve attention.

Between Port Clarence and Cape Prince of Wales only one, and that evidently not a very large site, was learned of at Cape York.

The most important site of the peninsula region is doubtless that at the cape. Thanks to the able local teacher of that time, Mr. Clark M. Garber, I am able to present a detailed map of this locality. It is here that Doctor Jenness in 1926 conducted some excavations with interesting results. But the site has barely been touched. It is the nearest point to Asia. There are ample indications that it has been occupied for a long period and by relatively large numbers of people. Besides the ruined parts and old heaps there are still the skulls and bones of many burials among the rocks about the village, and there is evidence that more are in the ground. It is one of the chief sites of the far northwest for systematic thorough exploration, and such exploration is a growing necessity for all branches of anthropology interested in the problems of the Bering Sea and Asiatic-American connections.

Scammon Bay, Norton Sound, South Coast of Seward Peninsula, to Cape Rodney

[Fig. 22]

91. *Melatolik.*—A small coast village.

92. *Bimiut.*—A small coast village.

93. *Kwikak.*—Eskimo village on the outer coast in the Yukon Delta, a little south of the mouth of Black River. Native name, from the Coast Survey, 1898, which gives it as Kwikagamiut. (G. D. A.)

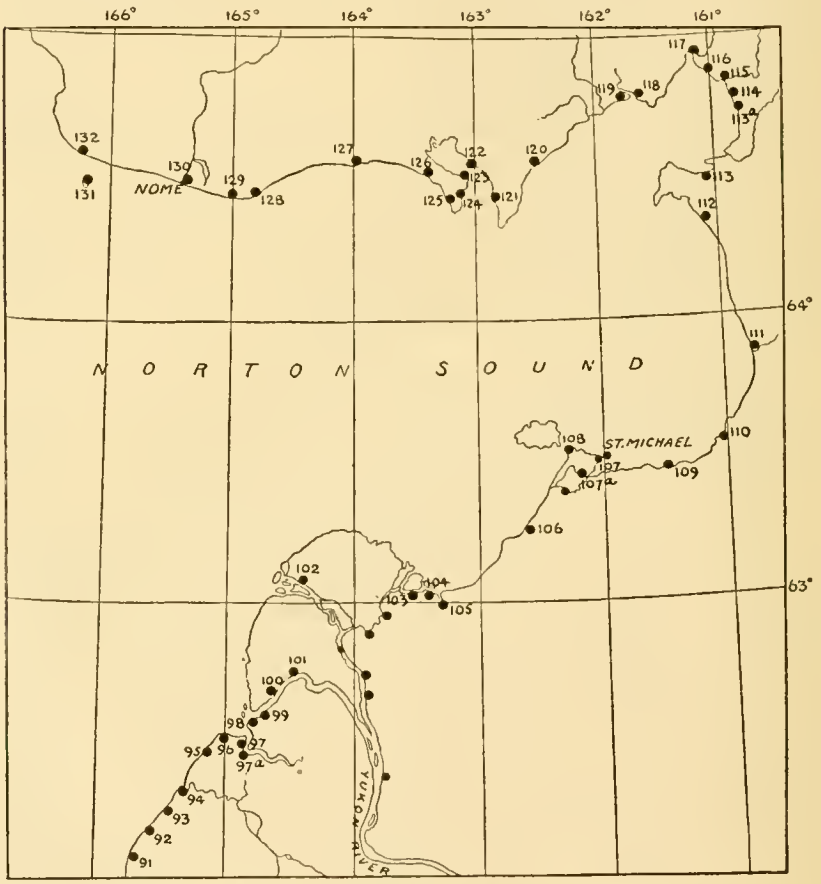


Figure 22.—Eskimo villages and sites, Scammon Bay to Norton Sound and Bay to Cape Rodney

94. *Kipniak.*—Eskimo village and Coast Survey tidal station at mouth of Black River in the Yukon Delta. Nelson, 1879, reports its name to be Kipniaguk and Dall writes it phonetically Kip-nai-ak. (G. D. A.)

95. *Kogomiut.*—A small village.

96. *Waklarok.*—A small village.

97. *Nunamekrok.*—A small village.

97a. *Eleutak.*—A small settlement.

98. *Nilak.*—A small village.

99. *Kwikluak.*—A small village near the mouth of the Kwikluak Pass of the Yukon, south bank.

100. *Alakanuk.*—A small settlement.

101. *Kwiguk.*—A village on Kwikluak Pass of the Yukon, north bank.

102. *Kwikpak.*—Village near mouth north bank of pass of same name, Yukon River.

103. *Nakhliwak.*—A small village, occupied part of time, about 2 miles from mouth of Apoon Pass, Yukon; visited by the writer; small skeletal collection.

104. *Kotlik Point.*—A store and Eskimo camp (summer) at mouth of Apoon Pass, north bank. (A. H.)

105. *Pastolik.*—Four Eskimo houses, occupied winter. Extensive burial ground near. Collections, A. Hrdlička. Good prospects for excavation in burial places.

106. *Pikmiktalik.*—Eskimo village, near the mouth of Pikmiktalik River, about 30 miles to the south of St. Michael, western Alaska. (G. D. A.)

106a. *Pastoliak.*—A site near mouth of next small stream to the north. A few houses. Some burials.

107. *St. Michael and Whale Island.*—Old sites, northeast end of St. Michael and on Whale Island, opposite. A small living village near the point of the main island, mostly mix bloods. (A. H.)

107a. Dead village. Nelson reports it had been peopled by the Pastolik Eskimo ("Eskimo about Bering Strait," p. 263).

108. *Stebbins.*—A living Eskimo village at Cape Stephens.

110. *Golsova.*—A small camp at mouth of river of same name.

111. *Unalakleet* (*or Unalaklik*).—Important old Eskimo village, Norton Sound; western end of portage to Yukon. Population in 1880, 100; in 1890, 175.

112. *Shaktolik.*—Eskimo village, at mouth of Shaktolik River, Norton Sound. Population in 1880, 60; in 1890, 38. (G. D. A.) Old settlement; several old sites in this region.

113. *Nuklit.*—Eskimo village, on the eastern shore of Norton Sound, immediately behind Cape Denbigh. (G. D. A.) Originally given on Zagoskin's general map. (A. H.)

113a. *Tapkhalik.*—Old village on east shore of Norton Bay.

114. *Unakhtuglig or Unagtulig.*—Originally given on Zagoskin's general map. (A. H.)

115. *Kviguk.*—Eskimo village, on north shore of Norton Bay, at mouth of the Kviguk River. Eskimo name, from the Russians.

Tikhmenief, 1861, has Kviegmiut and Kvieguk-miut; i. e., Kviguk people. (G. D. A.) Originally on Zagoskin's general map.

116. *Kvig-miut.*—Old village, above the preceding; originally on Zagoskin's general map.

117. *Kvinkhak* (*now Inglestat*).—Old village at head of Norton Bay. Originally on Zagoskin's general map.

118. *Tulukhtulig* (*at or near Elim*).—Old village on west coast of Norton Bay.

119. *Atnik.*—Old village below the preceding.

120. *Camp* (*Reindeer*).

121. *Chinig.*—Old village at or near the site of present mission; name now erroneously applied to village at Point Golovnin.

122. *Ikalikhvig.*—Present Cheenik, at Point Golovnin.

123. Old site; located 1926 (A. H.); a moderate-sized village; not promising for excavation.

124. *Knikhtak.*—Originally on Zagoskin's general map; now a camp, no old remains in evidence; a house and four burials on same shore, 2 miles farther south; collection (A. H.).

125. *Chiukak.*—Dead village; on Zagoskin's general map; some skeletal material remaining; name now applied to a village farther up the coast.

126. *Chaimiut.*—Dead village; originally on Zagoskin's general map; name belonged to village nearer the point.

127. *Ukvikhtulig.*—Dead village at Topkok Head; originally on Zagoskin's general map.

128. Dead village, 18 miles east of Nome, near Port Safety. (A. H.)

129. *Azachagiag.*—Dead village, west of Cape Nome; originally on Zagoskin's general map.

130. *Nome.*—Probably small native village at this site in the past. Now principal white settlement in western Alaska. King Island, Diomede, and some Wales natives reside on the outskirts during summer.

131. *Aziak Island* (*Sledge Island*).—Two dead villages; the principal one at the northern point of the island. Visited by Collins, 1928. Collections.

132. *Sinuk.*—Small old site.

133. *King Island* (*Ukiook*).—Old village, still occupied in winter; in summer inhabitants live at Nome.

133a. A village site at Cape Woolley; said to be the stopping place of the King Islanders.

134. Dead sites.

135. Burials.

136. *Siniak.*—Now a Lutheran Mission for the Eskimo.

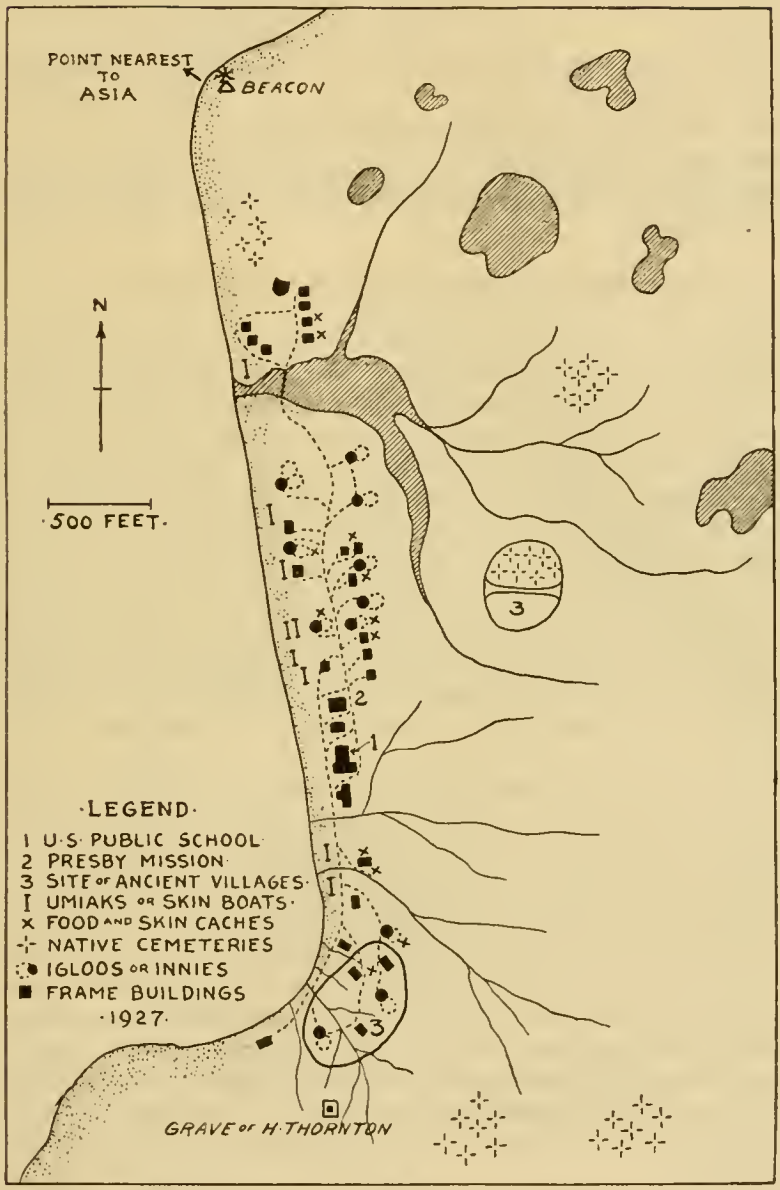


FIGURE 23.—Eskimo villages and sites, Wales. (By Clark M. Garber, 1927)

137. *Teller.*—Old Eskimo site; some still live here with a few whites. A few Eskimo camps along Tuksuk Channel.

138. *Salt Lake* (*Imuruk Basin*).—Ruins seen on north shore. (A. H.)

139. Old sites near eastern end of lake; a Chukchee-Eskimo battlefield in vicinity. (A. H.)

140. Old village site on the St. Marys River.

141. Burials reported.

142. *Wales.*—Old Nykhta, Zagoskin's maps; see special description; collections.

The Northern Shore of the Seward Peninsula

This shore is but little known to science. It is dangerous of approach to any except small boats. The only place that could be visited by me was Shishmaref, a good-sized thriving Eskimo village, on both sides of which along the sea are remains of old sites with burials. The more important old settlement was that to the east of the village. Here are found large and extensive heaps, the tops of which have recently been leveled for fox cages, the whole site belonging, regrettably, to a newly established fox farm. It is an old site, though probably occupied up to white man's times, and is doubtless of some importance. Excavations would still be possible, as the bulk of the remains is intact; and though the surface skeletal material has been removed (part saved for our collections), there are indications of surface burials (assimilations by the tundra) in the ground.

Between Wales and Shishmaref are several dead sites, as shown on the map, and some of them, judging from the information obtained, are of promise. One of these settlements, "Tapkhaig," was evidently still a living village at the time of Zagoskin (1840).

Northeast and east of Shishmaref the coast is known even less than that to the west. A few miles off Shishmaref I saw from a distance—the boat could not approach nearer—what to all appearances was a large ridge of ruins, and from various maps and other sources information was obtained of several other sites, all of which represent former villages. From one of these sites on the Bucknell River Mr. Carl Lomen secured a fine piece of fossil ivory carving, and the site is said to be of much promise. The whole coast is a virgin field for archeology.

143. *Mitletukeruk.*—Old village site. Visited by Collins, 1928; collections.

144. *Tapkhaig or Ekpik.*—Old village site, originally shown in Zagoskin's general map.

145. *Sinrazat.*—Old site.

146. *Karatuk or Shishmaref.*—Living village, with ruins on both sides. Visited by A. H.; collections.

147. *Kividlow.*—Old site.

148. Old site reported.

148a. *Siuk.*—Old site.

149. Old site (?).

150. *Paapkuk.*—Old site.

151. *Deering.*—Recent settlement, but old sites probable in vicinity.

151a. *Kualing.*—Old village, now long dead, shown by Zagoskin. (General map.)

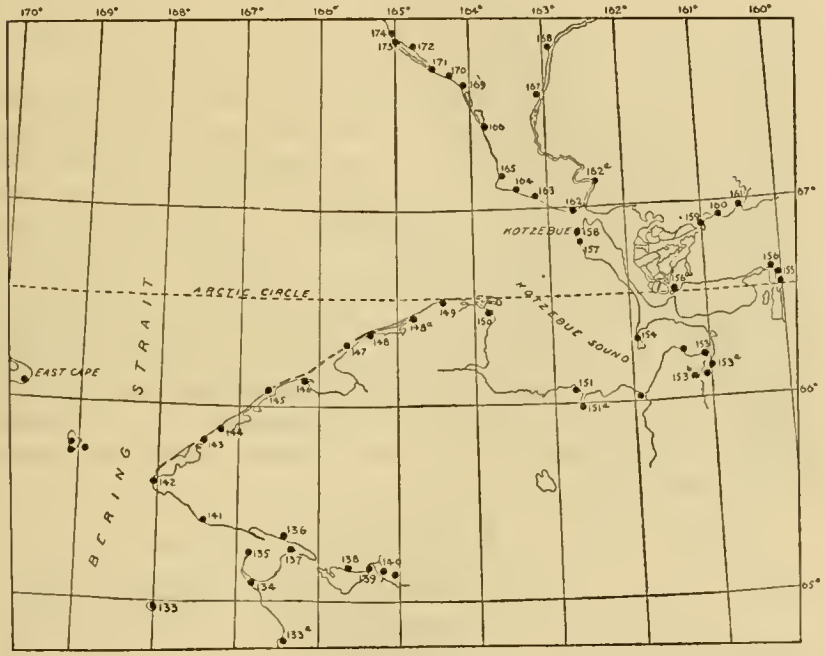


FIGURE 24.—Eskimo villages and sites, Seward Peninsula, Kotzebue Sound, and Arctic Coast, to Kevalina

152. *Kiwalik.*—A village at mouth of river of same name.

153. Dead villages reported on the two promontories; promising archeologically. On Elephant Point Nelson saw the site of an old village "with about 15 pits marking the locations of the houses." (Eskimo of Bering Strait, 264.)

153a. Buckland River. Camp sites.

153b. Old village site.

154. Old whaling place, occupied summers only. (S. Chance.)

155. *Selawik.*—Old village. Old igloos and camps at various places in the Selawik Basin. (S. Chance.)

156. Camps. (S. Chance.)

156a. *Chilivik.*—A village, now long dead, shown on the general map of Zagoskin.

157. Fish camps. (A. H.)

Kotzebue Sound, Its Rivers and Its Coast Northward to Kevalina

Figure 24 shows the village sites that it was possible to locate in these regions. Nearly all these are now "dead villages," though some Eskimo may still occasionally camp in their vicinity. A large present settlement of the Eskimo, well advanced toward civilization, is found at Kotzebue, and fish camps extend from here along the shore in the direction of Cape Blossom. Another important recent living village and school center is Noorvik on the lower Kobuk River.

Inquiries as to old sites in this region were greatly assisted by Mr. Sylvester Chance, at the time of my visit the supervisor of the Government schools of the district. At my request and with the aid of the natives Mr. Chance has compiled a list of such sites and settlements as could still be remembered, and the information has been incorporated into these records.

Among the more important ruins of this vicinity are apparently those at and near Cape Krusenstern, and again those near Kevalina farther to the northward. Archeological specimens of considerable interest were seen and partly secured from both localities. The old Kevalina especially should receive early attention, for it is being excavated by the Eskimo of the present village, though fortunately this is at some distance.

Seward Peninsula, Kotzebue Sound, and Northward

158. *Kotzebue.*—Old name: Kikikhtagiuk. (Zagoskin, general map.) A small white with a large Eskimo settlement. Old burials in ground (assimilated). A. H. collections.

159. *Noorvik.*—White and native village; school center.

160. *Oksik.*—Old camp, still occupied. (S. Chance.)

161. *Kiana.*—Old village, still occupied. (S. Chance.)

162. *Shesoalik.*—Old camp, still occupied in summer. (S. Chance.)

162a. *Kubok.*—Old village shown on general map of Zagoskin.

163. *Aniyak.*—Old camp, still occupied. (S. Chance.)

164. Old site reported here; said to be promising archeologically.

165. *Tikizat.*—Eskimo village, at Cape Krusenstern, Arctic Ocean. Eskimo name, from Petrof, 1880, who reported a population in that year of 75.

166. *Kiligmak.*—Old camp, still occupied.

167. *Noatak.*—A living village.

168. Old camp, exact location not certain. (S. Chance.)
169. *Matthew or Aniyak.*—Old camp.
170. *Ottala.*—Camp, occupied. (S. Chance.)
171. Old site reported; exact location (?).
172. Old site, rich archeologically, exact location undetermined; small collection. (A. H.)
173. *Kevalina.*—Living Eskimo village.
174. *Pingo.*—Old dead village. (S. Chance, Jim Allen.)

Kevalina—Point Barrow

Point Hope (Tigara)

This is the most important ruin as well as living Eskimo village in Arctic Alaska. It is unanimously declared by the Eskimo of the coast to be one of the oldest settlements and has always been the largest native center on the coast. The point was called Golovnin Point by the early Russians; it was called Point Hope by Beechey in 1826 in honor of Sir William Johnston Hope. At the time of its visit by the revenue cutter *Corwin*, 1884, there are said to have been two villages;[43] the second being possibly at the site of the old whaling station. Rasmussen, who visited the village about 1924, speaks of it in part as follows:[44] "Point Hope or Tikeraq, 'the pointing finger,' is one of the most interesting Eskimo settlements on the whole coast of Alaska, and has doubtless the largest collection of ruins. The old village, now deserted, consists of 122 very large houses, but as the sea is constantly washing away parts of the land and carrying off more houses, it is impossible to say what may have been the original number. Probably the village here and its immediate neighborhood had at one time something like 2,000 souls, or as many as are now to be found throughout the whole of the Northwest Passage between the Magnetic Pole and Herschel Island."

The ruins are to the northwest and west of the present village. Those to the northwest consist of imposing heaps, which together form an elevated ridge facing the sea. It is said that this old settlement was abandoned because of the encroachments upon it by the sea, particularly during storms.

The ruins of this main compound have been for several years assiduously excavated inch by inch by the local Eskimo, and thousands of articles of great variety, of stone, bone, ivory, and wood, with here and there in the uppermost layers an object of metal, are being gathered and sold to all comers. With these are found a few human skulls and bones, but especially the skulls and bones of various animals, all of which unfortunately have hitherto been left behind in

[43] Healy, M. A. Cruise of the *Corwin* in the Arctic Ocean 1884. Washington, 1889. p. 27.
[44] Rasmussen, Knud. Across Arctic America. New York, London, 1927, 329–330.

the mud. But the probably most valuable central and lower portions of the piles remain. The locality calls loudly for proper exploration, which will well repay any museum by the quantity and value of the specimens that are sure to be recovered.

POINT HOPE TO POINT BARROW

Information about this part of the northwesternmost coast of Alaska was obtained principally from Jim Allen, the trader at Wainwright, and Charles Brower, the trader at Barrow; but parts of the coast were also examined in person. The number of old sites is rather large, but it appears that there is not much of special promise until we reach near Barrow.

Old "igloos" southwest of Barrow: From 5 to 8 miles southwest of Barrow and at some distance (up to about 400 yards) from the shore there existed, and in part still exist, a series of elevations which the natives of Barrow always regarded as natural. On excavation the larger of these elevations proved to be old structures with numerous burials and cultural objects, and the remains, as shown elsewhere, are exceptional for this coast. Six of these "mounds" have been excavated by the University of Pennsylvania Expedition (Van Valin), while several are still remaining. It is very important that these should be carefully excavated before they are attacked by the natives of Barrow for mercenary purposes.

BARROW AND POINT BARROW

Two large living villages, with old sites and inhumed (natural) burials in their vicinity, and with some old remains between them. Barrow is the most important present mixed settlement and center of civilization in the Arctic. Besides the school, it contains a mission hospital and recently a meteorological observatory and wireless station. The tundras to the east of the village for about 1½ miles show patches of burials, particularly in the more distant parts of this region on the elevations to both sides of a small stream.

Much archeological work remains to be done about Barrow, particularly in the remainder of the old "igloos." East of Point Barrow the population is very sparse and no ruins of any note or settlements are reported before those of the Barter Island and the mouth of the Colville River.

175. *Pingishuguruk.*—A small old site.

176. *Ketchemeluk.*—A small old site.

176a. *Ipnot.*—Eskimo village on the Arctic coast, near Cape Thomson, a little south of Point Hope. Name from Petrof, who wrote it Ip-Not and Ipnot, and reported a population of 40 in 1880.

177. Old whaling station.

178. *Point Hope or Tigara.*—Eskimo village at Point Hope, Arctic Ocean. It is Tiekagag-miut of Tikhmenief, 1861; Tikirak of Petrof, 1880, who reports a population in that year of 276. Spelled Tikera in the Eleventh Census. Herendeen gives Tik-i-rah. The Eskimo name of the settlement is said to be Tik-i-rah-mum. Visited by A. H.; important collections.

179. *Wewuk* (*or Wevok*).—Eskimo village on the Arctic coast, near Cape Lisburne. Eskimo name, published by the Hydrographic Office in 1890. (G. D. A.) (Jim Allen.)

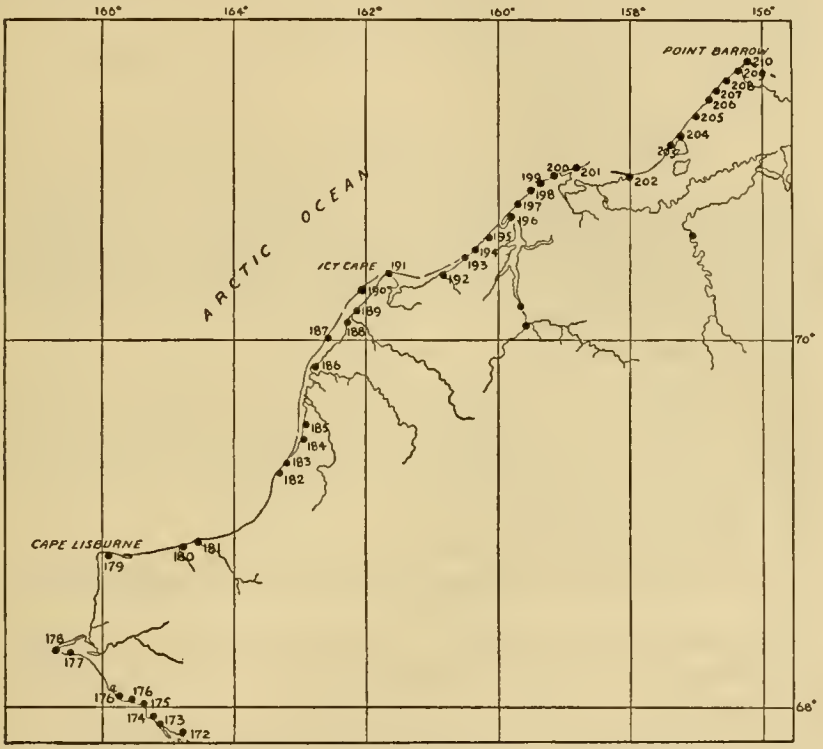


FIGURE 25.—Eskimo villages and sites, Kevalina to Point Barrow

180. *Iniktilik.*—Small village, occupied. (S. Chance.)

181. *Pitmegia.*—A small old site at the mouth of river of same name, north side. (Jim Allen, S. Chance.)

e. Napayochak.—Old camp, two igloos. (S. Chance.)

f. Tolageak.—A small old site. (S. Chance.)

g. Emelik.—A small old site. (S. Chance.)

h. Pingasoogarook.—Old village, still occupied. (S. Chance.)

182. *Umalik.*
183. *Koochik.*
184.
185.

} Trapping stations; igloos. (S. Chance.)

186. *Kokolik.*—Eskimo settlement, at Point Lay, Arctic coast. (G. D. A.) Old but still partly occupied village. (S. Chance.) Kelik. (Jim Allen.)

187. *Napayochik.*—Old camp, two igloos. (S. Chance.)

188. *Tolageak.*—Old dead igloos. (S. Chance.)

189. *Utukok.*—Old small settlement at northern mouth of Utukok River.

190. *Emelik.*—Old deserted igloo. (S. Chance.)

191. *Kayakshulik.*—A live village at Icy Cape. (Jim Allen, S. Chance.)

192. *Nokotlik* (*?*).—Old igloo. (S. Chance.)

193. *Mitliktavik.*—A dead moderate-sized village, about 5 miles below Kilik. (Jim Allen.)

194. *Kilimantavic.*—Eskimo village, near Wainwright Inlet, Arctic coast. Tikhmenief, 1861, calls it Kilametagag-miut; Petrof, 1880, calls it Kolumakturook; Hydrographic Chart 68 calls it Kelamantowruk, while later charts omit it or call it Kilimantavic. According to Murdoch this name is Ke-lev-a-tow-tin (sling). (G. D. A.) A large dead village about 20 miles below Wainwright. (Jim Allen.) Kilamitavic. (S. Chance.)

195. Old abandoned camp. (S. Chance.)

196. *Wainwright.*—A large living native village; some remains of old habitations on its eastern outskirts. (A. H.) About a mile south of present settlements are the remains of the old village once occupied by the Wainwright people. (Jim Allen.)

197. *Kululin.*—Old site.

198. *Sedaru.*—Old dead village.

199. *Atnik.*—Old dead village. (S. Chance.) Possibly same with next.

200. *Itanik.*—On maps Atanik. Old village, still partly occupied. (S. Chance, Jim Allen.) Called Atanick in Tikhmenief, 1861. (G. D. A.)

201. *Pinoshuragin.*—Petrof, 1880, shows a native village of this name (population 29) on the Seahorse Islands. On British Admiralty Chart 593 (ed. of 1882) it is called Pingoshugarun. (G. D. A.) Pingasoogarook: Old village, still occupied. (S. Chance.)

202. *Kokolak.*—Two old igloos, still occupied. (S. Chance.)

203. *Sakamna.*—Small camp.

204. *Sinaru.*—Small camp about 22 miles from Barrow; visited by A. H.; small skeletal collection.

205. *Walakpa.*—A small dead old settlement about 12 miles from Barrow.

206. *Nunava.*—Small camp.

207. "*Old Igloos.*"—A very important site archeologically. Explored partly by Van Valin. (See special section devoted to this site.)

208. *Barrow.*—Known also as Utkiavik, Uglaamie, or the Cape Smyth village. Important white and Eskimo settlement. Old remains. Extensive burial grounds east of village. (A. H. collections.)

209. *Nunawa.*—Remains of old camping site, about 4 miles from Barrow.

210. *Point Barrow.*—The Eskimo Nuwuk. Good-sized living village. Remains of older habitations. Population in 1853, 309. (G. D. A.)

The St. Lawrence and Diomede Islands

ST. LAWRENCE ISLAND

Ranking in archeological and anthropological importance with Wales and in some respects perhaps even exceeding the latter, is the large island of St. Lawrence, with the almost forgotten little Punuk group at its eastern extremity.

FIGURE 26.—Russian map of St. Lawrence Island, 1849. (Tebenkof)

The main island was discovered by Bering on St. Lawrence Day, August 10, 1728, and it was found peopled by the Eskimo. In 1849 an excellent map of it was published by Tebenkof in Novo-Archangelsk, and on this map (fig. 26) are indicated about a dozen smaller or larger Eskimo settlements, some of which, however, are not named and may already have been "dead."

About 1878 there were still six settlements with somewhat less than 1,500 Eskimo inhabitants on the island. That winter (1878–79) not

less than 1,000 of the population died of famine (Hooper), three of the villages becoming completely depopulated and a fourth nearly so. The Punuk Island village may have become extinct about the same time.

To-day there are on the St. Lawrence Island but two living settlements, the main one, now known as Gambell, at the old site of Chibukak on the northwestern cape, and the other, Savonga, about 40 miles east of it, near Cape North.

A number of the old sites on this island, and also that on one of the Punuks, indicate a long occupation, antedating by far the advent of the Russians. The accumulations rise in some places to imposing heaps or ridges. Their frozen contents yield quantities of fossil ivory, all of which shows the work of man, and among them occur specimens with fine curvilinear designs and of high scientific as well as artistic value.

Through Nelson in 1881 and R. D. Moore in 1912 the Smithsonian Institution has acquired a large quantity of human skeletal material from the main island, and there is now (1928) an expedition of the Institution under Collins on the Punuk as well as the St. Lawrence exploring some of the principal ruins.

THE DIOMEDE ISLANDS AND THE ASIATIC COAST

[FIGS. 27 AND 28]

The smaller or American Diomede, though a very inhospitable place, supports, and that evidently since long, a small Eskimo village of stone houses, below and about which there is a considerable accumulation of refuse. Doctor Jenness dug here for a short time in 1926.

The larger or Russian Diomede has two villages, each of which is larger than the one on the smaller island. There are also said to be some remains in a broad depression on the eastern side of the island, while skeletal remains are reported by the natives to exist among the rocks on the top. This island is in need of thorough attention. Its people are reputed to be skilled ivory workers. They come yearly to Nome, where they were visited and seen at their work by the writer. They bring each year some fossil ivory, said to come mainly from the Asiatic coast, and among this are occasionally articles of much interest.

Ruins of Eskimo villages are also present along the coasts of the Chukchee Peninsula, both those facing the Bering Sea and those along the Arctic. Very little is definitely known or can be found from the American Eskimo about these ruins, and some of them may not be Eskimo. Nelson in his book (p. 265) reports briefly

on a few about Cape Wankarem. Interesting objects of the fossil ivory culture are said to occur in these old sites as far west as the Kolyma, but nothing is certain except that there are ruins, that a good number of them are probably Eskimo, and that fossil ivory, both worked (walrus) and unworked (mammoth), comes from these

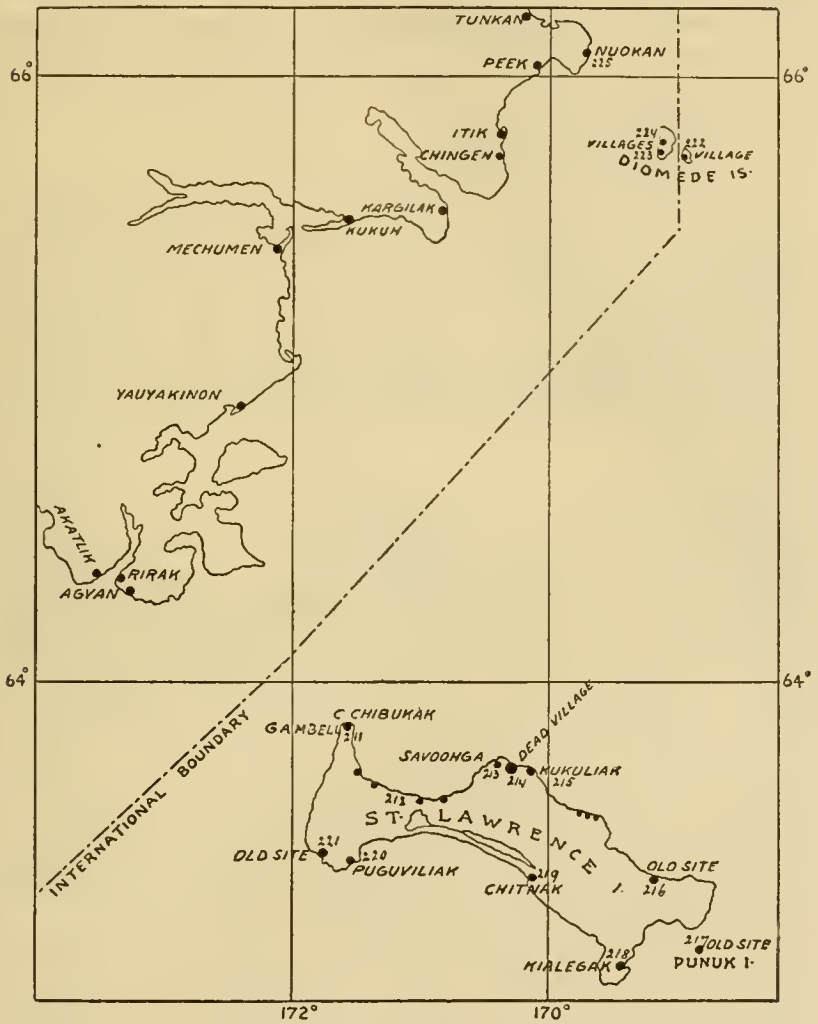


FIGURE 27.—Eskimo villages and sites, St. Lawrence Island, the Diomedes, and the eastern Asiatic coast

coasts. A noteworthy report is that of a large native cemetery on the Bering Sea side, with hundreds of burials in rough stone-slab graves. Information of this was given me by Joe Bernard, well known in connection with Bering Sea explorations, who had seen the site in person.

211. *Gambell (or Chibukuk).*—Old Eskimo settlement on the northwest cape of St. Lawrence Island. United States National Museum expedition, 1912, by Riley D. Moore; anthropometric data; important collections.

212. Small sites, north bay, St. Lawrence Island, indicated on 1849 Russian map (q. v.).

213. *Savonga.*—A small modern Eskimo village. A. H., 1926; some collections.

214. Ruins of an old site 4 miles northeast of Savonga. Important archeologically.

215. *Kukuliak.*—Dead village.

216. Former summer site. Given on the 1849 Russian map.

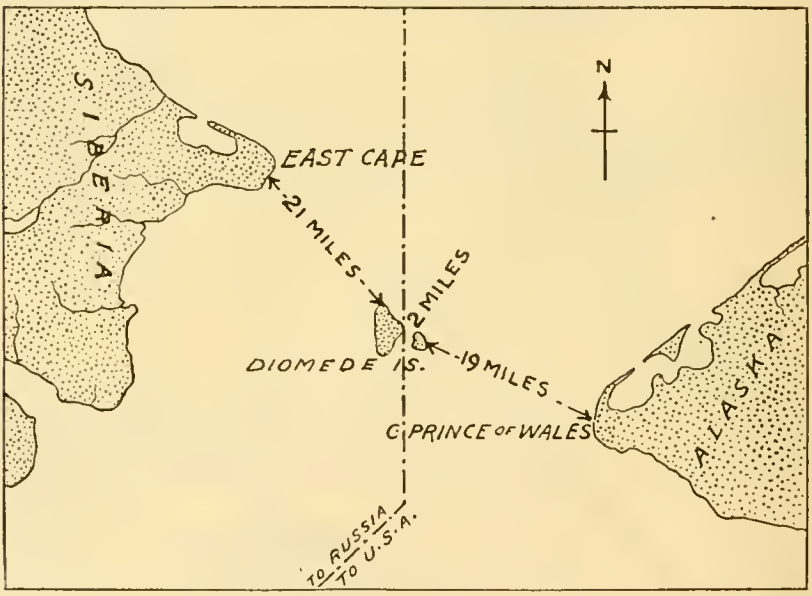


FIGURE 28.—The Bering Strait Islands

217. Important old site with large accumulations on one of the two Punuk Islands. Explored 1928 by Collins; collections.

218. *Kialegak.*—Dead village. Important archeologically. Partly explored by Collins, 1928; collections.

219. *Chitnak.*—One of the dead villages of 1879. (Nelson, Hooper.)

220. *Puguviliak.*—One of the dead villages of 1879. (Nelson, Hooper.)

221. Old site; no details available.

222. Living small village on the smaller (American) Diomede Island. Some old accumulations. A. H., 1926, collections; some excavations same year by D. Jenness.

223. *Nunarbuk.*—Village still occupied, on greater (Russian) Diomede, located on an elevated slope around the southern cape of the island. Skeletal and other remains reported on top of mesa.

224. Village, still occupied, on an elevated saddle near middle of west coast of island.

225. Eskimo village, East Cape of Asia. Other villages indicated along the coast of Chukchee Peninsula. Others on north coast. (See Nelson, The Eskimo of Bering Strait, p. 265.)

PHYSICAL ANTHROPOLOGY

Earlier Data

The previously published data on the western Eskimo are few in number and mostly not as well documented as would be desirable. There are, however, a good number of references to the physical characteristics of the people by explorers. The main of these are given below. These references in general are not of much scientific value, yet in some instances they approach this closely and are of considerable interest collectively.

1784, Cook:[45]

The inlet which we had now quitted, was distinguished by Captain Cook with the name of Prince William's Sound. * * * The natives whom we saw were in general of a middling stature, though many of them were under it. They were square or strong chested, with short thick necks, and large broad visages which were for the most part rather flat. The most disproportioned part of their body appeared to be their heads, which were of great magnitude. Their teeth were of a tolerable whiteness, broad, well set, and equal in size. Their noses had full round points, turned up at the tip; and their eyes, though not small, were scarcely proportioned to the largeness of their faces. They had black hair which was strong, straight, and thick. Their beards were in general thin or deficient, but the hairs growing about the lips, of those who have them, were bristly or stiff and often of a brownish color; and some of the elderly men had large, thick straight beards. * * * The complexion of some of the females, and of the children, is white without any mixture of red. Many of the men, whom we saw naked, had rather a swarthy cast, which was scarcely the effect of any stain, as it is not their custom to paint their bodies.

Vol. 3, page 31. All the Americans we had seen since our arrival on that coast (west coast of Alaska) had round, chubby faces, and high cheek bones, and were rather low of stature.

Ibid., page 72: *Norton Sound.*—The woman was short and squat and her visage was plump and round. * * * Her husband was well made and about 5 feet 2 inches in height. His hair was black and short, and he had but little beard. His complexion was of a light copper cast. * * * The teeth of both of them were black, and appeared as if they had been filed down level with the gums.

[45] Cook, Capt. James, and Capt. James King. A Voyage to the Pacific Ocean. London, 1784, II, vol. 2, p. 300.

1821, Kotzebue:[46]

Kotzebue Sound.—The Americans [i. e., Eskimo] are of a middle size, robust make, and healthy appearance; their countenances * * * are characterized by small eyes and very high cheek bones.

1832, Beechey:[47]

The western Esquimaux appear to be intimately connected with the tribes inhabiting the northern and northeastern shores of America, in language, features, manners, and customs. They at the same time, in many respects, resemble the Tschutschi, from whom they are probably descended. * * *

They are taller in stature than the eastern Esquimaux, their average height being about 5 feet 7½ inches. They are also a better looking race, if I may judge from the natives I saw in Baffin's Bay, and from the portraits of others that have been published. At a comparatively early age, however, they (the women in particular) soon lose this comeliness, and old age is attended with a haggard and careworn countenance, rendered more unbecoming by sore eyes and by teeth worn to the gums by frequent mastication of hard substances.

1850, Latham:[48]

Physically the Eskimo is a Mongol and Asiatic.

The Eskimos of the Atlantic are not only easily distinguished from the tribes of American aborigines which lies to the south or west of them, and with which they come in contact, but they stand in strong contrast and opposition to them—a contrast and opposition exhibited equally in appearance, manners, language, and one which has had full justice done to it by those who have written on the subject.

It is not so with the Eskimos of Russian-America, and the parts that look upon the Pacific. These are so far from being separated by any broad and trenchant line of demarcation from the proper Indians or the so-called red race, that they pass gradually into it, and that in respect to their habits, manner, and appearance, equally. So far is this the case that he would be a bold man who should venture, in speaking of the southern tribes of Russian-America, to say here the Eskimo area ends and here a different area begins.

1853, Hooper:[49]

Kotzebue Sound Esquimeaux.—The men generally were taller than the average of Europeans, strongly built and well formed; some had well-marked features * * *. The women were generally short, the visages of the younger ones tolerably good but * * * the very reverse was the case with the dames of more advanced age. Their figures inclined to the squat, their mien and expression promised intelligence and good nature. Although both sexes had in most instances the round flat face of the Mongolian cast, a few individuals possessed well-defined, though petite features, and all had fine eyes.

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[46] Kotzebue, Otto von, A voyage of discovery into the South Sea and Bering Strait, 1815–1818, vol. 1, p. 209. London, 1821.

[47] Beechey, F. W., Narrative of a voyage to the Pacific and Bering Strait. Philadelphia, 1832, pp. 474–476.

[48] Latham, Robert G., The varieties of man. London, 1850, pp. 290–292.

[49] Hooper, W. H., Ten months among the tents of the Tuski. London, 1853, pp. 223–224.

GRAVES AT NASH HARBOR, NUNIVAK ISLAND

(Photos by Collins and Stewart, 1927.)

SCHOOL CHILDREN AT WALES

a, Children, Nunivak Island. (Photo by Collins and Stewart, 1927)

b, Adults, Nunivak Island. (Photo by Collins and Stewart, 1927)

KING ISLAND ESKIMO: A FAMILY GROUP

KING ISLAND NATIVE

a, Young Eskimo woman, northern Bering Sea region. (Photo by Lomen Bros.)

b, Eskimo, northern Bering Sea region. (Photo by F. H. Nowell.)

A FINE FULL-BLOOD ESKIMO PAIR, NORTHERN BERING SEA REGION

TYPICAL FULL-BLOOD ESKIMO. NORTHERN BERING SEA REGION

(Photo by Lomen Bros.)

ELDERLY MAN. ST. LAWRENCE ISLAND

(Photos by R. D. Moore, 1912. U.S.N.M.)

1853, Seemann, vol. II, pages 49–51:[50]

The Eskimos.—By comparing the accounts transmitted by different writers we find that the various tribes, however widely separated geographically, differ but slightly from each other in appearance, manners, customs, or language. They are, however, by no means as uniform in size as might have been expected. Those inhabiting the vicinity of Norton and Kotzebue Sounds are by far the finest and tallest, while those living between Cape Lisburne and Point Barrow are, like the tribes of the eastern portions of America, much shorter in stature, and bespeak the inferiority of the districts in which they live.

Both sexes are well proportioned, stout, muscular, and active. The hands and feet are small and beautifully formed, which is ascribed by some writers to their sedentary habits, but this cannot be the case, as probably no people take more exercise or are more constantly employed. Their height varies. In the southern parts some of the men are 6 feet; in the more northern there is a perceptible diminution, though by no means to the extent generally imagined.

Their faces are flat, their cheek bones projecting, and their eyes small, deeply set, and, like the eyebrows, black. Their noses are broad; their ears are large, and generally lengthened by the appendage of weighty ornaments; their mouths are well formed, their lips are thin. * * *

The teeth of the Eskimos are regular, but from the nature of their food and from their practice of preparing hides by chewing, are worn down almost to the gums at an early age. Their hair is straight, black, and coarse; the men have it closely cut on the crown, like that of a Capuchin friar, leaving a band about two inches broad, which gradually increases in length towards the back of the neck; the women merely part their hair in the middle, and, if wealthy, ornament it with strings of beads. The possession of a beard is very rare, but a slight moustache is not infrequent. Their complexion, if divested of its usual covering of dirt, can hardly be called dark; on the contrary, it displays a healthy, rosy tint, and were it not for the custom of tattooing the chin some of the girls might be called pretty, even in the European acceptation of the term.

1861, Richardson:[51]

The Eskimos are remarkably uniform in physical appearance throughout their far-stretching area, there being perhaps no other nation in the world so unmixed in blood. Frobisher's people were struck with their resemblance in features and general aspect to the Samoyeds and their physiognomy has been held by all ethnologists to be of the Mongolian or Tartar type. Doctor Latham calls the Samoyeds Hyperborean Mongolidae, and the Eskimos he ranges among the American Mongolidae, embracing in the latter group all the native races of the New World. The Mongol type of countenance is, however, more strongly reproduced in the Eskimos than in the red Indians—the conterminous Tinné tribes differing greatly in their features, and the more remote Indians still more.

Generally the Eskimos have broadly egg-shaped faces with considerable prominence of the rounded cheeks caused by the arching of the cheek bones, but few or no angular projections even in the old people, whose features are always

[50] Seemann, Berthold, Narrative of the voyage of H. M. S. *Herald*. London, 1853, vols. I–II. On the Anthropology of Western Eskimo Land and on the Desirability of Further Arctic Research. J. Anthrop. Soc., London, 1865, vol. III, p. 301.

[51] Richardson, Sir John, The Polar Regions. Edinburgh, 1861, p. 301.

much weather beaten and furrowed. The greatest breadth of the face is just below the eyes, the forehead tapers upward, ending narrowly, but not acutely, and in like manner the chin is a blunt cone; both the forehead and the chin recede, the egg outline showing in profile, though not so strongly, as in a front view. The nose is broad and depressed, but not in all, some individuals having prominent noses, yet almost all have wider nostrils than Europeans. The eyes have small and oblique apertures like the Chinese, and from frequent attacks of ophthalmia and the effect of lamp smoke in their winter habitations adults of both sexes are disfigured by excoriated or ulcerated eyelids. The sight of these people is, from its constant exercise, extremely keen, and the habit of bringing the eyelids nearly together when looking at distant objects has in all the grown males produced a striking cluster of furrows radiating from the outer corners of each eye over the temples.

The complexions of the Eskimos when relieved from smoke and dirt are nearly white and show little of the copper color of the red Indians. Infants have a good deal of red on the cheeks, and when by chance their faces are tolerably clean are much like European children, the national peculiarities of countenance being slighter at an early age. Many of the young women appear even pretty from the liveliness and good nature that beams in their countenances. The old women are frightfully ugly * * *.

The young men have little beard, but some of the old ones have a tolerable show of long gray hairs on the upper lip and chin. * * * The Eskimo beard, however, is in no instance so dense as a European one.

The hair of the head is black and coarse, the lips thickish, and the teeth of the young people white and regular, but the sand that, through want of cleanliness, mixes with their food, wears the teeth down at an early age almost to the level of the gums, so that the incisors often have broad crowns like the molars.

The average stature of the Eskimos is below the English standard, but they can not be said to be a dwarfish race. The men vary in height from about 5 feet to 5 feet 10 inches or even more. They are a broad-shouldered race, and when seated in their kayaks look tall and muscular, but when standing lose their apparent height by a seemingly disproportionate shortness of the lower extremities. This want of symmetry may arise from the dress, as the proportions of various parts of the body have not been tested by accurate measurements. The hands and feet are delicately small and well formed. Mr. Simpson (Blue Book, 1855) observed an undue shortness of the thumb in the western Eskimos, which, if it exists farther to the east, was not noted by the members of the searching expeditions.

1870, Dall:[52]

Page 136: The Innuit, as they call themselves, belong to the same family as the northern and western Eskimo. I have frequently used the term Eskimo in referring to them, but they are in many respects very different people. * * * It should be thoroughly and definitely understood that they are not Indians nor have they any known relation, physically * * * to the Indian tribes of North America. Their grammar, appearance, habits, and even their anatomy, especially in the form of the skull, separate them widely from the Indian race. On the other hand, it is almost equally questionable whether they are even distinctly [distantly?] related to the Chukchees and other probably Mongolian races, of the eastern part of Siberia.

[52] Dall, W. H., Alaska and Its Resources. Boston, 1870.

The Innuit of Norton Sound and the vicinity are of three tribes, each of which, while migrating at certain seasons, has its own peculiar territory. The peninsula between Kotzebue and Norton Sounds is inhabited by the Kaviaks or Kaviagemut Innuit. The neck of this peninsula is occupied by the Mahlemut Innuit. The shore of Norton Sound south of Cape Denbigh to Pastolik is the country of the Unaleets or Unaligmut Innuit. The habits of these tribes are essentially similar. They are in every respect superior to any tribe of Indians with which I am acquainted.

Their complexion I have described as brunet. The effect of the sun and wind, especially in summer, is to darken their hue, and from observing those who lived in the fort, I am inclined to think that a regular course of bathing would do much toward whitening them. They are sometimes very tall; I have often seen both men and women nearly 6 feet in height and have known several instances where men were taller. Their average height equals that of most civilized races. Their strength is often very great. I have seen a Mahlemut take a 100-pound sack of flour under each arm and another in his teeth and walk with them from the storehouse to the boat, a distance of some 20 rods, without inconvenience.

Page 140: The women * * * are often of pleasing appearance, sometimes quite pretty. They preserve their beauty much longer than Indian women. Their clear complexion and high color, with their good humor, make them agreeable companions, and they are often very intelligent. A noticeable feature is their teeth. These are always sound and white, but are almost cylindrical, and in old people are worn down even with the gums, producing a singular appearance. The eyes are not oblique as in the Mongolian races, but are small, black, and almost even with the face. The nose is flat and disproportionately small. Many of the Innuit have heavy beards and mustaches, while some pull out the former.

Page 17: I * * * made the acquaintance of a fine-looking young Mahlemut who * * * introduced me to his wife and child, the latter about 2 years old. The former was not particularly ugly or pretty. * * * The husband was a fine-looking, athletic fellow, standing about 5 feet 5 inches, with a clear brunet complexion, fine color, dark eyes, and finely arched eyebrows. The flat nose, common to all the Eskimo tribes, was not very strongly marked in him, and a pleasant smile, displaying two rows of very white teeth, conquered any objection I might have felt to his large mouth. The baby looked like any other baby. * * *

Page 376: It has been frequently remarked that the Tuski and Innuit tribes have a Mongolian cast of countenance. This, upon an actual comparison, will be found to be much less than is usually supposed. The real points of resemblance are principally in the complexion, which is somewhat similar, and in the eyes. But the eyes of the Innuit are not oblique, as in the Chinese. They have an apparent obliquity, which is due to the peculiar form of the zygomatic arch, but the eyes themselves are perfectly horizontal. The prominent characteristics of the Orarian [53] skull are the strongly developed coronary ridge, the obliquity of the zygoma, and its greater capacity compared with the Indian cranium. The former is essentially pyramidal, while the latter more nearly approaches a cubic shape.

The mean capacity (in cubic centimeters) of three Tuski skulls from Plover Bay, according to Doctor Wyman, was 1,505; that of 20 crania of northern

[53] Orarian, a term used by the author to distinguish the tribes of Innuit, Aleutians, and Asiatic Eskimo from the natives known under the name of Indian, in allusion to the universal coastwise distribution of the former.

Eskimo, according to Doctor Davis, was 1,475, and that of 4 Innuit crania of Norton Sound was 1,320; thus showing a wide variation. The mean capacity of 20 West American Indian crania was only 1,284.06. The mean height of all the Orarian skulls above referred to was 136.55 millimeters, against a breadth of 134.47 millimeters, while the height of the Indian skulls was 120.14 millimeters, against a breadth of 100.025 millimeters. The zygomatic diameter of the Orarian crania was 134.92 millimeters, while that of 12 Indian skulls was 134.65 millimeters. The Orarian skulls were most dolichocephalic, and the Indian most brachycephalic. The latter averaged 378.71 cubic centimeters less capacity than the former. The average height of the Orarians, except among the stunted tribes of the extreme north, will average as great as that of their Indian neighbors. The strength and activity of the former far exceed that of any northern Indians with whom I am acquainted.

Page 401: The Kaniagmuts are of middle stature and a complexion more reddish than that of the Aleutians or more northern Innuit. They are stoutly built, with large broad faces, and their hair is coarse, black, and straight.

Page 407: The Magemuts * * * are tall, finely formed, and have very fair complexions. Blue eyes are not unknown among them, but their hair is black and their beards are very light.

The Ekogmuts. * * * A noticeable feature in many of them is the extreme hairiness of their persons. Many have very strong black beards and hairy bodies.

Page 410: The Point Barrow tribe are said by Richardson to be called Nuwungmëun. * * * These northern Innuit are very few in number. * * * Simpson mentions that their thumbs appeared to be disproportionately short. The same may be true of the Norton Sound Innuit; at all events, no white man can wear one of their mittens comfortably until the thumb is lengthened.

Doctor Otis, of the United States Army Medical Museum, says that the skulls found in the northern mounds have the same peculiarities which distinguish all Orarian crania, and that both are instantly distinguishable from any Indian skulls.

1874, Bancroft (compilation):[54]

"The physical characteristics of the Eskimos are: A fair complexion,[55] the skin, when free from dirt and paint, being almost white; a medium stature, well proportioned, thickset, muscular, robust, active,[56] with small and beauti-

[54] Bancroft, Hubert H., The Native Races of the Pacific States. Vol. I, New York, 1874. Wild Tribes, p. 45.

[55] *Color.*—"Their complexion, if divested of its usual covering of dirt, can hardly be called dark."—Seemann's Voy. *Herald*, vol. II, p. 51. "In comparison with other Americans of a white complexion."—McCulloh's Aboriginal Hist. of America, p. 20. "White complexion, not copper coloured."—Dobb's Hudson's Bay, p. 50. "Almost as white as Europeans."—Kalm's Travels, vol. II, p. 263. "Not darker than that of a Portuguese."—Lyon's Journal, p. 224. "Scarcely a shade darker than a deep brunet."—Parry's Third Voyage, p. 493. "Their complexion is light."—Dall's Alaska, p. 381. "Eyewitnesses agree in their superior lightness of complexion over the Chinooks."—Pickering's Races of Man, U. S. Ex. Ex., IX, 28. At Coppermine River they are "of a dirty copper color; some of the women, however, are more fair and ruddy."—Hearne's Travels, p. 166. "Considerably fairer than the Indian tribes."—Simpson's Nar., p. 110. At Cape Bathurst "the complexion is swarthy, chiefly, I think, from exposure and the accumulation of dirt."—Armstrong's Nar., p. 192. "Show little of the copper color of the Red Indians."—Richardson's Pol. Reg., p. 303. "From exposure to weather they become dark after manhood."—Richardson's Nar., I, 343.

[56] *Proportions.*—"Both sexes are well proportioned, stout, muscular, and active."—Seemann's Voy. *Herald*, II, 50. "A stout, well-looking people."—Simpson's Nar., pp. 110, 114. "Below the mean of the Caucasian race."—Doctor Hayes in Historic Magazine, vol. I, p. 6. "They are thick set, have a decided tendency to obesity, and are seldom

fully shaped hands and feet;[57] a pyramidal head;[58] a broad egg-shaped face; high rounded cheek bones; flat nose; small oblique eyes; large mouth; teeth regular, but well worn;[59] coarse black hair closely cut upon the crown, leaving a monk-like ring around the edge,[60] and a paucity of beard."[61]

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more than 5 feet in height."—Figuier's Human Race, p. 211. At Kotzebue Sound "tallest man was 5 feet 9 inches; tallest woman 5 feet 4 inches."—Beechey's Voy., I, 360. "Average height was 5 feet 4½ inches"; at the mouth of the Mackenzie they are of "middle stature, strong, and muscular."—Armstrong's Nar., 149, 192. "Low, broad set, not well made nor strong."—Hearne's Trav., p. 166. "The men were in general stout."—Franklin's Nar., I, 29. "Of a middle size, robust make, and healthy appearance."—Kotzebue's Voy., I, 209. "Men vary in height from about 5 feet to 5 feet 10 inches."—Richardson's Pol. Reg., p. 304. "Women were generally short." "Their figure inclines to squat."—Hooper's Tuski, p. 224.

[57] *Hands and feet.*—"Tous les individus qui appartiennent à la famille des Esquimaux se distinguent par la petitesse de leurs pieds et de leurs mains, et la grosseur énorme de leurs têtes."—De Pauw, Recherches Phil. I, 262. "The hands, and feet are delicately small and well formed."—Richardson's Pol. Reg., p. 304. "Small and beautifully made."—Seemann's Voy. Herald, II, 50. At Point Barrow "Their hands, notwithstanding the great amount of manual labor to which they are subject, were beautifully small and well formed, a description equally applicable to their feet."—Armstrong's Nar., p. 101.

[58] *Head.*—"The head is of good size, rather flat superiorly, but very fully developed posteriorly, evidencing a preponderance of the animal passions; the forehead was for the most part low and receding; in a few it was somewhat vertical but narrow."—Armstrong's Nar., p. 193. Their cranial characteristics "are the strongly developed coronary ridge, the obliquity of the zygoma, and its greater capacity compared with the Indian cranium. The former is essentially pyramidal, while the latter more nearly approaches a cubic shape."—Dall's Alaska, p. 376. "Greatest breadth of the face is just below the eyes, the forehead tapers upwards, ending narrowly but not acutely, and in like manner the chin is a blunt cone."—Richardson's Pol. Reg., p. 302. Doctor Gall, whose observations on the same skulls presented him for phrenological observation are published by M. Louis Choris, thus comments upon the head of a female Eskimo from Kotzebue Sound: "L'organe de l'instinct de la propagation se trouve extrêmement développé pour une tête de femme." He finds the musical and intellectual organs poorly developed, while vanity and love of children are well displayed. "En général," sagely concluded the doctor, "cette tête femme présentait une organization aussi heureuse que celle de la plupart des femmes d'Europe."—Voy. Pitt., pt. II, p. 16.

[59] *Face.*—"Large, fat, round faces, high cheek bones, small hazel eyes, eyebrows slanting like the Chinese, and wide mouths."—Beechey's Voy., I, 345. "Broad, flat faces, high cheek bones."—Doctor Hayes in Hist. Mag., I, p. 6. Their "teeth are regular, but from the nature of their food and from their practice of preparing hides by chewing, are worn down almost to the gums at an early age."—Seemann's Voy. *Herald*, II, 51. At Hudson Strait, "broad, flat, pleasing face; small and generally sore eyes; given to bleeding at the nose."—Franklin's Nar., I, 29. "Small eyes and very high cheek bones."—Kotzebue's Voy., I, 209. "La face platte, la bouche ronde, le nez petit sans être écrasé, le blanc de l'oeil jaunâtre, l'iris noir et peu brillant."—De Pauw, Recherches Phil., I, 262. They have "small, wild-looking eyes, large and very foul teeth, the hair generally black, but sometimes fair, and always in extreme disorder."—Brownell's Indian Races, p. 467. "As contrasted with the other native American races, their eyes are remarkable, being narrow and more or less oblique."—Richardson's Nar., I, 343. "Expression of face intelligent and good natured. Both sexes have mostly round, flat faces, with Mongolian cast."—Hooper's Tuski, p. 223.

[60] *Hair.*—"Allowed to hang down in a club to the shoulder."—Richardson's Pol. Reg., p. 305. "Their hair is straight, black, and coarse."—Seemann's Voy. *Herald*, II, 51. A fierce expression characterized them on the McKenzie River, which "was increased by the long, disheveled hair flowing about their shoulders."—Armstrong's Nar., p. 149.

[61] *Beard.*—"The old men had a few gray hairs on their chins, but the young ones, though grown up, were beardless."—Beechey's Voy., I, 322. "The possession of a beard is very rare, but a slight mustache is not infrequent."—Seemann's Voy. *Herald*, II, 51. "As the men grow old they have more hair on the face than red Indians."—Richardson's Nar., I, 343. "Generally an absence of beard and whiskers."—Armstrong's Nar., p. 193. "Beard is universally wanting."—Kotzebue's Voy., I, 252. "The young men have little beard, but some of the old ones have a tolerable show of long, gray hairs on the upper lip and chin."—Richardson's Pol. Reg., p. 303. "All have beards."—Bell's Geography, V, 294. Kirby affirms that in Alaska "many of them have a profusion of whiskers and beard."—Smiths. Report, 1864, p. 416.

Simpson, 1875:[62]

These people are by no means the dwarfish race they were formerly supposed to be. In stature they are not inferior to many other races and are robust, muscular, and active, inclining rather to spareness than corpulence. The tallest individual was found to be 5 feet 10½ inches, and the shortest 5 feet 1 inch. The heaviest man weighed 195 pounds, and the lightest 125 pounds. The individuals weighed and measured were taken indiscriminately as they visited the ship, and were all supposed to have attained their full stature. Their chief muscular strength is in the back, which is best displayed in their games of wrestling. The shoulders are square, or rather raised, making the neck appear shorter than it really is, and the chest is deep; but in strength of arm they can not compete with our sailors. The hand is small, short, broad, and rather thick, and the thumb appears short, giving an air of clumsiness in handling anything; and the power of grasping is not great. The lower limbs are in good proportion to the body, and the feet, like the hands, are short and broad with a high instep. Considering their frequent occupations as hunters, they do not excel in speed nor in jumping over a height or a level space, but they display great agility in leaping to kick with both feet together an object hanging as high as the chin, or even above the head. In walking, their tread is firm and elastic, the step short and quick; and the toes being turned outward and the knee at each advance inclining in the same direction, give a certain peculiarity to their gait difficult to describe.

The hair is sooty black, without gloss, and coarse, cut in an even line across the forehead, but allowed to grow long at the back of the head and about the ears, whilst the crown is cropped close or shaven. The color of the skin is a light yellowish brown, but variable in shade, and in a few instances was observed to be very dark. In the young, the complexion is comparatively fair, presenting a remarkably healthy sunburnt appearance, through which the rosy hue of the cheeks is visible; before middle life, however, this, from exposure, gives place to a weather-beaten appearance, so that it is difficult to guess their ages.

The face is flat, broad, rounded, and commonly plump, the cheek bones high, the forehead low, but broad across the eyebrows, and narrowing upwards; the whole head becomes somewhat pointed toward the crown. The nose is short and flat, giving an appearance of considerable space between the eyes. The eyes are brown, of different shades, usually dark, seldom if ever altogether black, and generally have a soft expression; some have a peculiar glitter, which we call gipsylike. They slope slightly upwards from the nose, and have a fold of skin stretching across the inner angle to the upper eyelid, most perceptible in childhood, which gives to some individuals a cast of countenance almost perfectly Chinese. The eyelids seem tumid, opening to only a moderate extent, and the slightly arched eyebrows scarcely project beyond them. The ears are by no means large, but frequently stand out sideways. The mouth is prominent and large, and the lips, especially the lower one, rather thick and protruding. The jawbones are strong, supporting remarkably firm and commonly regular teeth. In the youthful these are in general white, but toward middle age they have lost their enamel and become black or are worn down to the gums. The incisors of the lower jaw do not pass behind those of the upper, but meet edge to edge, so that by the time an indi-

[62] Simpson, John, Observations on the Western Eskimo and the Country They Inhabit. *In* A Selection of Papers on Arctic Geography and Ethnology; Pres. by the Roy. Geogr. Soc., London, 1875, pp. 238–246.

vidual arrives at maturity, the opposing surfaces of the eye and front teeth are perfectly flat, independently of the wear they are subjected to in every possible way to assist the hands. The expression of the countenance is one of habitual good humor in the great majority of both sexes, but is a good deal marred in the men by wearing heavy lip ornaments. * * *

While young the women are generally well formed and good looking, having good eyes and teeth. To a few, who besides possessed something of the Circassian cast of features, was attributed a certain degree of brunette beauty. Their hands and feet are small, and the former delicate in the young, but soon become rough and coarse when the household cares devolve upon them. Their movements are awkward and ungainly, and though capable of making long journeys on foot, it is almost painful to see many of them walk. Unlike the men, they shuffle along commonly a little sideways, with the toes turned inwards, stooping slightly forward as if carrying a burden, and their general appearance is not enhanced by the coat being made large enough to accommodate a child on the back, whilst the tight-fitting nether garment only serves to display the deformity of their bow legs. * * *

The physical constitution of both sexes is strong, and they bear exposure during the coldest weather for many hours together without appearing inconvenienced, further than occasional frostbites on the cheeks. They also show great endurance of fatigue during their journeys in the summer, particularly that part in which they require to drag the family boat, laden with their summer tent and all their moveables, on a sledge over the ice.

Extreme longevity is probably not unknown among them; but as they take no heed to number the years as they pass, they can form no guess of their own ages, invariably stating "they have many years." Judging altogether from appearance, a man whom we saw in the neighborhood of Kotzebue Sound could not be less than 80 years of age. He had long been confined to his bed and appeared quite in his dotage. There was another at Point Barrow, whose wrinkled face, silvery hair, toothless gums, and shrunk limbs indicated an age nothing short of 75. This man died in the month of April, 1853, and had paid a visit to the ship only a few days before, when his intellect seemed unimpaired, and his vision wonderfully acute for his time of life. There is another still alive, who is said to be a few years older.

1877, Dall:[63]

Page 9: The Orarians are distinguished * * * by a light fresh yellow complexion, fine color, broad build, scaphocephalic head, great cranial capacity, and obliquity of the arch of the zygoma.

Page 17: The Ekogmut inhabit the Yukon delta from about Kipniuk to Pastolik * * *. Their most noticeable personal peculiarity consists in their hairy bodies and strong beards.

1884, Hooper:[64]

About 3,000 Innuits inhabit the northwest coast of America, from the Colville River, on the east, to Bering Strait, including the islands therein, on the west. Many of these came under my observation while cruising in the Arctic Ocean in command of the *Corwin*.

In appearance they are tall and muscular, many being 6 feet in height, and some were seen that would exceed that even. Their peculiar dress gives them

[63] Dall, W. H., Tribes of the Extreme Northwest. Contribution to North American Ethnology, I, Washington, 1877.

[64] Hooper, C. L., Report of cruise of the revenue steamer *Corwin*, 1881. Washington, 1884, p. 101.

a squat appearance, and their stature seems less than it is in reality. The women are much shorter than the men, but both sexes are strong and active, though not equal in these respects to the Tchuktchis and other reindeer tribes of Siberia.

The face of the Innuit is broad below the eyes, the forehead is narrow and receding, the chin and lower jaw broad and heavy. The nose is usually broad and flattened, but not always; occasionally one is seen whose features are well formed and handsome. In the young children this is the almost invariable rule; many of them are really beautiful. The eyes are small and black, and appear to be slightly oblique, and for this reason, perhaps more than any other, they have been classed with the Mongolidæ. They have large mouths, thick, loosely hanging lips, and fine, strong teeth. These, however, from eating raw food, are usually very much worn. The labrets worn in the lips are hideous-looking things, made of bone, glass, stone, ivory, or in fact anything within the reach of the native which can be worked into the requisite shape.

They have rather light skin, very different from the Indians of the plains; and in this also they differ from the Tchuktchis, being much lighter, and when cleansed from the dirt which usually covers them, and freed from the sunburn and tan due to long exposure, they become quite fair. They have small, well-formed hands and feet, much smaller in proportion than white men. This was particularly noticeable when buying boots and mittens from them for our use; only the largest sizes made by them could be used at all. They are generally without beard, but as the men grow old, they sometimes have a thin, straggling mustache and beard, but it is never full and regular. The hair is coarse and black.

1885, Ray:[65]

Pages 37–38: The following table will show that physically the Inyu of North American coast does not conform to the typical idea of the Eskimo. They are robust, healthy people, fairer than the North American Indian, with brown eyes and straight black hair. The men are beardless until they attain the age of from 20 to 25 years, and even then it is very light and scattering, and is always clipped close in the winter; at this season they also cut off their eyebrows and tonsure their crown like a priest, with bangs over their forehead. Their hands and feet are extremely small and symmetrical; they are graceful in their movements when unincumbered by heavy clothing.

Page 46: Physically both sexes are very strong and possess great powers of endurance.

1888, Murdoch:[66]

In stature these people are of a medium height, robust, and muscular, inclining rather to spareness than corpulence, 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

[65] Ray, P. H., Ethnographic sketch of the natives. Report of the International Polar Expedition to Point Barrow, Alaska. Washington, 1885.

[66] Murdoch, J., Ethnological results of the Point Barrow expedition. Ninth Ann. Rept. Bur. Ethn., 1887–88, pp. 33–39. Washington, 1892.

pounds. 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 Doctor Simpson, nor is the shortness of the thumb which he mentions sufficient to attract attention. 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.

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 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 eyeglasses—and broad, especially across the alæ nasæ, with a peculiar, rounded, somewhat bulbous tip, and large nostrils. The eyes are horizontal, 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 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. 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.

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. 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, however, speaks of the "luxuriant 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 as 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 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.

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. * * * 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 of adoption. Doctor Simpson heard of a "rare case" where one woman had borne seven children. We heard of no twins at either village, though we obtained the Eskimo word for twins.

1890, Murdoch:[67]

The people who live on the extreme northwest corner of our continent are far from being an ugly or an ill-made race. Though they are not tall—a man of 5 feet 10 inches is a tall man among them—they are well proportioned, broad shouldered, and deep chested. The men, as a rule, are particularly well "set up," like well-drilled soldiers and walk and stand with a great deal of grace and dignity.

The women do not have such good figures, but are inclined to slouchiness. They are seldom inclined to be fleshy, though their plump, round faces, along with their thick fur clothing, often give them the appearance of being fat. They generally have round, full faces, with rather high cheek bones, small, rounded noses, full lips, and small chins. Still, you now and then see a person with an oval face and aquiline nose. Many of the men are very good looking, and some of the young women are exceedingly pretty. Their complexion is a dark brunet, often with a good deal of bright color on the cheeks and especially on the lips. They sunburn very much, especially in the spring, when the glare of the sun is reflected from the snow. They have black or dark-brown eyes and abundant black hair. The women's hair is often long and silky. When they are young they have white and regular teeth, but these are worn down to stumps before middle life is reached. Cheerful and merry faces are the rule.

1890, Kelly:[68]

Personal appearance.—There are three types observable among the Arctic Eskimos of Alaska. The tall, cadaverous natives of Kangoot, Seelawik, Koovuk, and Kikiktowruk, on Kotzebue Sound, who live on fish, ptarmigans, and marmots. They always have a hungry look and habitually wear a grin of fiendish glee at having circumvented an adverse fate. There is a tendency among these people to migrate north.

Then there is the tall, strongly knit type of the Nooatoks, a gigantic race, of a splendid physique that would be remarkable in any part of the world.

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[67] Murdoch, J., Dress and physique of the Point Barrow Eskimos. Popul. Sci. Month., Dec., 1890, 222–223.

[68] Kelly, J. W., Arctic Eskimos in Alaska and Siberia. Revised and edited by Sheldon Jackson. Bull. No. 3, Soc. Alaskan Nat. Hist. and Ethnol., Sitka, 1890, p. 15.

Rugged as the mountains among which they live, vigorous and courageous, they stop at nothing but the impossible to accomplish a desired end. Their food supply is the reindeer, mountain sheep, ptarmigans, and fish. There are many of the coast natives of this type, but they lack the healthy glow and the indomitable will of the Nooatoks.

The third type is the short, stumpy one, probably that of the old Eskimo before the admixture with southern tribes, now found on the Arctic coast. * * *

The Eskimos have coarse, black hair, some with a tinge of brown. Many of the coast people of both sexes are bald from scrofulous eruptions Males have the crown of the head closely cropped, so that reindeer may not see the waving locks when the hunter creeps behind bunch grass. They have black eyes and high cheek bones. The bones of the face are better protected from the severity of the climate by a thicker covering of flesh than southern races.

Among the coast people the nose is broad and flat, with very little or no ridge between the eyes. The adult males have short mustaches, and some of the elder ones—more noticeable in the interior—have rough, scraggy beards. Generally their beard is very scant, and most of them devote otherwise idle hours to pulling out the hairs.

1900, Nelson:[69]

The Eskimo from Bering Strait to the lower Yukon are fairly well-built people, averaging among the men about 5 feet 2 or 3 inches in height. The Yukon Eskimo and those living southward from that river to the Kuskokwim are, as a rule, shorter and more squarely built. The Kuskokwim people are darker of complexion than those to the northward, and have rounder features. The men commonly have a considerable growth of hair on their faces, becoming at times a thin beard 2 or 3 inches in length, with a well-developed mustache. No such development of beard was seen elsewhere in the territory visited.

The people in the coast region between the mouths of the Kuskokwim and the Yukon have peculiarly high cheek bones and sharp chins, which unite to give their faces a curiously pointed, triangular appearance. At the village of Kaialigamut I was impressed by the strong development of the superciliary ridge. From a point almost directly over the pupil of the eye and extending thence inward to the median line of the forehead is a strong bony ridge causing the brow to stand out sharply. From the outer edge of this the skull appears as though beveled away to the ears, giving the temporal area a considerable enlargement beyond that usually shown. This curious development of the skull is rendered still more striking by the fact that the bridge of the nose is low, as usual among these people, so that the shelf-like projection of the brow stands out in strong relief. It is most strongly marked among the men and appears to be characteristic at this place. Elsewhere in this district it was noted only rarely here and there.

All of the people in the district about Capes Vancouver and Romanzof, and thence to the Yukon mouth, are of unusually light complexion. Some of the women have a pale, slightly yellowish color, with pink cheeks, differing but little in complexion from that of a sallow woman of Caucasian blood. This light complexion is so exceptionally striking that wherever they travel these people are readily distinguished from other Eskimo, and before I visited their territory I had learned to know them by their complexion whenever they came to St. Michael.

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[69] Nelson, Edward W., The Eskimo about Bering Strait. Eighteenth Ann. Rept. Bur. Amer. Ethn., Washington, 1900, pp. 26–29.

The people of the district just mentioned are all very short and squarely built. Inland from Cape Vancouver lies the flat marshy country about Big Lake, which is situated between the Kuskokwim and the Yukon. It is a well-populated district and its inhabitants differ from those near the coast at the capes referred to, in being taller, more slender, and having more squarely cut features. They also differ strikingly from any other Eskimo with whom I came in contact, except those on Kowak River, in having the bridge of the nose well developed and at times sufficiently prominent to suggest the aquiline nose of our southern Indian tribes.

The Eskimo of the Diomede Islands in Bering Strait, as well as those of East Cape and Mechigme and Plover Bays on the Siberian coast, and of St. Lawrence Island are tall, strongly built people and are generally similar in their physical features. These are characterized by the unusual heaviness of the lower part of the face due to the very square and massive lower jaw, which, combined with broad, high cheek bones and flattened nose, produces a wide, flat face. These features are frequently accompanied with a low retreating forehead, producing a decidedly repulsive physiognomy. The bridge of the nose is so low and the cheek bones so heavy that a profile view will frequently show only the tip of the person's nose, the eyes and upper portion of the nose being completely hidden by the prominent outline of the cheek. Their eyes are less oblique than is common among the people living southward from the Yukon mouth. Among the people at the northwestern end of St. Lawrence Island there is a greater range of physiognomy than was noted at any other of the Asiatic localities.

The Point Hope people on the American coast have heavy jaws and well-developed superciliary ridges. At Point Barrow the men are remarkable for the irregularity of their features, amounting to a positive degree of ugliness, which is increased and rendered specially prominent by the expression produced by the short, tightly drawn upper lip, the projecting lower lip, and the small beady eyes. The women and children of this place are in curious contrast, having rather pleasant features of the usual type.

The Eskimo from Upper Kowak and Noatak Rivers who were met at the summer camp on Hotham Inlet are notable for the fact that a considerable number of them have hook noses and nearly all have a cast of countenance very similar to that of the Yukon Tienné. They are a larger and more robustly built people than these Indians, however, and speak the Eskimo language. They wear labrets, practice the tonsure, and claim to be Eskimo. * * * Among them was seen one man having a mop of coarse curly hair, almost negroid in character. The same feature was observed in a number of men and women on the Siberian coast between East Cape and Plover Bay. This latter is undoubtedly the result of the Chukchi-Eskimo mixture, and in the case of the man seen at Hotham Inlet the same result had been brought about by the Eskimo-Indian combination. Among the Eskimo south of Bering Strait on the American coast not a single instance of this kind was observed. The age of the individuals having this curly hair renders it quite improbable that it came from an admixture of blood with foreign voyagers, since some of them must have been born at a time when vessels were extremely rare along these shores. As a further argument against this curly hair having come from white men, I may add that I saw no trace of it among a number of people having partly Caucasian blood. As a general thing, the Eskimo of the region described, have small hands and feet and the features are oval in outline, rather flat and with slightly oblique eyes.

Children and young girls have round faces and often are very pleasant and attractive in feature, the angular race characteristics becoming prominent after

the individuals approach manhood. The women age rapidly, and only a very small proportion of the people live to an advanced age.

The Malemut and the people of Kaviak Peninsula, including those of the islands in Bering Strait are tall, active, and remarkably well built. Among them it is common to see men from 5 feet 10 inches to 6 feet tall and of proportionate build. I should judge the average among them to be nearly or quite equal in height to the whites.

Among the coast Eskimos, as a rule, the legs are short and poorly developed, while the body is long with disproportionately developed dorsal and lumbar muscles, due to so much of their life being passed in the kaiak.

The Eskimo of the Big Lake district, south of the Yukon, and from the Kaviak Peninsula, as well as the Malemut about the head of Kotzebue Sound, are on the contrary very finely proportioned and athletic men who can not be equaled among the Indians of the Yukon region. * * * There were a number of half-blood children among the Eskimo, resulting from the intercourse with people from vessels and others, who generally show their Caucasian blood by large, finely shaped, and often remarkably beautiful brown eyes. The number of these mixed bloods was not very great.

1905, Jackson:[70]

The Eskimos of Alaska are a much finer race physically than their kindred of Greenland and Labrador. In the extreme north, at Point Barrow, and along the coast of Bering Sea they are of medium size. At Point Barrow the average height of the males is 5 feet 3 inches and average weight 153 pounds; of the women, 4 feet 11 inches and weight 135 pounds. On the Nushagak River the average weight of the men is from 150 to 167 pounds. From Cape Prince of Wales to Icy Cape along the Arctic Coast and on the great inland rivers emptying into the Arctic Ocean they are a large race, many of them being 6 feet and over in height.[71] They are lighter in color and fairer than the North American Indian, have black and brown eyes, black hair, some with a tinge of brown, high cheek bones, fleshy faces, small hands and feet, and good teeth. The men have thin beards.

1916, Hawkes:[72]

The Alaskan Eskimo are a taller and more symmetrical people than their brethren of the central and eastern districts. They lack that appearance of stoutness and squatness inherent in the eastern stock, and for proportion and development of the various parts of the body they do not compare unfavorably with Indians and whites. It is not unusual to find in an Alaskan Eskimo village several men who are 6 feet tall, with magnificent shoulders and arms and bodily strength in proportion. The usual height, however, is about 168 centimeters for men, which is some 10 centimeters above the height of the eastern Eskimo. * * * The average for women among the western Eskimo is 158 centimeters, which approximates the height of the men in the Hudson Bay region, 158 centimeters (Boas). The female type in Alaska is taller and slimmer than in the east, and the width of the face is considerably less. Eskimo women of large stature are often seen in the northern section of

[70] Jackson, Sheldon, Our barbarous Eskimos in northern Alaska. The Metropol. Mag., Vol. xxii, New York, June, 1905, pp. 257–271.

[71] Either a bad misprint or bad error.—A. H.

[72] Hawkes, Ernest William, Skeletal measurements and observations of the Point Barrow Eskimo, with comparisons with other Eskimo groups. Am. Anthrop., n. s. xviii, No. 2, pp. 206–207, Lancaster, 1916.

Alaska. The individual variation here is more conspicuous than in Labrador or Hudson Bay.

1923, Jenness:[73]

In his report on the Copper Eskimos, D. Jenness gives excellent descriptive notes on this group with references to others. These notes, too voluminous to be transcribed, may well be consulted in these connections.

Older Anthropometric Data on the Western Eskimo

Stature and other measurements on the living

The earliest actual measurements of the living among the western Eskimo are those given in Captain Beechey's Narrative (1832, p. 226), where we read that of the Eskimo of Cape Thompson (north of Kotzebue Sound) "the tallest man was 5 feet 9 inches (175.3 centimeters), the tallest woman 5 feet 4 inches (162.6 centimeters) in height." As seen before, Beechey also stated that the stature of the Eskimo increases from the east to the west.

In 1881–82, Lieutenant Ray collects and in 1885 reports evidently careful measurements of 51 men and 30 women from the villages of Uglaamie, at Cape Smythe, now Barrow, and Nuwuk, on Point Barrow.[74] An abstract of the data shows as follows:

Average height: Male, 5 feet 3½ inches (161.3 centimeters); female, 4 feet 11¾ inches (151.8 centimeters).
Average weight: Male, 153⅗ pounds; female, 135⅔ pounds.
Tallest male: 5 feet 8¾ inches (174.6 centimeters).
Tallest female: 5 feet 3 inches (160 centimeters).
Shortest male: 4 feet 11 inches (149.9 centimeters).
Shortest female: 4 feet ½ inch (123.2 centimeters).
Weight: Male, 126 to 204 pounds; female, 106 to 172 pounds.

In 1892, in connection with the preparation of the anthropological exhibits for the World Exposition at Chicago, an extensive effort was made under the direction of Frederick W. Putnam and Franz Boas to secure, by the help of a group of specially instructed students, physical data on many tribes of the American aborigines, and this included a contingent of the western Eskimo. An abstract of the results was reported by Boas in 1895.[75] The locality where the Eskimo were measured is not given, but it was most likely Nome or St. Michael Island. Thirty-four men gave the high (for the Eskimo) average of 165.8 centimeters, an unstated number of women an equally elevated average of 155.1 centimeters. No details

[73] Jenness, D., Physical characteristics of the Copper Eskimos. Rept. Canad. Arct. Exp. 1913–1918. Ottawa, 1923, p. 38.

[74] Ray, Lieut. P. H., Report of the International Polar Expedition to Point Barrow, Alaska. Washington, 1885, p. 50.

[75] Zur Anthropologie der Nordamerikanischen Indianer. Verh. Berl. Ges. Anthrop., Sitz. Mai 18, 1895 (with Z. Ethnol. for same year).

are given. There is also given the mean and distribution of the cephalic index on 114 living western Eskimo of both sexes. (On chart, p. 395, the number is 141.) The mean index was 79.2. There are again, as under Stature, no details as to locality, and none could be obtained from the author.

In 1901 Deniker, in his Races of Man (p. 580), reports the stature of 85 Eskimo of Alaska, doubtless males, as 163 centimeters. There are no details, no references, and I have not been able to trace the source of the measurement.

During the years 1897–1899 A. J. Stone made an extended journey along a portion of the upper Yukon and through parts of northwestern Alaska and the Mackenzie River basin, for the American Museum of Natural History. On this journey he made some measurements of Indian and Eskimo, and these were published in 1901 by Franz Boas.[76] The Eskimo measured were the "Nunatagmiut" (11 males, 5 females), of the Noatak River, Alaska, and the "Koukpagmiut," (12 males, 6 females), east of the mouth of the Mackenzie. The Noataks, who alone interest us more closely here, gave the relatively high (for Eskimo) stature of 167.9 centimeters in the men and 155.6 centimeters in the women. The number of subjects is small and there may possibly have been some unconscious selection; yet it is clear that in this group there are numerous fairly tall individuals.

STONE'S DATA ON THE NOATAK RIVER ESKIMO

	Males (11)	Females (5)		Males (11)	Females (5)
Stature	167. 9	155. 6	Height of nose	5. 63	5. 3
Stretch of arms	173. 0	159. 2	Width of nose	3. 76	3. 34
Height of shoulder	139. 7	128. 4	Index of stretch of arms	103. 1	102. 4
Length of arm	73. 9	66. 0	Index of arm		42. 6
Height sitting	86. 8	81. 8	Index of height sitting	52. 6	52. 4
Width of shoulders	38. 0	34. 2	Index of width of shoulders	22. 6	22
Length of head	18. 9	18. 1	Cephalic index	81. 6	78. 8
Width of head	15. 45	14. 26			
Width of face	15. 57	14. 46			
Height of face	12. 84	11. 98			

[76] A. J. Stone's Measurements of Natives of the Northwestern Territories. Bull. Am. Mus. Nat. Hist., 1901, xiv, pp. 53–68.

In addition, Doctor Jenness, in 1913, measured 13 adult male Point Hope Eskimo for stature, head length, and head breadth.[a] He obtained the following records:

Stature	Head length	Head breadth	Cephalic index	Stature	Head length	Haad breadth	Cephalic index
160. 5	19. 7	15. 1	76. 6	174. 3	18. 6	15. 1	81. 1
168. 5	19. 6	14. 7	75. 0	158. 3	18. 7	15. 4	82. 3
167. 3	19. 4	14. 5	74. 7	168. 2	19. 2	16. 3	84. 9
162. 9	21. 0	14. 6	69. 5	167. 3	18. 7	15. 9	85. 0
162. 4	19. 2	14. 5	75. 5				
167. 8	19. 5	14. 9	76. 4	*Means* [1]			
170. 2	18. 8	14. 7	78. 2				
170. 4	18. 8	14. 8	78. 7	168. 2	19. 28	15. 06	*78. 1*
168. 3	19. 4	15. 3	78. 8				

[1] By present writer.

Doctor Jenness [77] also gives useful data on the stature and cephalic index of living Eskimo from other localities which, with the addition of the sources and a slightly different arrangement, are here reproduced:

STATURE

Place	Men		Women	
	Cases	Stature	Cases	Stature
Smith Sound (Steensby)	8	157. 4	10	145. 4
S. W. Greenland (Hansen)	21	157. 6	24	151. 8
Labrador (Duckworth and Pain)	11	157. 7	10	149. 7
Smith Sound (Hrdlička) [1]	3	157. 7		
S. E. Greenland (Hansen)	22	160. 4	23	152. 9
Point Barrow (Ray)	51	161. 5	28	153. 6
Hudson Bay (South Island and Aivilik) (S. I. 35, Toeher; A. 9, Boas)	44	162. 0	12	151. 8
Mackenzie Delta (Jenness)	4	162. 2		
N. E. Greenland (Hansen)	31	164. 7	15	155. 1
Coronation Gulf (Jenness)	82	164. 8	42	156. 4
Iglulik, Hudson Bay (Parry)	20	166. 0	20	153. 7
Point Hope (Jenness)	13	166. 5		
Mackenzie Delta (Stone)	12	167. 5	6	151. 5
Noatak River (Stone)	11	167. 9	5	155. 5

[1] Added from author's Anthropology of Central and Smith Sound Eskimo, 1910, 228; the stature of one woman was 146.7.

[a] Physical Characteristics of tha Copper Eskimo. Rep. Canad. Arch. Exped. 1913-1918, Ottawa, 1923, Introd., also p. B37.

[77] Rep. Canad. Arct. Exped., 1913-1918, B50.

CEPHALIC INDEX [1]

Place	Men		Women	
	Cases	Index	Cases	Index
Mackenzie Delta (Stone)	12	73. 9		
Mackenzie Delta (Jenness)	4	76. 1	6	75. 2
Southeast Greenland (Hansen)	22	75. 7	23	75. 0
Labrador (Duckworth and Pain)	11	77. 0	10	74. 5
Hudson Bay (Tocher and Boas)	35	77. 2		
Coronation Gulf (Jenness)	82	77. 6	42	76. 6
Northeast Greenland (Hansen)	31	77. 8	15	76. 5
Smith Sound (Steensby)	8	78. 0	10	77. 4
Southwest Greenland (Hansen)	21	78. 1	24	76. 8
Point Hope (Jenness)	13	[2] 78. 3		
Noatak River (Stone)	11	81. 6	5	78. 8

[1] Physical Characteristics of the Copper Eskimo. Rep. Canad. Arct. Exped., 1913–1918, Ottawa, 1923 p. B55.

[2] The totals of the measurements give *78.1*—A. H.

THE SKULL

The first western Eskimo skull collected for scientific purposes was apparently that of a female St. Lawrence Islander. It was taken from the rocks of the island by the Kotzebue party in 1817. It was reported upon phrenologically in 1822 by Gall.[78]

In 1839 Morton, in his "Crania Americana" (p. 248), gives measurements and the illustration of a western Eskimo skull from Icy Cape, collected by Dr. A. Collie, surgeon of H. M. S. *Blossom*. The principal measurements of this evidently female skull were: Length, 17.02 centimeters; breadth, 12.70; height, 12.70. Cephalic index, *74.6*.

In 1862 [79] and 1863 [80] Daniel Wilson reports briefly on six Tchuktchi skulls, which were probably those of Asiatic Eskimo. He says:

> My opportunities for examining Esquimaux crania have been sufficient to furnish me with very satisfactory data for forming an opinion on the true Arctic skull form. In addition to the measurements of 38 skulls, * * * I have recently compared and carefully measured six Tchuktchi [probably Asiatic coast Eskimo] skulls, in the collection of the Smithsonian Institution, exhumed from the burial place of a village called Tergnyune, on the island of Arikamcheche, at Glassnappe Harbor, west of Bering Strait, and during a

[78] Voyage pittoresque autour du Monde, by Louis Choris, Paris, 1822, pp. 15, 16.

[79] Wilson, Daniel, Prehistoric man. Two vols. Lond., 1862; II, pl. 15; 3d ed., 1876, II, 192, 15.

[80] Wilson, Daniel, Physical ethnology. Smithsonian Report for 1862, Washington, 1863, pp. 261–262. The measurements of the Tchuktchi are given in the Prehistoric Man, vol. II, Table 16.

recent visit to Philadelphia I enjoyed the advantage of examining, in company with Dr. J. Aitken Meigs, a series of 125 [eastern] Esquimaux crania, obtained by Doctor Hayes during his Arctic journey of 1860. The comparison between the Tchuktchi and the true Esquimaux skull is interesting. Without being identical, the correspondence in form is such as their languages and other affinities would suggest. Of the former, moreover, the number is too few, and the derivation of all of them from one cemetery adds to the chances of exceptional family features; but on carefully examining the Hayes collection with a view to this comparison, I found it was quite possible to select an equal number of Esquimaux crania closely corresponding to the Tchuktchi type, which indeed presents the most prominent characteristics of the former, only less strongly marked.

In Prehistoric Man, Volume II, Plate XV, this author gives also the measurements of the Icy Cape skull recorded by Morton.

The principal mean measurements of the six Tchuktchi skulls (both sexes) were: Height, 17.60 centimeters; breadth, 13.59; height, 13.77; cranial index, *77.2*.

The next measurements on western Eskimo crania are those given in 1867 by J. Barnard Davis (*Thes. cran.*). This author measured 6 skulls, 3 of which were from Port Clarence (Seward Peninsula), 2 from Kotzebue Sound, and 1 from Cape Lisburne. The measurements, regrettably, are in inches. They include the greatest glabello-occipital length, greatest breadth, height (plane of for. magn. to vertex), height of face (chin-nasion), and breadth of face (d. bizygom. max.). The cranial index of the 4 specimens identified as male averaged *75.5* (75–76), that of the 2 females *77.5* (77–78). On page 226 the author mentions also an artificially deformed skull of a Koniag; this was in all probability a wrong identification for no such deformations are known from the island (Kodiak).

In 1868 Jeffries Wyman[81] published measurements of 5 skulls of "Tsuktshi," the same as those of Daniel Wilson, and of 5 from the Yukon River, "three of which are Mahlemuts."

The identification of the specimens was partly erroneous. The data with corrected identification are republished by Dall (q. v.) in 1877. And the same skulls figure in all future measurements.

In 1875 Topinard[82] gives the Barnard Davis measurements in metric form without, so far as the western Eskimo are concerned, any additions.

The main measurements of Barnard Davis's western Eskimo skulls, converted to metric values, follow. The sex identification in some of the specimens is doubtful.

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[81] Observations on Crania. Proc. Bost. Soc. Nat. Hist., xi, 440–462. Boston, 1868.

[82] Topinard, P., Mesures craniometriques des Esquimaux. Rev. d'Anthrop., 1873, II, 499–522.

	Skull length	Breadth	Height (to vertex)	Cranial index
Port Clarence, male	17. 8	13. 45	−14	*75. 7*
Do	17. 8	13. 45	14. 2	*75. 7*
Port Clarence, female	−18	−14	13. 45	*77. 5*
Means of the three	17. 86	13. 64	13. 59	*76. 4*
Kotzebue Sound, male	17. 55	13. 2	13. 45	*75. 4*
Kotzebue Sound, female	17. 3	13. 45	13. 7	*77. 9*
Means of the two (probably both females)	17. 4	13. 35	13. 6	*76. 6*
Cape Lisburne, male	18. 3	14. 2	−14	*77. 8*

The next records are those by George A. Otis, published in 1876 in the Check List of the Specimens in the Section of Anatomy of the United States Army Medical Museum, Washington (pp. 13–15). Aside from those on Greenland crania the author gives here the measurements of 3 presumably Eskimo skulls collected by Dall; of 2 western Eskimo skulls, no locality; and of 3 Mahlemut skulls, probably from Norton Sound (St. Michael Island). In his later (1880) catalogue,[83] page 13, Otis adds to the above three skulls from Prince William Sound, which, however, were more probably Indian; the three Mahlemuts, on the other hand, are given with the Alaskan Indians (p. 35). These data are of but little value. The Eskimo skulls are the same Smithsonian specimens that were reported upon in 1868 by Jeffries Wyman.

In 1878, Rae[84] mentions some measurements or observations on the skulls of Western Eskimo by Flower, but no records of these could be located. Rae says:

> I had the privilege of attending the series of admirable lectures so ably given by Professor Flower at the Royal College of Surgeons a few weeks ago on the "Comparative Anatomy of Man," from which I derived much useful information and on one point very considerable food for thought.
>
> I allude to the wonderful difference in form exhibited between the skulls of the Eskimos from the neighborhood of Bering Strait, and of those inhabiting Greenland, the latter being extremely dolichocephalic, whilst the former are the very opposite—brachycephalic, the natives of the intermediate coast, from the Coppermine River eastward, having mesocephalic heads.

[83] List of the specimens in the Anatomical Section of the Army Medical Museum. Washington, 1880.

[84] Rae, John, Eskimo skulls. J. Anthrop. Inst. Gr. Brit., London, 1878, VII, 142.

In 1879 Lucien Carr, in his "Observations on the Crania from the Santa Barbara Islands, California"[85] (p. 281), gives erroneously Otis's measurements of Aleut skulls as those of "Alaskan Eskimo."

Meanwhile W. H. Dall has published (1877) his monograph on the "Tribes of the Extreme Northwest,"[86] in which he includes Wyman's and also some of Otis's data on the Eskimo (and Aleut) skulls from Alaska and Asia. The Tshuktshi are now classed as Asiatic Eskimo, the Mahlemuts as Eskimo from St. Michael Island. The total number of skulls described in the former series is 11, in the latter series 6 (of Aleuts the number of skulls measured is 27 adults and 7 children). The means of the principal measurements of the Eskimo series, both sexes together, are as follows:

JEFFRIES WYMAN'S AND OTIS'S MEASUREMENTS OF WESTERN ESKIMO CRANIA

Crania (both sexes)	Length	Breadth	Height	Cranial index
Asiatic Eskimo	(11) 17. 8	(11) 14. 1	(7) 13. 2	(11) *79. 3*
Northwest American Eskimo	(6) 17. 5	(6) 13. 2	(6) 13. 1	(6) *75. 1*

There were also taken the weight, capacity, circumference, longitudinal arch, length of the frontal, parietal, and occipital, "zygomatic diameter," and in two specimens of each series the facial angle. To-day these data have but a historical value.

In 1882, Quatrefages and Hamy,[87] in their "Crania ethnica" (p. 440) give the measurements of two male Kaniagmiouts (Kodiak Indian, A. Pinart, collector) and one female Mahlemiout. The principal measurements of these skulls are as follows:

	Males (2)	Female (1)		Males (2)	Female (1)
Skull:			Nose:		
Length	18. 6	17. 9	Length	5. 9	5. 1
Breadth	14. 2	13. 9	Breadth	2. 3	2. 3
Height (bas.-bg.)	14. 3	13. 2	Nasal index	*38. 98*	*45. 09*
Cranial index	*76. 34*	*77. 65*	Facial index, total	*77. 69*	*70. 37*
			Orbital index	*92. 68*	*90. 24*

In 1883 Dr. Irving C. Rosse, in his "Medical and Anthropological Notes on Alaska,"[88] refers to his examination of a number of Eskimo

[85] Rep. U. S. Geogr. Surv. W. of 100 Merid., vol. VII.

[86] U. S. Geog. and Geol. Surv. Rocky Mt. Reg. Contributions to North American Ethnology, I. Washington, 1877, p. 63 et seq.

[87] Quatrefages, A. de, and Hamy, E. T., Crania ethnica. Paris, 1882, 438, 440.

[88] Cruise of the *Corwin* in 1881. Washington, 1883, p. 38.

skulls from the St. Lawrence Island brought to the Army Medical Museum.[89] There are no measurements outside of a reference to the capacity, but there are two excellent chromolithographs showing two female crania, besides a number of outline drawings.

The next data on the western Eskimo skull are in rather unsatisfactory condition. They are those of Boas. In his report on the "Anthropologie der nordamerikanischen Indianer,"[89a] Doctor Boas mentions the cranial index of the Alaska Eskimo to average *77*; and on page 397 he reports the same index as secured on 37 "Alaska Eskimo" skulls, apparently of both sexes. The only note relating to these figures is found on page 393, where it is stated that these results proceed from measurements that had been made for the author at the Peabody Museum, Cambridge, the American Museum, New York, the Academy of Sciences, Philadelphia, and the United States Army Medical Museum, Washington; and that he utilized also the measurements of Barnard Davis and Otis. On 22 of the above western Eskimo skulls there is also given the length-height index of *76.6*. There is no information as to either sex or locality. There are no other measurements.

Deniker (1901) and later Martin (1914) repeat the data given by Boas.

In 1890 Tarenetzky[90] publishes measurements and observations on four Koniag (Kodiak) skulls and one Oglemute (Aglegmute, Alaska Peninsula). The main measurements (pp. 70–71) are:

	Koneage[a]	Koneage	Koneage	Koneage	Means[b] of the four from Kodiak Island	Aglegmjute (Alaska Peninsula)
Skull:						
Length	17. 1	16. 4	17. 2	16. 8	16. 88	19. 0
Breadth	13. 8	15. 7	15. 8	14. 4	14. 93	13. 7
Height	13. 1	14. 4	14. 0	13. 2	13. 68	14. 1
Cranial index	*80. 7*	*95. 7*	*91. 8*	*85. 7*	*88. 4*	*72. 1*
Nose:						
Length	4. 7	5. 3	5. 7	5. 9	5. 40	5. 8
Breadth	2. 4	2. 5	2. 6	2. 3	2. 45	2. 3
Nasal index	*51. 0*	*47. 1*	*46. 6*	*39. 0*	*45. 4*	*39. 6*
Orbital index	*87. 5*	*97. 6*	*92. 7*	*80. 9*	*89. 7*	*88. 1*

[a] Most if not all the Kodiak skulls are doubtless females, the Oglemute a male. Quite probably also the Kodiak skulls are those of Aleuts and not of Eskimo.

[b] By preseut author.

[89] Now in the Division of Physical Anthropology of the U. S. National Museum.

[89a] 1895, Verh. Berliner. Ges. Anthrop. p. 367 et seq.

[90] Tarenetzky, Al., Beiträge zur Craniologie der Ainos auf Sachalin. Mem. Acad. imp. Sc. St. Pétersb., 1890, XXXVII, No. 13, 1–55.

In 1900 Sergi [91] reports on four Kodiak skulls that he examined in Paris. Two of these are probably Aleut (or Indian). The cranial indices were, respectively, *75.8*, *78.3*, *88*, and *88.2*.

In 1916 E. W. Hawkes presented a thesis on the "Skeletal Measurements and Observations on the Point Barrow Eskimo, with Comparisons from other Eskimo Groups."[92] The number of skulls measured was 27, of which 14 were identified as adult males, 5 adult females, 6 adolescents, and 2 infants. In addition there are measurements by Ralph Linton of other skeletal parts than the skull of three skeletons.

The measurements, though the first taken by this author, have evidently been taken in a painstaking manner and according to modern methods, and are therefore of some value. An abstract of those on the adults follows:

PRINCIPAL MEASUREMENTS OF POINT BARROW CRANIA, BY HAWKES

	Males (14)	Females (5)		Males (14)	Females (5)
Vault:			Face.—Continued		
Length	18. 91	17. 86	Facial index, total	*92. 13*	*52. 48*
Breadth	13. 73	13. 58	Facial index, upper	*86. 20*	*54. 05*
Basion-bregma height	13. 86	13. 30	Nose:		
Cranial index	*72. 65*	*76. 06*	Height	5. 66	5. 24
Height-length index	*73. 24*	*74. 45*	Breadth	2. 30	2. 18
Height-breadth index	*100. 68*	*98. 01*	Index	*40. 69*	*41. 62*
Face:			Orbits:		
Diam. bizygom. max	14. 10	13. 40	Height	3. 76	3. 59
BF:BH proportion	*102. 6*	*98. 7*	Breadth	4. 13	4. 05
Chin-nasion height	(6) 13. 15	(3) 11. 60	Index	*91. 3*	*88. 5*
Alveolar point-nasion	(14) 7. 42	(5) 6. 80	Dental arch:		
			Length	5. 31	6. 27
			Breadth	4. 96	6. 06
			Index	*93. 4*	*96. 7*

In 1923 Cameron [93] published the following data on six western Eskimo skulls from Port Clarence, collected by the Canadian Arctic Expedition:

[91] Sergi, G., Crani Esquimesi. Atti della società Romana di antropologia, Roma, 1900, VII, 2, 93–102.

[92] Am. Anthrop., 1916, XVIII, 203–244.

[93] Cameron, John, Osteology of the western and central Eskimo. Rep. Canad. Arctic Exp., 1913–1918. Ottawa, 1923. With a report on the teeth by S. G. Ritchie and J. S. Bagnall. Table and means by the present writer.

PORT CLARENCE (SEWARD PENINSULA) ESKIMO CRANIA

Vault				Nose			
Length	Breadth	Height	Cranial index	Length	Breadth	Nasal index	Orbital index
Males:							
18.9	13. 9	14. 1	*73. 5*	5. 9	2. 5	*42. 4*	*86. 4*
18.7	14. 3	13. 7	*76. 5*	5. 3	2. 5	*47. 2*	*85. 7*
18.8	13. 25	14. 2	*70. 2*	6. 0	2. 2	*36. 7*	*86. 4*
17.8	13. 0	13. 3	*73. 4*	------	------	------	*88. 9*
19.2	13. 7	------	*71. 4*	------	------	------	------
Mean: 18.68	13. 63	13. 82	*72. 97*	5. 73	2. 40	*41. 9*	*86. 9*
Female: 17.85	13. 1	12. 8	*73. 1*	------	------	------	------

The last contribution to the craniology of the western Eskimo before the present report are the data embodied in my "Catalogue of Human Crania in the United States National Museum Collections," published in 1924.[94] These data are embodied in those of the present report.

For ready survey the old records on western Eskimo crania are given in the following table. A sex distinction in the earlier reports was mostly impracticable or remained doubtful.

PREVIOUS MEASUREMENTS OF WESTERN ESKIMO SKULLS

	Vault				Nose			Orbital index
	Length	Breadth	Height	Cranial index	Length	Breadth	Index	
1 Icy Cape, ♀ (Morton, 1839)	17. 02	12. 70	12. 70	*74. 6*	------	------	------	------
6 Asiatic Eskimo ("Tschuktchi"): mean (Daniel Wilson, 1862)	17. 60	13. 59	13. 77	*77. 2*	------	------	------	------
3 Port Clarence (Banard Davis, 1867)	17. 86	13. 64	13. 59	*76. 4*	------	------	------	------
2 Kotzebue Sound, ♀ (Barnard Davis, 1867)	17. 40	13. 35	13. 60	*76. 6*	------	------	------	------
11 Asiatic Eskimo (Wyman and Otis, 1868-1876)	17. 80	14. 10	13. 20	*79. 3*	------	------	------	------
6 N. W. Amer. Eskimo (St. Michael Island) (Wyman and Otis, 1868-1876)	17. 50	13. 20	13. 10	*75. 1*	------	------	------	------
2 Kodiak Island, ♂ (Quatrefages and Hamy, 1882)	18. 60	14. 20	14. 30	*76. 35*	5. 9	2. 3	*39*	------
1 Kodiak, ♀ (Quatrefages and Hamy, 1882)	17. 90	13. 90	13. 20	*77. 65*	5. 1	2. 3	*45. 1*	------
(37 western Eskimo) [a] (Boas, 1895)	------	------	------	(77)	------	------	------	------
4 Kodiak Island, ♀ [b] (Tarenetzky, 1900)	16. 88	14. 93	13. 68	*88. 4*	5. 4	2. 45	*45. 4*	*89. 7*
4 Kodiak Island, [c] (Sergi, 1900)	------	------	------	*2 : 77. 1* *2 : 88. 1*	------	------	------	------
14 Point Barrow, ♂ (Hawkes, 1916)	18. 91	13. 73	13. 86	*72. 65*	5. 66	2. 30	*40. 7*	*91. 3*
5 Point Barrow, ♀ (Hawkes, 1916)	17. 86	13. 58	13. 30	*76. 1*	5. 24	2. 18	*41. 6*	*88. 5*
5 Port Clarence, ♂ (Cameron, 1923)	18. 68	13. 63	13. 82	*73*	5. 73	2. 40	*41. 9*	*86. 9*
1 Port Clarence, ♀ (Cameron, 1923)	17. 85	13. 10	12. 80	*73. 1*	------	------	------	------

[a] No details; series comprises specimens measured by Wyman, Otis, and Barnard Davis.
[b] Probably Aleuts, not Eskimo.
[c] Not the same with those of Tarenetzky; two probably Aleut.

[94] No. 1: The Eskimo, Alaska and Related Indians, Northeastern Asiatics. Proc. U. S. Nat. Mus., 1924, LXIII; sep., 51 pp.

Present Data on the Western Eskimo

THE LIVING

Barring the Aleutian and Pribilof Islands in the south and the Chukchee territory in the west, the Bering Sea is wholly the sea of the Eskimo, the Indians occupying the inland but reaching nowhere to the coast. There is doubtless much of significance in this remarkable distribution. It is now quite certain that the Eskimo has not been pressed out by the Indian; there are as a rule no traces of him farther inland than where he has been within historic times. On the other hand no Indian remnants or remains are known from any part of the coasts or islands within the Eskimo region; though the study of the older sites in these regions has barely as yet begun, besides which (see Narrative) it is a serious question whether really old sites could now be located in these regions at all even if they had once existed. At all events the Eskimo appears from all indications to be the latest comer, and judging from his remains his occupancy here is not geologically ancient; it is one to be counted, apparently, in many hundreds of years rather than in thousands. The Aleuts in the south are, as I have pointed out in the Catalogue (No. 1, 1924, p. 39), not Eskimo but Indians, related to the general Alaska Indian type; and the Pribilof Islands appear never to have been occupied until fairly recently, when a good number of Aleuts, mostly mixed bloods, have been transported and established there in the interest of the seal fisheries.

MEASUREMENTS OF LIVING WESTERN ESKIMO

Thanks to Moore, Collins, and Stewart, all of the National Museum, instructed by me and working with the same instruments, we now have several small to fair series of measurements on the living western Eskimo of both sexes. They are tabulated below. They are the first made on these groups and will be of much interest both in general and in connection with the measurements made on the skulls and bones of most of the same people. The main points shown are as follows:

Stature.—The stature of the males ranges from markedly to moderately submedium. There is a considerable similarity. Only the Yukon group and that of Togiak reach near or slightly above medium, the general human medium for males approaching 165 centimeters. The female stature on the St. Lawrence Island averages 12 centimeters less than that of the males, which is about the difference found in most other peoples. At Hooper Bay, and especially at the Nunivak Island, the difference is less, indicating either that the males are slightly stunted or that the growth of the females is somewhat favored.

Height sitting.—The height-sitting-stature index ranges from slightly to quite notably higher than it is in other races, indicating a tendency toward a relatively long trunk and somewhat short limbs. A study of the long bones shows that this is due especially, if not wholly, to the relative shortness of the tibia; and the subdevelopment of this bone may, it seems, be ascribed to a great deal of squatting both at home during the long winters and in the canoes. The male Eskimo show more difference from other males in this respect than the Eskimo females show from other females.[95]

Arm span.—Relatively to the stature the length of the arms in the Eskimo males is shorter than it is in other racial groups, though there appears to be some inequality in this respect. This shortness would be especially marked if we compared the arm span with the height sitting. It is due essentially to a shortness of the distal half of the upper limbs. The males once more show this disproportion more as compared to other males than the females compared with others of their sex. (See comp. data in Old Americans.) This may be connected in some way with the male Eskimo work and habits; or it may be an expression of a correlative subdevelopment with that of the lower limbs. It is a good point for further study.

The head.—The head, especially when taken in relation to the stature, is of good size, particularly on the Nunivak Island and on the Yukon. This agrees with what is known of the Eskimo head, skull, and brain elsewhere.

The size of the Eskimo head—which is not caused by a thick skull—will best be appreciated by contrasting it with that of civilized whites. In whites in general the mean head diameter or cephalic module ranges in males from approximately 15.70 to 16.40; in the male western Eskimo groups the range is 15.87 to 16.08, and 16.11 in the group at Marshall on the Yukon. The percentage relation of the module to stature in 12 groups of male whites, including the old Americans, averages *9.31* to *10.11*; in the male Eskimo groups it is from *9.57* to *9.94*. In females, the cephalic module is 15.57 in the old Americans, 15.36 to 15.68 in the Eskimo; the relation of the module to stature in the former being *9.59*, in the latter *10.15* to *10.25*.

In the western Eskimo woman the head dimensions are particularly favorable. In the old American whites the mean head diameter in the female is to that of the male on the average as *95* to 100; in the two main groups of the western Eskimo it is as *96.1* and *96.7* to 100. Nothing is known as to the cause of this apparently favorable status of the Eskimo woman; it is another interesting point for further inquiry.

[95] For comparative data on these and other proportions see writer's Old Americans, Baltimore, 1925; also Topinard's and Martin's textbooks.

In shape, the head of the western Eskimo is highly mesocephalic to moderately brachycephalic and of only fair height, and it seldom approaches the scaphoid or dome-shaped. It is not the narrow, high, keeled skull of the northeastern and often the northern Eskimo. The physiognomy, the characteristics of the body, and the mentality and behavior, are in general typical Eskimo; but the form of the vault is substantially different. It is a form which approaches on one side that of the northwesternmost Indian, and on the other that of the northeastern and Mongoloid Asiatics. More must be said about this when we come to consider the skull.

The forehead.—Anthropometric studies have shown repeatedly[95a] that the height of the forehead is not a safe gauge of intelligence, as commonly believed, but is controlled by the variable height of the hair line. Thus the common full-blood American Negro laborer and servant show a slightly higher forehead than the educated old American whites.

Something of a similar nature is found in the Eskimo. As seen in the following table, in the males the western Eskimo forehead is absolutely, and especially relatively to stature, higher than it is in the whites. In the females the absolute height in the two races is identical, but relatively to stature the Eskimo again shows a clear though somewhat lesser advantage. The condition is apparently not due to the size of the head, for this is not greater than in the whites, in the males; while in the females, where the Eskimo shows a slightly larger head than the white in relation to stature, the forehead fails to correspond.

DIMENSIONS OF FOREHEAD

	Western Eskimo		Old Americans	
	Male	Female	Male	Female
	cm.	*cm.*	*cm.*	*cm.*
Height, nasion to hair line	6. 86	6. 45	6. 59	6. 45
Percentage relation to stature	*4. 23*	*4. 23*	*3. 78*	*3. 80*
Breadth: Diameter frontal minimum	10. 58	10. 54	10. 59	10. 12
Percentage relation of diameter frontal minimum to breadth of face	*71. 1*	*73. 7*	*76. 4*	*77. 8*
Forehead index $\frac{(H \times 100)}{(B)}$	*64. 8*	*61. 2*	*63. 7*	*62. 1*

With the lower breadth of the forehead, conditions are also interesting. The absolute figures for the two races show a reversal.

[95a] See Old Americans; also the writer's The natives of Kharga Oasis, Egypt, Smiths. Misc. Coll., Washington, 1912; Anthropology of the Chippewa, Holmes Anniv. Vol., Washington, 1916; and Measurements of the Negro, Am. J. Phys. Anthrop., 1928, XII, No. 1.

The height of the forehead is larger in the Eskimo than in the white males, equal in the females; the lower frontal breadth is equal in the males but larger in the Eskimo than in the white female. Proportionately to stature, which is so much lower in the Eskimo, both sexes of the latter show an advantage in the dimension over the white.

The percental relation of the breadth of the forehead to that of the face reflects the excess of the latter in the Eskimo, particularly the male. There is evidently not a full direct correlation between the two dimensions. Yet relatively to its height the face is broader in the females than in the males (see below), which is doubtless not without influence on the lower breadth of the forehead in the former.

To summarize, the western Eskimo forehead exceeds in area that of the American whites, in both sexes, and that particularly in relation to stature. As to the individual measurements, the male Eskimo forehead as contrasted with that of the white is especially high, the female especially broad.

To which should be added that in the Eskimo the spheno-temporal region is often remarkably full, almost bulging, so that, contrary to what may be observed in the Negro, the frontal maximum diameter is also probably larger than in the whites, all of which doubtless has significance, even though this is not yet fully understood.

The face.—The principal measurements and relations are given below. They show a face large and especially broad. Moreover, relatively to its height the face is especially broad in the Eskimo female, in connection doubtless with the well-known excess of the work (in softening leather, etc.) of her jaws, with consequent development of the muscles of mastication, which in turn broaden the zygomae.

DIMENSIONS OF THE FACE

	Western Eskimo		Old American whites	
	Male	*Female*	*Male*	*Female*
Height menton-nasion	12. 67	11. 64	12. 15	11. 09
Females to males (M=100)	*91. 9*		*91. 3*	
Diameter bizygomatic maximum	14. 88	14. 30	13. 87	12. 99
Females to males (M=100)	*96. 1*		*93. 6*	
Facial index, anatomic	*85. 2*	*81. 4*	*87. 6*	*85. 4*
Facial module (or mean diameter), anatomic	13. 77	12. 97	13. 01	12. 04
Female to male (M=100)	*94. 2*		*92. 5*	
Percentage relation of female and male to stature	*8. 49*	*8. 50*	*7. 46*	*7. 44*

The great size of the Eskimo face is especially apparent in the relations of the mean diameter of the face to stature; it is in this respect no less than 12 per cent in excess of that of the whites in the males and 12.5 per cent in the females.[96]

Lower facial breadth.—Due to the great development of the masseter muscles and the consequent frequent lesser or greater eversion of the angles of the lower jaw, the bigonial diameter in the Eskimo is very large, particularly when taken in relation to stature, and in such relation it looms especially large in the females. Compared with the old American whites, the bigonial breadth in its relation to stature is higher in the Eskimo males by 15.5 per cent, in the Eskimo females by 17.7 per cent. And measurements of Eskimo lower jaws in general show that this breadth in the western contingents is not exceptional

LOWER FACIAL BREADTH

	Western Eskimo (St. Lawrence Island)		Old Americans	
	Males	*Females*	*Males*	*Females*
Diameter bigonial	11. 78	11. 18	10. 63	9. 84
Female vs. male	*94. 9*		*92. 6*	
Percentage relation to stature	*7. 21*	*7. 39*	*6. 09*	*6. 08*
Percentage relation to breadth of face	*80*	*79. 5*	*76. 7*	*75. 8*

The nose.—The nose of the western Eskimo promises to be of much importance in the study of Eskimo origins in general. Nowhere in this region is it like the nose of the northern or northeastern groups. It is decidedly broader. Its breadth is intermediary between that of the Alaska and other Indians and that of the northern and northeastern Eskimo, connecting with both, and these characteristics are so generalized throughout western Alaska and the Bering Sea islands that they can not possibly be attributed to Indian or other admixture. Nor can this relatively broad nose of the western Eskimo be well attributed to environmental effects, i. e., to a broadening of a formerly narrow nose through climatic conditions. There do not appear to be any such conditions. The only rational explanation seems to be that this is the more original condition of the Eskimo nose, and that the northern and northeastern narrowness is a later derivation. More may be said on this point when we come to consider the skeletal remains.

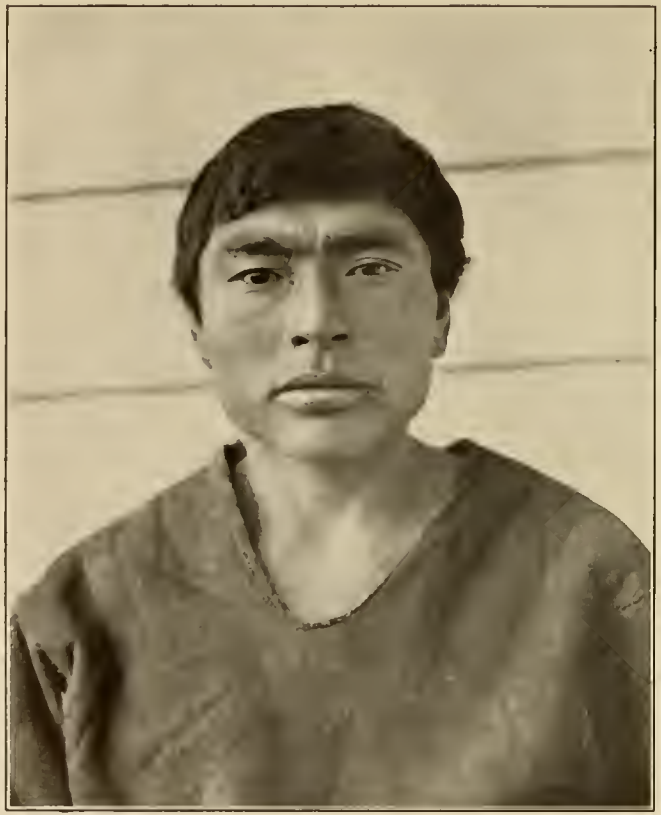
[96] A word of slight caution is due here. In all these cases the proper way would be to compare the Eskimo with whites of same mean stature. But we have no such whites available. As it is the comparisons must be taken merely as approximations, but they are so close approximations that the substance of the conclusions is probably correct.

THE WALES PEOPLE

(Photo by Lomen Bros.)

THE LONG AND BROAD-FACED TYPES, WALES

(Photo by Lomen Bros.)



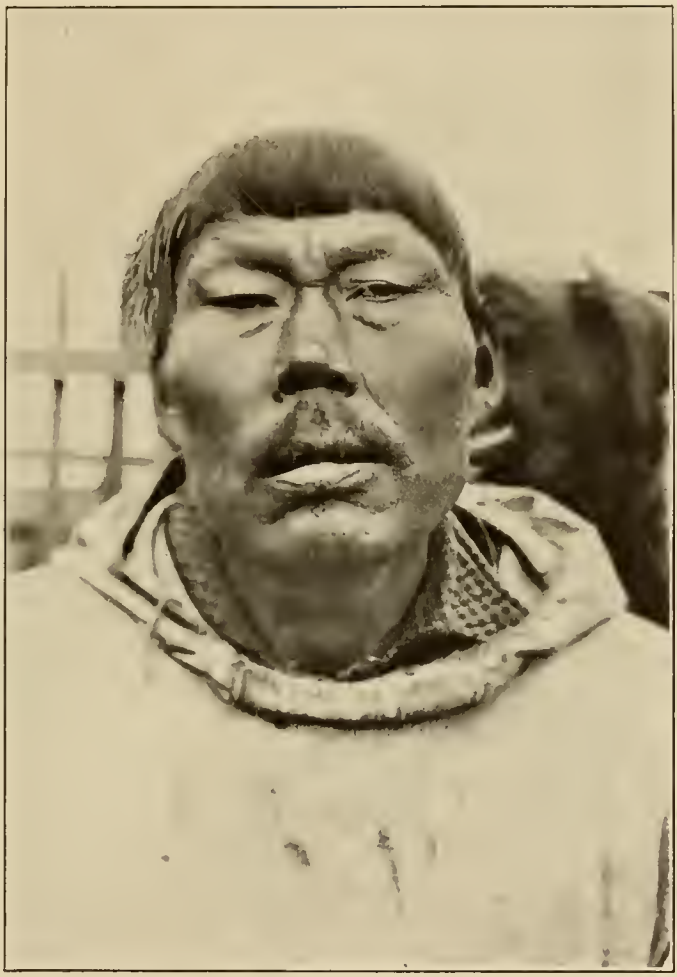
a, Broad-faced and low-vaulted Eskimo, St. Lawrence Island. (Photo by R. D. Moore, 1912. U.S.N.M.)

b, Broad-faced type, St. Lawrence Island. (Photo by R. D. Moore, 1912. U.S.N.M.)

a, A young man from Seward Peninsula.

b, A boy from St. Lawrence Island.

THE LONG-FACED TYPE



A "HYPERESKIMO," KING ISLAND. EXCESSIVELY DEVELOPED FACE

ESKIMO "MADONNA" AND CHILD, NORTHERN BERING SEA REGION

(Photo by Lomen Bros.)

The Eskimo nose is also high, which goes with the height of the whole face; that in turn evidently is attributable to more work and demand—in brief, more mastication. The nose, face, lower jaw, and other parts of the Eskimo anatomy offer rare opportunities for studies in the heredity of acquired characters.

NOSE MEASUREMENTS

	American whites		Western Eskimo	
	Old Americans and immigrants	Old Americans		
	Males	Females	Males	Females
	(13 groups)		(6 groups)	
Height	4. 95–5. 4	4. 94	5. 47–6. 03	5. 03
Breadth	3. 45–3. 6	3. 25	3. 82–3. 93	3. 61
Index	*62. 5–73*	*66*	*63. 7–71. 9*	*71. 9*

The mouth.—The western Eskimo mouth is large. It is considerably larger (wider) than in the old American whites, though these are of much higher stature. In relation to stature the width of the western Eskimo mouth exceeds that in the white old Americans by 13 per cent in the males and by nearly 14 per cent in the females, but there is a close relation with that of a large group of Indians. The details follow:

MOUTH WIDTH

	Western Eskimo (Nunivak and St. Lawrence Islands)		16 tribes of Indians of the Southwest and northern Mexico.		Old American whites	
	Males	Females	Males	Females	Males	Females
Width	5. 73	5. 44	5. 85	5. 49	5. 37	4. 95
Females versus males	*94. 9*		*93. 8*		*92. 3*	
Percentage relation to stature	*3. 53*	*3. 57*	*3. 50*	*3. 55*	*3. 07*	*3. 08*

The ears.—The ears of the western Eskimo are large. They are especially long. They exceed in both size and relative length those of whites, but are in both respects much more like those of the American Indian. The excess in length, both in the Eskimo and the Indian, is especially marked when this measurement is taken in relation to stature.

Relatively to its length, the ear of the female Eskimo in all our groups is somewhat narrow, giving a lower index. This is not observed in the available whites and Indians.

None of the series below are affected seriously by the age factor; though with an organ so much influenced by age as the ear the ideal way would be to compare only groups of the same age.

EARS

	Western Eskimo		Miscellaneous North American Indian		Old American whites (Labor Ser.)	
	Males	Females	Males	Females	Males	Females
Height of left ear	7. 05	6. 61	7. 25	6. 95	6. 69	6. 10
Breadth of left ear	3. 82	3. 49	3. 90	3. 70	3. 79	3. 47
Ear index	*54. 2*	*52. 8*	*53. 2*	*53. 6*	*56. 7*	*56. 9*
Percentage relation of ear length to stature	*4. 34*	*4. 33*	*4. 25*	*4. 35*	*3. 84*	*3. 68*

	Western Eskimo groups		Whites in general
Height of left ear	6. 71– 7. 40	6. 49– 6. 73	6. 20– 6. 69
Breadth of left ear	3. 72– 4. 04	3. 45– 3. 57	3. 58– 3. 79
Ear index	*53. 3 –58. 9*	*52. 3 –53. 1*	*56 –58. 6*

The chest.—The best measurements of the chest, experience has shown, are the antero-posterior and lateral diameters at the nipple height in the males and at the corresponding level of the upper border of the fourth costal cartilages in the females. They give not merely the individual dimensions but also their relation, which is of much ontogenic as well as other interest, and their mean gives the chest module which in relation to the stature is anthropologically as well as individually (medically) important.

The table following gives the chest measurements in the western Eskimo, in a large group of Indians (my older data), and in the old American whites as well as others.

The Eskimo chest is large. In the males, in addition, it is very deep. Compared to that of the white old Americans it is markedly deeper in the males and broader in the females, notwithstanding the fact that the Americans are much taller. It is even larger, besides being relatively deeper in the males and somewhat broader in the females, than it is in many tribes of the Indian. Only tall and bulky Indians such as the Sioux show a chest that is absolutely somewhat larger, but in relation to stature, with which the dimensions of the chest stand in close correlation,[97] the Eskimo prevails even in this instance. This excess in chest development in the Eskimo must be ascribed in the main to his occupations and exertions, particularly again, it would seem, in connection with the canoe.

[97] The chest dimensions correlate with stature, respectively the trunk height, and the breadth correlates with the depth; but both are influenced by function.

CHEST MEASUREMENTS

	Western Eskimo, Nunivak Island		16 tribes of southwestern and New Mexico Indians		Old Americans	
	Males	Females	Males	Females	Males	Females
Stature	161. 8	153. 1	167. 3	—155.	174. 3	161. 8
Breadth	29. 97	28. 63	29. 89	28. 21	29. 76	26. 62
Depth	24. 63	—22.	22. 77	21. 91	21. 70	20. 03
Index	*82. 2*	*76. 8*	*76. 15*	*77. 66*	*72. 9*	*75. 3*
Module	27. 30	25. 32	26. 33	25. 06	25. 73	23. 32
Module vs. stature	*16. 87*	*16. 53*	*15. 74*	*16. 17*	*14. 75*	*14. 41*

	4 other groups of western Eskimo, males	72 Sioux Indians, males	12 other groups of white males
Stature	—160. 6–166.	—174.	163. 4–171. 6
Breadth	—29. 6– 30.	31. 92	—25. 9– 28.
Depth	—23. – 24. 75	—26.	20. 9– 22. 6
Index	*76. 7– 83. 3*	*81. 4*	*72. 9– 81. 5*
Module	26. 97	28. 96	23. 4– 25. 7
Module vs. stature	*16. 56*	*16. 64*	*14. 22– 14. 84*

The hand.—The hand of the Eskimo is small, both absolutely and relatively to stature. But it is rather broad relative to its length, giving a high index. The index is higher than that of any of the groups available for comparison, white or Indian, excepting a few groups of immigrant whites, laborers.

HAND

	Western Eskimo (group means)		16 tribes of southwestern and Mexican Indians		Old Americans		12 groups of immigrant whites
	Males	Females	Males	Females	Males	Females	Males
Left hand:							
Length	17. 35–18. 42	16. 60–16. 85	18. 53	17. 20	19. 28	17. 34	----------
Breadth	8. 60– 8. 90	7. 78– 8. 20	8. 51	7. 71	9. 18	7. 87	----------
Percentage relation of hand length to stature	*10. 96*	*10. 94*	*11. 07*	*11. 13*	*11. 05*	*10. 70*	*—11. —11. 3*

	Western Eskimo		Southwestern and Mexican Indians		Sioux		Old American whites		12 other groups of whites	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Hand index	49. 5	47. 5	45. 9	44. 8	47. 6	-------	47. 6	45. 4	47. 6–50. 3	------

72 Sioux males: *11. 40.*

The foot.—The foot of the western Eskimo, like his hand, is both absolutely and relatively to stature rather short, but it is broad, giving a high breadth-length index. Its actual breadth perceptibly exceeds that of the much taller old American whites, though not reaching that of any of the immigrant laborers.

Contrary to what was seen in the case of the hand, the relative proportions of the Eskimo foot, as expressed by the index, are almost identical with those of the southwestern and Mexican Indians. The Sioux foot is relatively longer, and so is that of whites except southern Italians, who, though their foot as a whole is larger, give the same index as the Eskimo.

FOOT

	Western Eskimo		16 tribes of southwestern and Mexican Indians		Old Americans		12 groups of immigrant whites
	Males	Females	Males	Females	Males	Females	Males
Left foot:							
Length	24.23	22.13	25.42	23.30	26.12	23.33	----
Breadth	9.72	8.70	10.15	9.07	9.49	8.36	----
Percentage relation foot length-stature	*14.94*	*14.61*	*15.19*	*15.08*	*14.97*	*14.42*	*15.36–15.75*

	Western Eskimo		Southwestern and Mexican Indians		Sioux		Old American whites		12 other groups of whites	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Foot index	40.1	39.3	39.9	38.9	37.1	----	36.3	35.8	37.9–40.1	----

72 Sioux males: *15.40*.

Girth of the calf.—The western Eskimo, like the American Indians, are characterized by a rather slender calf. The size of the calf correlates in a large measure with stature. Reducing our measurements to calf girth-stature ratios, these are seen to be much alike in the three racial groups used for comparison, namely the Eskimo, the Indian, and the old American white. But this is deceptive. The correlation of size of calf with stature is not uniform (see "Old Americans," p. 348) for all stature groups; as the scale in stature descends the calf is relatively stouter. If we take white Americans of approximately the same stature with the Eskimo here considered, there appears a higher ratio, showing that stature for stature the girth of the calf of the Eskimo is smaller, notwithstanding his generally more ample supply of adipose tissue. Once more his relation

is closer with the Indian. The Eskimo and the Indian women are especially much alike, while the white women make a marked exception—their calfs (as well as thighs) have more fat than is found in those of their Eskimo and Indian sisters.

MEASUREMENTS OF THE LEG

	Western Eskimo		Southwestern and Mexican Indians (16 tribes)		Old white Americans	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*
Maximum girth of left calf	33. 6	31. 4	34. 1	32	36. 1	35. 5
Percentage relation to stature	*20. 7*	*20. 6*	*20. 52*	*20. 54*	*20. 3*	*21. 95*
Percentage relation to stature in those approaching the Eskimo stature	-----	-----	------	------	*21. 6*	*22. 3*
Females v. males (M=100)	*93. 5*		*93. 9*		*98. 3*	

PHYSIOLOGICAL OBSERVATIONS

Due to various difficulties which do not exist to that extent elsewhere, the physiological observations on the Eskimo are neither as numerous or extended as would be desirable; yet there are some data of value. They extend to the pulse, respiration, temperature, and dynamometric tests of hand pressure. They were made mainly on St. Lawrence and Nunivak Islands, by Moore, Collins, and Stewart. They quite agree, especially after elimination of some records that are clearly erroneous or abnormal. The tests should be extended with even more rigid precautions in future work among the Eskimo.

The results are given below. They were all made in the summer season and on healthy subjects, yet there were numerous indications of temporary disorders, pathological or functional. Even after a careful elimination of the obvious cases of such disorders not a few minor irregularities have doubtless remained, so that the data can not be taken for more than fairly close approximations to the normal.

The data show remarkably low pulse, respiration rate and temperature close to those of whites, with a submedium hand pressure. (For comparative data see "Old Americans.") The low pulse is also characteristic in the Indian, as I have repeatedly pointed out before (see especially my "Physiological and Medical Observations among the Indians," etc., Bull. 34, Bur. Amer. Ethn., Washington, 1908).

The dynamometric tests agree also better with those on the Indians than with those on whites; they are valid only as to the hands, and they embody not only the strength of the muscles but also that of the conscious impulse behind them. The age factor, of importance, does not here enter materially into the case.

PULSE, RESPIRATION, TEMPERATURE, AND STRENGTH

ST. LAWRENCE ISLAND ESKIMO

MALES—ALL

Pulse [1]	Respiration [2]	Temperature [3]	Strength (Collins dynamometer)	
			Pressure right hand	Pressure left hand
(63)	(54)	(61)	(60)	(60)
62. 1	20. 1	98. 64	34. 36	28. 75
(40–78)	(15–25)	(97. 6–99. 4)	(19. 5–45. 5)	(19. 5–44)
(47)	(47)	(47)	(57)	(57)
[4] 61. 3	[4] 20. 4	[4] 98. 84	[4] 34. 34	[4] 29. 78

FEMALES—SUSPICIOUS CASES ELIMINATED

(25)	(25)	(25)	(47)	(47)
72. 4	20	99. 13	20. 13	16. 81
(54–84)	(15–23)	(98. 4–99. 9)	(14. 5–29)	(12–22. 5)

NUNIVAK ISLAND ESKIMO

Pulse [1]	Respiration [2]	Temperature [3]
Males		
(6)	(6)	(6)
63. 2	18. 2	98. 05
(52–68)	(16–21)	(97. 8–98. 4)

[1] Sitting, at rest, no signs of any health disorder.
[2] Sitting, at rest.
[3] Sitting, at rest, sub lingua.
[4] Subjects where all three determinations were not possible and the most suspicious ones (abnormally above or below the mean) eliminated.

The details of these six records were:

Age (year)	Time of day (p. m.)	Pulse	Respiration	Temperature
40	4. 40	60	21	98. 1
33	2	66	18	97. 8
19	2. 30	68	18	98. 2
45	1. 25	68	18	98. 4
40	1. 30	64	(14)	97. 8

In connection with the pressure tests in the two hands, some interesting comparisons are possible between the Eskimo here dealt with and the old white Americans. As all the tests were made with the same instrument and method the results inspire confidence. It is in details of this nature that the anthropologist finds again and again the most striking proofs of the basal unity of the living races and their necessarily common origin somewhere in the past.

PRESSURE FORCE IN THE HANDS IN THE WESTERN ESKIMO AND OLD WHITE AMERICANS

	Western Eskimo		Old Americans	
	Male	Female	Male	Female
Pressure:	*Kg.*	*Kg.*	*Kg.*	*Kg.*
Right hand	34. 36	20. 13	41. 8	23. 3
Left hand	28. 75	16. 81	36. 1	19. 4
Percentage relation of left to right	*83. 7*	*83. 5*	*86. 4*	*83. 6*
Percentage relation of female to male (M = 100):				
Right hand	*55. 8*		*55. 5*	
Left hand	*53. 7*		*53. 7*	

SUMMARY OF OBSERVATIONS ON THE LIVING WESTERN ESKIMO[98]

These Eskimo are generally of submedium stature, occasionally reaching medium. The distal parts of their extremities are relatively short. Walk in adult males somewhat awkward.

In head form they are highly mesocephalic to moderately brachycephalic; the height of the head averages about medium. The head is of good size, especially when taken in relation to stature. The forehead is above medium in both height and breadth.

The face is large in all dimensions, generally full and rather flat. In men it not seldom approaches a square form. The lower jaw region is largely developed, the angles of the lower jaw are broad to protruding.

The nose is of fair breadth, with bridge somewhat narrow above and on the whole only moderately high. The mouth is large, lips medium to somewhat above. The ears are long. Beard sparse on sides of face, mostly sparse on chin; mustache sparse and often limited to tufts above the corners of the mouth. Expression generally good-natured, smiling.

The chest is large, in females broad, in males especially deep. There is but a mild lumbar curve and no steatopygy. The lower limbs in females are less stout and shapely than they are in whites. The hands and feet are small, but, particularly the foot, relatively broad.

Temperature and respiration approach those in normal whites, though they appear frequently to be slightly higher; pulse normally is slow.

Dynamometric tests of strength (pressure, both hands) give somewhat lower records than in whites.

[98] Incorporated in this are writer's own observations.

Remarks

The most noteworthy and important result of these studies on the living western Eskimo is the evidence, coming to light again and again, of their fundamental somatic relations to the Indian. These relations are too numerous and weighty to be accidental. Nor can they be ascribed to mixture with the Indian in such far-away groups as the St. Lawrence Islanders, who so long as known have never had any direct or even indirect contact with Indians. These relations in dimensions and relative proportions of the body, and in physiological characteristics such as the slow normal pulse, are supplemented by many phases of behavior, and often by a more or less Indianlike physiognomy. They inevitably lead to the conclusion that the Eskimo and the Indian are in the root members of the same family. They are two digits of the same hand, separate and diverging, yet at base joined to and derived from the same source. And this source, according to many indications, is the paleoasiatic, "mongoloid," stem of northern Asia. The western Eskimo shows to be nearer this source than his more northern and northeastern relatives, indicating either that he is a later comer, or, which is more probable, that he has changed less in the south than in the north. It may be possible to say something more on this subject after the skeletal remains have been considered.

YOUNG WOMAN, NORTHERN BERING SEA REGION

(Photo by Lomen Bros.)

YOUNG WOMEN, FULL-BLOOD ESKIMOS, SEWARD PENINSULA

(Photo by Lomen Bros.)

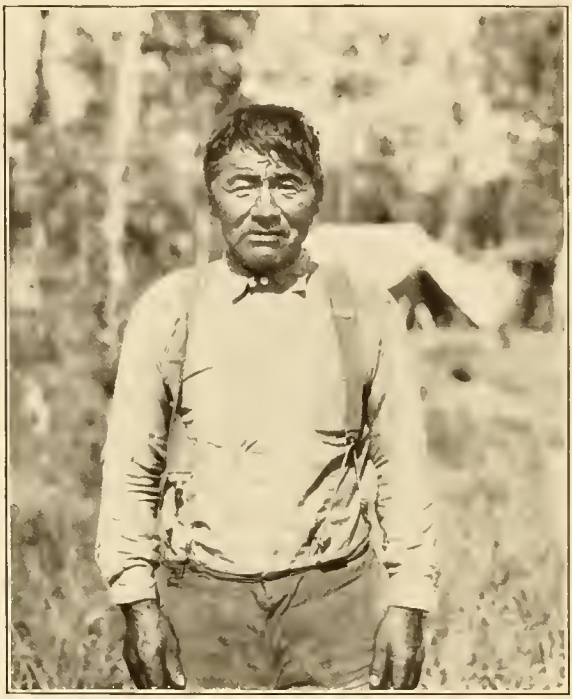
A POINT HOPE GROUP

a, Eskimo woman, Kevalina. (Photo on the *Bear* by A. H., 1926. U.S.N.M.)

b, The body build of an adult Eskimo woman. Upper Bering Sea

ELDERLY WOMAN, ST. LAWRENCE ISLAND

(Photos by R. D. Moore, 1912. U.S.N.M.)



a, Yukon Eskimo, below Paimute. (A. H., 1926)

b, Norton Sound Eskimo woman and child. (A. H., 1926)

ESKIMO, INDIANLIKE; NORTHERN BERING SEA REGION

(Photos by Lomen Bros.)

ESKIMO, INDIANLIKE; NORTHERN BERING SEA REGION

(Photos by Lomen Bros.)

ESKIMO, INDIANLIKE; NORTHERN BERING SEA REGION

(Photos by Lomen Bros.)

ESKIMO, INDIANLIKE: NORTHERN BERING SEA REGION

(Photo by Lomen Bros.)

ESKIMO, INDIANLIKE; NORTHERN BERING SEA REGION

(Photo by Lomen Bros.)

ESKIMO, INDIANLIKE; ARCTIC REGION

(Photo by Lomen Bros.)

SIBERIAN ESKIMO AND CHILD, INDIAN TYPE

a, Mrs. Sage, Kevalina. Fine Indian type. Born on Notak. Both parents Notak "Eskimo." (A. H., 1926.)

b, Eskimo family, Indianlike; near Barrow. (A. H., 1926.)

Western Eskimo: Measurements on the Living

[Measurements by Collins and Stewart, except as noted]

	Males—Locality							Females—Locality			
	Kulukak	Togiak	Tanunuk (Nelson Island)	Nunivak Island	Hooper Bay	Marshall, Lower Yukon	St. Lawrence Island	Kanakanak, Bristol Bay	Nunivak Island	Hooper Bay	St. Lawrence Island
Date of record	(1927)	(1927)	(1927)	(1927)	(1927)	(1927)	(1912)	(1927)	(1927)	(1927)	(1912)
Subjects measured	(8)	(4)	(4)	(19)	(20)	[1] (6)	[2] (63)	[3] (10)	(24)	(2)	[2] (48)
Age	Adult.	Adult.	Adult.	Adult.	Adult.	Adult.	Adult.	Near adult.	Adult.	Adult.	Adult.
Stature	160. 6	166	162. 7	161. 8	162. 5	163. 8	163. 3	147. 8	153. 1	153	151. 35
Height sitting	86	89. 75	90. 62	88. 86	89. 48	90. 22	88. 4	(83. 08)	84. 36	83. 80	84. 07
Height-sitting-stature index	*53. 55*	*53. 95*	*55. 69*	*55. 70*	*55. 06*	*55. 08*	*54. 13*	(*56. 21*)	*55. 10*	*54. 77*	*55. 55*
Arm span vs. stature	+2. 8	+6. 7	+5. 5	+2. 7	+. 7	+5. 1	+. 6	+1. 5	—. 7	(?)	—. 7
Head:											
Length	19. 06	18. 95	19. 37	19. 70	19. 13	19. 05	19. 33	18. 10	18. 85	18. 85	18. 56
Breadth	15. 56	15. 70	15. 37	15. 48	15. 57	15. 85	15. 40	15. 26	15	15. 30	14. 77
Height [4]	12. 98	13. 02	12. 90	13. 07	13. 11	13. 43	13. 23	13. 01	12. 81	12. 90	12. 76
Cephalic module	15. 87	15. 89	15. 88	16. 08	15. 94	16. 11	15. 99	15. 46	15. 55	15. 68	15. 36
Cephalic index	*81. 7*	*82. 9*	*79. 4*	*78. 6*	*81. 3*	*83. 3*	*79. 7*	*84. 3*	*79. 6*	*81. 2*	*79. 6*
Mean height index	*75*	*75. 2*	*74. 3*	*74. 3*	*75. 6*	*77*	*76. 2*	*79*	*79*	*75. 5*	*76. 6*

[1] Measurements by Collins.

[2] Measurements by R. D. Moore.

[3] Oldest girls of an orphanage.

[4] From the base line of the 2 meatus; this and all other measurements, including those of 1912, were taken by Hrdlička's methods and with his instruments. (See his "Anthropometry," Wistar Institute, Philadelphia, 1920.)

WESTERN ESKIMO: MEASUREMENTS ON THE LIVING—Continued

	Males—Locality							Females—Locality			
	Kuluk ak	Togiak	Tanunuk (Nelson Island)	Nunivak Island	Hooper Bay	Marshall, Lower Yukon	St. Lawrence Island	Kanakanak, Bristol Bay	Nunivak Island	Hooper Bay	St. Lawrence Island
Face:											
Menton-crinion	19. 70	20. 05	19. 70	19. 23	19. 41	19. 85	20. 01	18. 73	18. 45	18	18. 03
Menton-nasion	12. 89	12. 87	12. 58	12. 74	12. 47	12. 78	12. 68	(11. 79)	12. 11	11. 50	11. 31
Diameter bizygomatic maximum	14. 74	15. 27	14. 95	14. 99	14. 97	14. 85	14. 73	(13. 95)	14. 31	14. 55	14. 03
Physiognomic facial index	*72. 3*	*76. 2*	*75. 9*	*78. 2*	*77. 1*	*74. 8*	*73. 6*	*(62. 9)*	*77. 6*	*80. 8*	*77. 8*
Anatomical facial index	*87. 4*	*84. 2*	*85. 7*	*85*	*83. 3*	*86. 1*	*86. 7*	*84. 6*	*84. 6*	*79*	*80. 6*
Height of forehead (nasion-hair line)	6. 81	7. 18	7. 12	6. 49	6. 94	7. 07	7. 33	6. 94	6. 34	6. 50	6. 72
Breadth of forehead (diameter front—minimum)	10. 26	10. 75	10. 65	10. 54	10. 35	10. 38	10. 94	10. 62	10. 38	10. 65	10. 58
Diameter bigonial							11. 78				11. 18
Nose:											
Height	5. 65	6. 03	5. 57	5. 58	5. 48	5. 42	5. 47	(5. 02)	5. 17		4. 89
Breadth	3. 88	3. 82	3. 85	3. 89	3. 89	3. 60	3. 93	(3. 35)	3. 59		3. 63
Nasal index	*68. 7*	*63. 7*	*69. 1*	*69. 8*	*71*	*66. 4*	*71. 9*	*66. 7*	*69. 4*		*74. 4*
Mouth: Breadth	5. 64	5. 82	5. 70	5. 87	5. 74	5. 70	5. 60	(4. 81)	5. 56		5. 32
Ear (left):											
Height	6. 71	7. 17	7. 18	7. 05	6. 79	6. 52	7. 40	(5. 99)	6. 49	6. 60	6. 73
Breadth	3. 76	3. 82	3. 72	3. 91	3. 69	3. 38	4. 04	(3. 49)	3. 45	3. 45	3. 57
Ear index	*56. 4*	*53. 3*	*58. 9*	*55. 5*	*54. 3*	*51. 9*	*54. 6*	*(58. 3)*	*53. 1*	*52. 3*	*53*

Chest:											
Breadth	29. 58	29. 65	29. 70	29. 97			29. 96	(27. 43)	28. 63		
Depth	24. 10	24. 35	24. 75	24. 63			23	(19. 39)	22		
Chest index	*81. 5*	*82. 1*	*83. 3*	*82. 2*			*76. 7*	[5] *(70. 7)*	*76. 8*		
Hand (left):											
Length	17. 35	17. 87	17. 55	18. 42	17. 61	18. 12	17. 94	(15. 90)	16. 62	16. 85	16. 60
Breadth	8. 68	8. 60	8. 90	8. 81	8. 76	8. 70	8. 63	(7. 53)	7. 82	8. 20	7. 78
Hand index	*52. 9*	*48. 1*	*50. 7*	*47. 8*	*49. 7*	*48*	*48*	*47. 4*	*47. 1*	*48. 7*	*46. 7*
Foot (left):											
Length		24. 82	24. 05	24. 31	23. 88		24. 07	(22. 08)	22. 27	22. 15	21. 98
Breadth		9. 88	9. 90	9. 81	9. 40		9. 61	(8. 55)	8. 85	8. 65	8. 59
Foot index		*37. 8*	*41. 2*	*40. 4*	*39. 4*		*39. 9*	*(38. 7)*	*40. 6*	*39. 1*	*39. 1*
Leg: Circumference, maximum		32. 62	34. 42	33. 56	33. 64			(32. 39)	32. 12	29. 70	32. 33

[5] Subadult in chest.

Present Data on the Skull and other Skeletal Remains of the Western Eskimo

THE SKULL

Until recently collections of skeletal remains of the western Eskimo were confined largely to skulls. The material in our own institutions comprised a small collection of Mahlemut (St. Michael Island) and "Chukchee" (Asiatic Eskimo) crania made in the early sixties by W. H. Dall; a larger series of crania gathered in 1881 on St. Michael and St. Lawrence Islands by E. W. Nelson; 28 skulls with 3 skeletons brought in 1898 by E. A. McIlheny from Point Barrow; a valuable lot of skulls from Indian Point, Siberia, with a few from St. Lawrence Island, collected by W. Bogoras; and some scattered specimens by other explorers. To this were added in 1912 an important collection of skulls, with a few skeletons, made by Riley D. Moore, at that time my aide, on St. Lawrence Island; an important lot of crania gathered a few years later by V. Stefansson at Point Barrow; and a third large and highly interesting lot, this time of both skulls and skeletons, collected near Barrow for the University Museum at Philadelphia in 1917–1919 by W. B. Van Valin. But none of the later material was described exceepting the McIlheny collection which, in 1916, was reported upon by E. W. Hawkes.[99]

During the survey which is the subject of this report a special effort was made to collect all the older skeletal material along the Bering Sea and Arctic coasts that could be reached, and the result was the bringing back of some 450 crania, nearly 50 with skeletons, and many separate parts of the skeleton; nearly all of the specimens proceeding from localities thus far not represented in the collections. To which were added in 1927 nearly 200 skulls with a good number of skeletons gathered by H. B. Collins, jr., assistant curator in the Department of Anthropology, United States National Museum, and my aide, T. D. Stewart, on Nunivak Island and along the west coast of Alaska from Bristol Bay to near the Yukon delta.[99a]

We thus have now a relatively vast amount of skeletal material on the western Eskimo; it is essentially a virginal material; it is well identified as to locality; and the specimens are mostly in very good condition.

Aside from Hawkes's thesis, nothing of note had been published on these collections until 1924, when the first number of my Catalogue of Human Crania in the United States National Museum Collections appeared, which includes the principal measurements on

[99] Skeletal Measurements and Observations of the Point Barrow Eskimo, Amer. Anthrop., n. s. xviii, pp. 203–244, Lancaster, 1916.

[99a] In 1928 Mr. Collins brought another important accession to these collections.

290 skulls of the western Eskimo. Since then, in view of the growing importance of the subject, I have remeasured every specimen reported before; have measured personally all the new collections; and thanks to the kindness of those in charge have been enabled to extend the measurements to all the collections of Eskimo crania, both from Alaska and elsewhere, that were preserved up to the spring of 1928 at the National Museum at Ottawa, the American Museum of Natural History of New York, and the Wistar Institute of Philadelphia, which now contains the University Museum collections. The total records reach now to 1,283 adult skulls from practically all important parts of the total Eskimo area, besides a considerable quantity of other bones of the skeleton. The main results of the work will be given here, the detailed measurements being reserved for another number of the Catalogue.

To save repetitions and possible confusion and to show more clearly the status of the southwestern and midwestern Eskimo, the entire cranial material will be dealt with in this section, and previous records on the northeastern and a few other groups of the Eskimo will not be drawn upon to preserve the advantage of dealing with data obtained by the same methods, instruments, and observer.

In presenting the records it is found expedient, both on geographical and anthropological grounds, to make but three groupings. The first of these comprises the Eskimo from their southernmost limit to Norton Sound and the Bering Sea islands; the second group takes in Seward Peninsula (or the larger part of it) and the Arctic coast to Point Barrow; while the third embraces all the Eskimo east of Point Barrow. The first of these three groups is remarkably homogeneous, the second and third show each some exceptional units. It may be said at once that the dialectic subdivisions of Dall, Nelson, and others, in a large majority of cases are not found to be accompanied by corresponding physical differences, so that in a somatological classification they become submerged.

SKULL SIZE

The external size of the skull is best expressed by the cranial module or mean of the three principal diameters; the internal size, respectively the volume of the brain, by the "cranial capacity."

The module among the southwestern and midwestern Eskimo averages 15.44 centimeters in the males and 14.77 centimeters in the females. For people of submedium stature these are good dimensions. Fifty-two male and 40 female skulls of the much taller Sioux (writer's unpublished data) give the modules of only 15.25 and 14.27 centimeters; while 6 male and 9 female Munsee Indians, also tall,[1] give

[1] Bull. 62, Bur. Amer. Ethn., p. 22, Nos. 326–313.

practically the same values as these Eskimos, namely 15.48 centimeters for the males and 14.75 centimeters for the females.

Not all the western groups, however, give equally favorable proportions. In general, the coast people below Norton Sound, and especially below the Yukon, give, so far as the males are concerned, the lowest values. It is interesting to note that it is precisely these people who among the western Eskimo are reputed to be about the lowest also in culture. The Togiak and near-by Kulukak males showed, as seen before, also about the smallest head in the living. The St. Lawrence Island males stand just about the middle, but the females of this island, as, interestingly, also in the living, show markedly less favorably. The Nunivak skulls, as with the living, are somewhat above the average, while in the small Pilot Station (Yukon) group, just as in the near-by contingent of Marshall among the living, the males have the largest heads in this western territory. The lower Yukon Eskimo were also shown, it may be recalled, to be of a higher stature than the majority of the coast people. It is a group that deserves further attention.

The module of the female skull does not evidently stand always in harmony with that of the male. The most striking example of this is shown, as already mentioned, by the St. Lawrence Island females, both skulls and the living. The females of this isolated island are also unduly short, but their small head is not entirely due to the defective stature. There must exist on this island, it would seem, some conditions that are disadvantageous to the female. In the small groups, such as that from the Little Diomede, the disharmonies are doubtless partly due to small numbers of specimens, but there may also be other factors, such as the bringing in of women from other places.[2]

Taking the mean of all the groups equalizes conditions, and it is seen that the module in both sexes is almost identical with that of the more northern groups, to Point Barrow. But the north Arctic and northeastern groups give a cranial module that in both sexes is somewhat higher, though their stature, according to the available data (Deniker, Boas, Duckworth, Steensby, Thalbitzer), is not superior.

A very remarkable showing is that of the percentage relation of the female to male skull size in the three large groupings. In the first two it is identical, in the third it differs less than could confidently be expected among the closest relatives. Another remarkable fact is that this important relation is found to be much like that in the Eskimo in various groups of Indians; thus it was *96* in the Indians of

[2] More or less danger in such cases as these lies in erroneous sexing of the skulls. Due to experience, care, and especially to the relatively numerous accompanying bones or skeletons, this danger in the present series has been reduced to the minimum.

Arkansas and Louisiana,[3] *95.5* in the Munsee of New Jersey,[3] and *96.4* in the Indian skulls of California.[4] But it is only *93.6* in the Sioux (52 male, 40 female skulls) and differs more or less also in other tribes and peoples. A comprehensive study of this relation, with due respect to age, will some day well repay the effort.

ESKIMO: CRANIAL MODULE $\left(\frac{L+B+H}{3}\right)$

MALES IN ASCENDING ORDER

Southwestern and midwestern

	Males	Females		Males	Females
	(5)	(7)		(46)	(70)
Togiak	15. 21	14. 73	Nunivak Island	15. 53	14. 90
	(4)	(6)		(13)	(16)
Mumtrak	15. 22	14. 68	Indian Point (Siberia)	15. 54	14. 88
	(3)	(2)		(3)	(2)
Southwestern Alaska	15. 25	14. 90	Chukchee	15. 56	15. 05
	(9)	(4)		(4)	(1)
Hooper Bay	15. 30	14. 68	Port Clarence	15. 57	(14. 57)
	(8)	(6)		(9)	(16)
St. Michael Island	15. 30	14. 72	Nelson Island	15. 59	14. 64
	(5)	(7)		(3)	(3)
Little Diomede Island	15. 33	15. 09	Pilot Station, Yukon	15. 91	15
Pastolik and Yukon	(14)	(20)	General averages, ap-	(275)	(290)
Delta	15. 34	14. 83	proximately	*15. 44*	*14. 77*
	(145)	(128)	Females vs. males (M=		
St. Lawrence Island	15. 42	14. 27	100)	*95. 7*	
Golovnin Bay to Cape	(4)	(2)			
Nome	15. 52	14. 65			

Northwestern

	(2)	(1)		(27)	(24)
Kotzebue Sound	15. 05	(14. 67)	Old Igloos near Barrow	15. 52	14. 72
	(12)	(8)		(19)	(14)
Shishmaref	15. 19	14. 71	Wales	15. 66	14. 86
	(132)	(84)	General averages, ap-	(274)	(217)
Point Hope	15. 37	14. 72	proximately	*15. 39*	*14. 73*
	(47)	(52)	Females vs. males (M=		
Point Barrow	15. 45	14. 75	100)	*95. 7*	
	(35)	(34)			
Barrow and vicinity	15. 46	14. 66			

Northern and northeastern

	(49)	(52)		(9)	(6)
Greenland	15. 51	14. 72	Southampton Island	15. 65	15. 18
Hudson Bay and vi-	(5)	(2)		(7)	(2)
cinity	15. 55	14. 57	Smith Sound	15. 81	15. 15
Baffin Land and vi-	(16)	(17)	General averages, ap-	(92)	(89)
cinity	15. 55	15. 04	proximately	*15. 62*	*14. 92*
	(6)	(10)	Females vs. males (M=		
Northern Arctic	15. 63	14. 85	100)	*95. 5*	

[3] Bull. 62, Bur. Amer. Ethn., p. 23.

[4] Cat. Crania, U. S. Nat. Mus., No. 2.

MODULE AND CAPACITY

A comparison of considerable interest is also that of the cranial module or mean diameter, to the capacity of the same skulls. This comparison reveals an important sex factor.[5] Relatively to the module, the capacity is very appreciably smaller in the female than it is in the male. This is a universal condition to which, so far as known, there are occasional individual but no group exceptions. It appears very clearly in the Eskimo. In 283 western male Eskimo skulls in which we have so far measured the capacity,[6] the module averages 15.38 centimeters, the capacity 1,490 cubic centimeters; while in 382 female skulls thus far gauged the former averages 14.82 centimeters, the latter 1,337 cubic centimeters. The percentage relation of the capacity to the module, the numbers taken as a whole, is *90.8* in the males but only *90.2* in the females. This means that relatively to the external size of the skull the female Eskimo brain is 6.66 per cent smaller. Similar sex disproportion exists in other American groups as well as elsewhere. Some day when suitable data accumulate it will be of much interest to study this condition on a wider scale.

ADDITIONAL REMARKS ON CRANIAL MODULE

Before we leave this subject, it may be well to point out two noteworthy facts apparent from the data on the northwestern and northeastern groups. The first is that the figures on both sexes from Barrow and Point Barrow are very nearly the same, suggesting strongly the identity of the people of the two settlements; and the Point Hope group is in close relation. The second fact is the curious identity of the old Igloo group, 8 miles southwest of Barrow, with the Greenlanders. The import of this will be seen later.

SKULL SHAPE

Utilizing the materials of the Otis and Barnard Davis Catalogues and with measurements taken for him on additional specimens in several of our museums, Boas, in 1895 (Verh. Berl. anthrop. Ges., 398), as already mentioned, reported the cranial index of 37 "western Eskimo" skulls of both sexes (without giving localities or details) as *77*. He also reports in the same place (p. 391) the cephalic index of 61 probably male living "Alaska Eskimo," again without locality, as *79.2*. These rather high indices and the relatively elevated stature (61 subjects, 165.8 centimeters) lead him to believe (p. 376)

[5] See writer's "Relation of the Size of the Head and Skull to Capacity in the Two Sexes," Am. J. Phys. Anthrop., 1925, VIII, No. 3.

[6] All measured de novo by my aide, T. D. Stewart; for procedure see my "Anthropometry."

that both are probably due to an admixture with the Alaskan Indian, though the report contains no measurements of the latter.

The data that it is now possible to present may perhaps throw a new light on the matter. As was already seen in part from the data on the living, the head resp. the skull tends to relative shortness and broadness throughout the southwestern, midwestern, and Bering Sea region (excepting parts of the Seward Peninsula). Important groups in this region, particularly those on some of the islands, had little or no contact with the Indian. The cranial index in most of the groups of the southwestern and midwestern Eskimo equals or even exceeds that of the Indian. And Eskimo groups with a relatively elevated cranial index are met with even in the far north, as at Point Hope, Hudson Bay, and Smith Sound.[7] Finally, the shorter and broader head connects with that of the Asiatic Eskimo and that of the Chukchee, as well as other northeastern Asiatics.[8]

The records now available show the highest cranial indices to occur on the coast between Bristol Bay and the Yukon and on lower Yukon itself, while the lowest indices of the midwest area, though still mesocranic, occur in the aggregate of Nunivak Island and the mouths of the Yukon. Another geographical as well as somatological aggregate is that of the people of the St. Lawrence and Diomede Islands and of Indian Point, Siberia, the cranial index in these three localities being identical.

ESKIMO: CRANIAL INDEX

Mean of both sexes $\left(\frac{\text{Male}+\text{female index}}{2}\right)$ on 1,281 adult skulls

IN DESCENDING ORDER

Southwestern and midwestern

	(11)		(32)
Togiak	80. 1	Indian Point (Siberia)	77. 4
	(13)		(12)
Hooper Bay	79. 7	Little Diomede Island	77. 4
	(10)		(299)
Mumtrak	79. 6	St. Lawrence Island	77. 2
	(6)		(5)
Pilot Station, Lower Yukon	79. 3	Port Clarence	76. 6
	(5)		(34)
Chukchee (Siberia)	78. 6	Pastolik and Yukon Delta	76. 1
	(26)		(14)
Nelson Island	78	St. Michael Island	75. 7
	(6)		(116)
Southwestern Alaska	77. 7	Nunivak Island	75. 6

[7] Compare writer's "An Eskimo Brain," Amer. Anthrop. n. s., vol. III, pp. 454–500, New York, 1901; and his "Contribution to the Anthropology of Central and Smith Sound Eskimo," Anthrop. Papers, Amer. Mus. Nat. Hist., V, pt. 2, New York, 1910.

[8] Compare, besides present data, measurements by Bogoras in his report on "The Chukchee," Mem. Am. Mus. Nat. Hist., 1904–9, XI, p. 33; 148 male and 49 female adults gave him the mean stature of 162.2 and —152, the mean cephalic index of 82 and 81.8.

Northwestern

	(222)		(73)
Point Hope	76. 0	Barrow	73. 5
Kotzebue Sound and Kobuk River	(3) 75. 4		(33)
		Wales	73. 5
	(22)		(7)
Shishmaref	74. 5	Golovnin Bay	[8a] 72. 6
	(101)		(52)
Point Barrow	74. 1	Igloos, southwest of Barrow	69. 7

Northern and northeastern

	(7)		(15)
Hudson Bay and vicinity	76. 3	Northern Arctic	73. 6
	(9)		(33)
Smith Sound	76. 2	Baffin Land and vicinity	73. 2
	(15)		(101)
Southampton Island	74. 8	Greenland	71. 9

The Seward Peninsula shows sudden differences. There are a few localities along its southern coast where the cranial type belongs apparently to the Bering Sea and southern area. One site at Port Clarence was one of these. But already at Golovnin Bay, which is not far from Norton Sound and St. Michael Island, and according to the evidence of the most recent collections (Collins 1928), also at Sledge Island, there is a sudden appearance of marked dolichocrany, which is repeated at Wales, on the western extremity of the peninsula, approached at Shishmaref, the main Eskimo settlement on its northern shore, and, judging from some fragmentary material seen at the eastern end of the Salt Lake, also in the interior. The cause of this distinctive feature in the Seward Peninsula is for the present elusive. The little known territory urgently needs a thorough exploration.

The distribution of the cranial index farther north along the western coast shows several points of interest. The first is the exceptional position of Point Hope, one of the oldest and most populous settlements in these regions, which by its cranial index seems to connect with the Bering Sea groups. The second is the closeness, once more, of Barrow and Point Barrow. The third and greatest is the presence, in a small cluster of old igloos 8 miles down the coast from Barrow, of a group of people that finds no counterpart in its cranial index and, as will be seen later, also in some other characteristics, in the entire western region; in fact, in the whole Eskimo territory outside of Greenland. As noted before, the size of the head in this group is also closest to that of Greenland. These peculiar facts indicate a problem that will call for separate consideration.

[8a] Including 4 female skulls collected by Collins in 1928 and received too late for general inclusion into these series.

The northern and northeastern groups, with the exception of the mesocranic Hudson Bay and Smith Sound contingents, and the very dolichocranic Greenlanders, show dolichocrany much the same as that of Barrow and Point Barrow.

HEIGHT OF THE SKULL

This is a measurement of much value, both alone and as a supplement to the cranial index, for skulls with the same index may be high or low and thus really of a radically distinct type.

The height of the vault is best studied in its relation to the other cranial dimensions, particularly to the mean of the length and breadth, with both of which it correlates. But in the Eskimo it is also of interest to compare the height with the breadth of the skull alone. The former relation is known as the mean height index and the latter as the height-breadth index. Both mean the percentage value of the basion-bregma height as compared to the other dimensions.

The mean height index $\frac{H}{(\text{Mean of } L+B)}$, advocated independently by the writer since 1916 (Bull. 62, Bur. Amer. Ethn., p. 116), is proving of much value in differentiation of types and has already become a permanent feature in all writers' work on the skull. There is a corresponding index also on the living.

In the American Indian the averages of the index range from approximately 76 to 90. (See Catalogue of Crania, U. S. Nat. Mus., Nos. I and II.) Where the series of specimens are sufficiently large the index does not differ materially in the two sexes. Indices below 80 may be regarded as low, those between 80 and 84 as medium, and those above 84 as high.[9]

The southwestern and midwestern Eskimo skulls show mean height indices that may be characterized as moderate to slightly above medium. In general the broader and shorter skulls show lower indices, approaching thus in all the characters of the vault the Mongolian skulls of Asia. (Compare Catalogue Crania, U. S. Nat. Mus., No. I.) The Indian Point, St. Lawrence Island, and Little Diomede Island skulls are again, as with the cranial index, very close together, strengthening the evidence that the three constitute the same group of people. (Pls. 59, 60.)

The northwestern Eskimo and most of those of the northeast have relatively high vault. Barrow and Point Barrow are once more almost the same. The Point Hope group shows a high vault, though also rather broad. The somewhat broad Hudson Bay crania

[9] These subdivisions are somewhat arbitrary and may, as data accumulate and are better understood, be found to need some modification.

are but moderately high, like those of the southwestern Eskimo. The northern Arctic skulls give smaller height than would be expected with their type; the Southampton Island specimens give higher. The old Igloo group from near Barrow stands again close to Greenland; its skull is even a trace narrower and higher, standing in both respects at the limits of the Eskimo. The whole, as with the cranial index, shows evidently a rich field of evolutionary conditions.

ESKIMO: CRANIAL MEAN HEIGHT INDEX

$$\frac{\text{(H-Floor-Line of Aud. Meatus to Bg}\times 100)}{\text{Mean of L+B}}$$

MEAN OF BOTH SEXES IN ASCENDING ORDER

Southwestern and midwestern

	(11)		(5)
Togiak	81. 8	Chukchee	83. 3
	(25)		(34)
Nelson Island	82. 1	Pastolik and Yukon Delta	83. 4
	(6)		(4)
Southwest Alaska	82. 3	Port Clarence	83. 4
	(6)		(29)
Pilot Station, Yukon	82. 3	Indian Point (Siberia)	83. 8
	(10)		(279)
Mumtrak	82. 5	St. Lawrence Island	84. 1
	(13)		(12)
Hooper Bay	82. 7	Little Diomede Island	84. 5
	(116)		(14)
Nunivak Island	83. 3	St. Michael Island	85. 1

Northwestern

	(69)		(33)
Barrow	83. 8	Wales	85. 0
	(99)		(216)
Point Barrow	84. 1	Point Hope	85. 7
Kotzebue Sound and Kobuk	(2)		(4)
River	84. 4	Golovnin Bay–Cape Nome	85. 9
	(20)		(51)
Shishmaref	84. 5	Igloos, southwest of Barrow	86. 3

Northern and northeastern

	(7)		(9)
Hudson Bay and vicinity	82. 2	Smith Sound	85. 1
	(15)		(101)
Northern Arctic	82. 7	Greenland	85. 1
	(33)		(15)
Baffin Land and vicinity	84. 4	Southampton Island	85. 5

The height-breadth index $\frac{(\text{H}\times 100)}{(\text{B})}$ of the Eskimo skull shows in substance the same conditions as did the mean height index, but

SKULLS FROM OLD BURIALS, POINT HOPE; RIGHT SKULL SHOWS LOW VAULT. (U.S.N.M.)

SKULLS FROM OLD BURIALS, POINT HOPE; RIGHT SKULL SHOWS LOW VAULT. (U.S.N.M.)

while less informative or dependable on one side, on the other it accentuates the relative narrowness of the skull in some of the groups.

ESKIMO: HEIGHT-BREADTH INDEX OF THE SKULL

MEAN OF BOTH SEXES IN ASCENDING ORDER

Southwestern and midwestern

	(12)		(12)
Togiak	91. 9	Little Diomede Island	96. 3
	(6)		(279)
Pilot Station, Lower Yukon	92. 8	St. Lawrence Island	96. 5
	(10)		(116)
Mumtrak	93. 1	Nunivak Island	96. 7
	(5)		(31)
Chukchee	93. 1	Indian Point (Siberia)	96. 7
	(13)		(29)
Hooper Bay	93. 2	Pastolik	96. 8
	(25)		(6)
Nelson Island	93. 7	Cape Nome and Port Clarence	97. 0
	(5)		(14)
Yukon Delta	94. 7	St. Michael Island	98. 2
	(5)		
Southwest Alaska	95. 2		

Northwestern

	(99)	Kotzebue Sound and Kobuk River	(3)
Point Barrow	98. 7		99. 6
	(69)		(33)
Barrow	98. 8	Wales	100. 3
	(20)		(51)
Shishmaref	98. 9	Igloos, southwest of Barrow	105. 0
	(216)		
Point Hope	99. 2		

Northern and eastern

	(7)		(15)
Hudson Bay and vicinity	95. 3	Southampton Island	99. 8
	(16)		(33)
North Arctic	97. 8	Baffin Land and vicinity	99. 9
	(9)		(101)
Smith Sound	98. 3	Greenland	101. 8

THE FACE

The facial dimensions of the Eskimo skull offer a number of points of unusual interest. The face is absolutely and especially relatively to stature very large in all measurements. It is particularly high between the upper alveolar point and nasion.

The large size of the Eskimo face will best be appreciated from a few figures.

FACIAL DIMENSIONS OF THE WESTERN AND OTHER ESKIMO CRANIA COMPARED WITH THOSE OF THE SIOUAN AND ALGONQUIAN TRIBES

	Southwestern and midwestern Eskimo		Eskimo in general		Siouan tribes	Algonquian tribes
	Mean of 14 groups (male)	10 groups (female)	27 groups (male)	22 groups (female)	12 groups (male)	15 groups (male)
Total height (ment.-nas.)	12. 60	(11. 63)	12. 52	(11. 59)	12. 26	12. 11
Upper height (alv. pt.-nas.)	7. 87	(7. 29)	7. 79	(7. 21)	7. 52	7. 35
Diameter bizyg. max.	14. 25	(13. 27)	14. 26	(13. 22)	14. 16	13. 89
Module of upper face $\frac{(U.\ H.+B)}{2}$	11. 06	(10. 28)	11. 03	(10. 22)	10. 84	10. 62

So far as known there are no larger faces among the Indians than those of the Sioux, yet they remain very perceptibly, in all three measurements, behind the Eskimo. No face as large as that of the Eskimo is known, in fact, from anywhere else in the world. In whites the mean diameter of the largest faces (see data in Martin's Lehrbuch Anthrop., 789–791) does not exceed 10.36 centimeters. The above showing assumes especial weight when it is recalled that both the Siouan and the Algonquian tribes are among the tallest there are on the American Continent. The cause of the large size of the Eskimo face can only be the excessive use of the jaws; no other reason even suggests itself. But the character may already be more or less hereditary. It furnishes another attractive subject for further investigation.

With its large dimensions the face of the Eskimo skull presents generally also large orbits, large molars, submedium prominence and breadth of the nasal bridge, shallow suborbital (canine) fossae, large dental arch above medium teeth, and a large and stout lower jaw with broad not seldom more or less everted angles, giving the whole a characteristic appearance. With partial exception of the orbits and the nose, which are subject also to other factors, all these features of the Eskimo face are explainable as strengthenings resulting from the increased function of mastication.

The main dimensions of the cranial face in the three large groupings of the Eskimo are given in the next table.

WESTERN AND OTHER ESKIMO: FACIAL DIMENSIONS IN THE SKULL

	Males					Females				
	Menton-nasion	Alveolar point-nasion	Diameter bizygomatic maximum	Cranial facial index		Menton-nasion	Alveolar point-nasion	Diameter bizygomatic maximum	Cranial facial index	
				Total	Upper				Total	Upper
Groups	(9)	(14)	(14)	(8)	(14)	(8)	(10)	(10)	(8)	(10)
Southwestern and midwestern	12.60	7.87	14.25	*88.2*	*55.8*	11.63	7.29	13.27	*87.7*	*54.9*
Groups	(5)	(7)	(7)	(5)	(7)	(2)	(7)	(7)	(2)	(7)
Northwestern	12.58	7.73	14.23	*88.3*	*54.4*	11.55	7.19	13.18	*88.2*	*54.6*
Groups	(5)	(6)	(6)	(5)	(6)	(3)	(5)	(5)	(3)	(5)
North Arctic and northeastern	12.22	7.69	14.32	*85.9*	*53.7*	11.61	7.13	13.15	*85.7*	*54.2*

These data show a number of interesting conditions. The height of the upper face (alveolar point-nasion) is greatest in the southwestern and midwestern groups, is slightly lower in the northwesterners, and still further slightly lower in the north Arctic and the northeast. On the other hand the facial breadth is slightly higher in the north and east, and that although the vault has become mostly decidedly narrower.

These facts are shown best by the upper facial index, which in the males descends quite perceptibly in the west from the south to the north and in the Arctic from the west to the east. In the females there is a parallel gradual diminution in the upper facial height from the south to the north and then east, but the facial breadth diminishes very slightly also instead of increasing, as a result of which the upper facial index shows only minor differences; yet these differences are in the same direction as those in the males.

These matters are involved with a number of factors—the stature, the breadth of the vault, and the development and direct influence of the temporal muscles, besides hereditary conditions. Their proper study will necessitate even more—in fact, much more—material than is now at our disposal.

The following table gives the distribution of the upper cranial facial index in the various groups. Of the two indices that of the whole face, including the lower jaw, is the less valuable; first, because the jaw is often absent; second, because it is influenced by the height of the lower jaw, which does not correlate perfectly with the upper; and third, on account of the wear of the teeth, which in such people as the Eskimo is very common and diminishes more or less the total height of the face. Its averages in the three main groupings have already been given. Its figures are not very exceptional.

ESKIMO SKULLS: FACIAL INDEX, UPPER

MEAN OF BOTH SEXES IN ASCENDING ORDER

Southwestern and midwestern

	(6)		(24)
Pilot Station, Lower Yukon	53. 6	Indian Point (Siberia)	55. 1
	(5)		(23)
Cape Nome and Port Clarence	54. 0	Nelson Island	55. 2
	(10)		(4)
Hooper Bay	54. 4	Southwestern Alaska	55. 4
	(9)		(10)
Mumtrak	54. 5	St. Michael Island	55. 5
	(93)		(25)
Nunivak Island	54. 6	Pastolik	55. 7
	(262)		(4)
St. Lawrence Island	54. 9	Chukchee	55. 8
	(8)		(11)
Togiak and vicinity	55. 0	Little Diomede Island	56. 0

Northwestern

	(190)		(41)
Point Hope	52. 8	Barrow	54. 8
	(2)		(75)
Kotzebue	53. 7	Point Barrow	55. 2
	(17)		(31)
Shishmaref	54. 1	Wales	55. 4
	(42)		
Igloos north of Barrow	54. 1		

Northern and northeastern

	(9)		(90)
Smith South	51. 7	Greenland	54. 1
	(14)		(7)
Southampton Island	52. 3	Hudson Bay and vicinity	54. 3
	(23)		(11)
Baffin Land and vicinity	53. 8	Northern Arctic	56. 6

The upper facial index of the Eskimo skull is high, though there is considerable group variation. The reason is the height of the upper face, for which the accompanying considerable expansion of the zygomatic arches does not fully compensate. In the white groups this index ranges from approximately *50* to *54;* it averages *52.9* in 15 Algonquian and *53.1* in 12 Siouan tribes. The means in the large Eskimo groupings are from a little below *54* to a little over *55*. Its regional differences have already been mentioned. Sex differences in the index are very small. There are a number of points of significant agreement, the foremost of which is once more that in the case of Barrow and Point Barrow, and especially that of the Old Igloos near Barrow and Greenland.

THE NOSE

Equally as engaging as the whole face of the Eskimo skull is the cranial nose. Our data throw much light on this feature also.

Where the dimensions of the whole face are altered by some cause the nose can not remain unaffected. This is especially true of its height, which correlates directly and closely with that of the face proper; the correlation of the breadth of the nose with that of the face is weaker and more irregular, but not absent where not counteracted by other factors. Accordingly with the high Eskimo upper face there is found also a high nose, both being the highest known to anthropometry. But the nasal breadth, instead of responding to the considerable facial breadth, has become smaller, until in some of the Eskimo groups it is the smallest of all known human groups. There is plainly another potent factor in action here. This factor could conceivably be connected simply with the above-average growth of the facial bones; but if this were so then individuals with smaller development of these bones ought to have broader noses, and vice versa. This point can readily be tested. Taking the largest and best cranial series, that of St. Lawrence Island, and selecting the skulls with the smallest and the largest faces, the facts come out as follows:

	Smallest development of face			Largest development of face		
	Face height (upper)	Face breadth	Breadth of nasal aperture	Face height	Face breadth	Breadth of nasal aperture
10 males	7. 52	13. 64	2. 37	8. 46	14. 79	2. 49
10 females	6. 81	12. 56	2. 37	7. 54	14. 02	2. 40
Percentage relation of breadth of nose to mean diameter of face:						
Male	--------	--------	*22. 4*	--------	--------	*21. 4*
Female	--------	--------	*24. 5*	--------	--------	*22. 2*

The above data show that while the narrow nose in the Eskimo is to some extent affected by the large development in these people of the facial bones, yet there must be also other factors.

But if not wholly connected with the development of the facial bones, then some of the causes of the narrow nose in the Eskimo must either be inherited from far back or must be due to influences outside the face itself.

Pushing the character far back would be no explanation of its original cause, but it may be shown that such a procedure would not be justified. In the following important table are given the now available data on the breadth of the nasal aperture of the Eskimo.

group by group and area by area, and these data show that narrow nose is by no means universal in this family. The nasal aperture is broader in the southwest and midwest than in the northwest, and broader in the latter region than in the Arctic north and the northeast. In general it is seen that the farther northward and northeastward the narrower the nose, until it reaches beyond that of all other human groups; while in the west and southwest it gradually approaches until it reaches the nasal breadth of the Indian. And that this latter condition is not due to Indian admixture is shown by the fact that among the broadest noses are those of the Eskimo in Siberia and those on the St. Lawrence Island, where there was no known contact with the Indian, while the narrower noses are along the midwestern coast, where Indian admixture might have been possible.

ESKIMO: BREADTH OF THE NASAL APERTURE
BOTH SEXES TAKEN TOGETHER IN DESCENDING ORDER

Southwestern and midwestern

Southwestern Alaska	(5)	2. 50	Cape Nome and Port Clarence	(6)	2. 38
Indian Point (Siberia)	(31)	2. 48	Nelson Island	(23)	2. 37
Chukchee	(5)	2. 47	Togiak and vicinity	(9)	2. 36
Pilot Station, Lower Yukon	(6)	2. 45	Yukon Delta	(4)	2. 34
St. Lawrence Island	(280)	2. 42	Nunivak Island	(107)	2. 33
Pastolik	(29)	2. 41	Little Diomede Island	(11)	2. 32
Hooper Bay	(13)	2. 39	St. Michael Island	(13)	2. 21
Mumtrak	(10)	2. 38			

Northwestern

Kotzebue	(3)	2. 41	Point Hope	(211)	2. 33
Wales	(34)	2. 37	Point Barrow	(92)	2. 30
Shishmaref	(20)	2. 36	Igloos, north of Barrow	(48)	2. 30
Barrow	(56)	2. 35			

Northern and northeastern

Smith Sound	(9)	2. 29	Baffin Land and vicinity	(29)	2. 25
Northern Arctic	(15)	2. 26	Greenland	(98)	2. 23
Southampton Island	(14)	2. 25	Hudson Bay and vicinity	(7)	2. 19

It is hardly possible, therefore, to assume that a narrow nose is an *ancient* inheritance of the Eskimo. From the facts now at hand it seems much more probable that the Eskimo nose or respiratory nasal aperture was not originally very narrow, but that it gradually acquired this character as the people extended farther north and northeastward; and there appears to be but one potent factor that could influence this development and that increases from south to north, namely, cold. A narrowing of the aperture can readily be understood as a protective development for the throat and the organs of respiration.

It is not easy to see how the bony structures respond to the effects of cold or heat, but that they do, particularly where these are aggravated by moisture, has long been appreciated, and shown fairly conclusively through studies on the nasal index by Thomson and later by Thomson and Buxton.[9a] An even more satisfactory study would have been that of the nasal breadth alone. Perhaps the normal variation with the elimination of the less fit are the main agencies.

The next two tables show other interesting conditions. The first of these, seen best from the more general data, are the relations of the nasal dimensions and index in the two sexes. The females in all the three large groupings have a higher nasal index than the males. This is a general condition among the Indians as well as in other races. It is usually due to a relative shortness of the female nose. This condition is very plain in the Eskimo. The female nose is actually narrower than the male, due to correlation with shorter stature and lesser facial breadth, yet the index is higher. The reason can most simply be shown by comparing the general mean nasal breadth and height in the two sexes. The breadth in the female is approximately 96.2 per cent of that in the male; the height is only 92.7 per cent.

NASAL DIMENSIONS IN WESTERN AND OTHER ESKIMO CRANIA

Area	Males			Females		
	Height	Breadth	Index	Height	Breadth	Index
Groups	(14)	(14)	(14)	(10)	(10)	(10)
Southwestern and mid-western	5. 46	2. 42	*44. 3*	5. 06	2. 32	*45. 8*
Groups	(7)	(7)	(7)	(6)	(6)	(6)
Northwestern	5. 42	2. 37	*43. 7*	5. 06	2. 30	*45. 4*
Groups	(6)	(6)	(6)	(5)	(5)	(5)
Northern Arctic and northeastern	5. 38	2. 28	*42. 4*	4. 95	2. 18	*44. 0*

[9a] Thomson, Arthur, The correlation of isotherms with variations in the nasal index. Proc. Seventeenth Intern. Cong. Med., London, 1913, Sec. I, Anatomy and Embryology, pt. II, 89; Thomson, Arthur, and Buxton, L. H. D., Man's nasal index in relation to certain climatic conditions, Journ. Roy. Anthrop. Inst., LIII, 92–122, London, 1923. Additional references in these publications; also in the latter an extensive list of data on nasal index in many parts of the world.

Detailed group data on the nasal index show that this ranges from *47.7* on the Yukon to *41.8* in the northernmost contingent of the Eskimo at Smith Sound. The Kotzebue group that shows even a higher index than on the Yukon is too small to have much weight. Barrow and Point Barrow are once more nearly the same, as are the Old Igloos and Greenland; and there are some other interesting relations.

ESKIMO SKULLS: NASAL INDEX

BOTH SEXES TAKEN TOGETHER IN DESCENDING ORDER

Southwestern and midwestern

	(6)		(107)
Pilot Station, Lower Yukon	47. 7	Nunivak Island	45. 1
	(5)		(9)
Southwestern Alaska	47. 5	Togiak and vicinity	45. 0
	(31)		(29)
Indian Point (Siberia)	46. 5	Pastolik	44. 9
	(13)		(23)
Hooper Bay	46. 2	Nelson Island	44. 6
	(6)		(11)
Cape Nome and Port Clarence	46. 0	Little Diomede Island	44. 5
	(280)		(13)
St. Lawrence Island	45. 8	St. Michael Island	42. 9
	(5)		(4)
Chukchee	45. 6	Yukon Delta	42. 7
	(10)		
Mumtrak	45. 2		

Northwestern

	(3)		(56)
Kotzebue	49. 0	Barrow and vicinity	44. 0
	(20)		(48)
Shishmaref	46. 0	Igloos north of Barrow	44. 0
	(34)		(92)
Wales	45. 3	Point Barrow	43. 5
	(211)		
Point Hope	44. 9		

Northern and northeastern

	(7)		(98)
Hudson Bay and vicinity	44. 6	Greenland	43. 6
	(15)		(14)
North Arctic	44. 1	Southampton Island	43. 0
	(29)		(9)
Baffin Land and vicinity	43. 8	Smith Sound	41. 8

THE ORBITS

In many American groups the orbits are notoriously variable, yet their mean dimensions and index are of value.

The Eskimo orbits have long been known for their ample proportions. Their mean height and breadth are larger than those of any other known people and the excess is especially apparent when proportioned to stature. Taking the family as a whole, the mean height of the two orbits in males averages approximately 3.64 centimeters, the mean breadth 4.03 centimeters; while the males of 23 Algonquian tribes give for the same items 3.42 and 3.93, and those of 12 Siouan tribes 3.58 and 3.96 centimeters.

The general averages for the female Eskimo approach for orbital height 3.52 centimeters, for breadth 3.89 centimeters, dimensions which also surpass those in the females of any other known human group.

These large dimensions of the Eskimo orbit are, however, on closer examination into the matter, found not to be racial characters except in a secondary way. They are the direct consequence of the high and broad face. The correlation of the orbital height and breadth with the height and breadth of the face are shown by the following figures. These figures indicate also some additional details of interest.

ESKIMO ORBITS: RIGHT AND LEFT

MALES

	Height		Breadth		Index	
	Right	Left	Right	Left	Right	Left
St. Lawrence Island	(145) 3. 67	3. 68	(145) 4. 05	4. 01	(145) *90. 7*	*91. 8*
Nunivak Island	(41) 3. 59	3. 59	(41) 4. 05	4. —	(41) *88. 7*	*89. 7*
Point Hope	(120) 3. 63	3. 63	(120) 4. 05	4. 01	(120) *89. 6*	*90. 5*
Greenland	(46) 3. 64	3. 65	(46) 4. 02	3. 96	(46) *90. 6*	*92. 1*

FEMALES

St. Lawrence Island	(128) 3. 62	3. 60	(128) 3. 92	3. 89	(128) *91. 7*	*92. 6*
Nunivak Island	(58) 3. 50	3. 52	(58) 3. 88	3. 84	(58) *90. 2*	*91. 6*
Point Hope	(70) 3. 54	3. 54	(70) 3. 91	3. 88	(70) *90. 5*	*91. 4*
Greenland	(45) 3. 55	3. 56	(45) 3. 86	3. 83	(45) *91. 9*	*92. 9*

The general orbital index of the Eskimo is close to *90* in the males, *90.5* in the females. Such orbits are classed as also *relatively* high or *megaseme*, a character in which they resemble many of the American Indians. Thus the male crania of the Siouan tribes give the practically identical general index of *90.5*.

The slightly higher index in the females is the rule to which there are but few exceptions, and those in individual groups where the numbers of specimens may not be sufficient. The same tendency is observable in the Indians, and appears in fact to be panhuman. It is due to slightly lesser relative height as compared to the breadth of the orbit in the males, which condition is due in all probability to the greater development in the males of the frontal sinuses and supraorbital arches.

ESKIMO CRANIA: DIMENSIONS OF THE ORBITS IN RELATION TO THOSE OF THE FACE

ORBITAL HEIGHT VERSUS UPPER FACIAL HEIGHT

Males					
(10) Lowest faces (7.2–7.4)		(10) Average faces (7.8)		(10) Highest faces (8.4–9)	
Face	Orbits	Face	Orbits	Face	Orbits
7. 37	3. 62	7. 80	3. 65	8. 55	3. 78
Females					
(10) Lowest faces (6.4–6.8)		(10) Average faces (7.3)		(14) Highest faces (7.8–8.4)	
Face	Orbits	Face	Orbits	Face	Orbits
6. 69	3. 54	7. 30	3. 56	7. 89	3. 67

PERCENTAGE RELATIONS OF ORBITS TO FACE

49. 1	*46. 8*	*44. 2*
53	*48. 7*	*46. 6*

ESKIMO CRANIA: DIMENSIONS OF THE ORBITS IN RELATION TO THOSE OF THE FACE—Continued

ORBITAL BREADTH VERSUS FACIAL BREADTH

Males					
(10) Narrowest faces (13.4 and below)		(17) Average faces (14.2)		(10) Broadest faces (14.9 and above)	
Face	Orbits	Face	Orbits	Face	Orbits
13. 30	3. 96	14. 20	4. 01	15. 11	4. 17

Females					
(10) Narrowest faces (12.7 and below)		(14) Average faces (13.3)		(10) Broadest faces (13.9 and above)	
Face	Orbits	Face	Orbits	Face	Orbits
12. 57	3. 74	13. 30	3. 88	14. 09	3. 98

PERCENTAGE RELATIONS OF ORBITS TO FACE

29. 8	*28. 4*	*28. 2*
29. 8	*29. 2*	*27. 6*

Individual variation in the orbital index of the Eskimo is extensive, reaching from slightly below *80* to well over *100*. It extends more or less over the whole Eskimo area, without conveying definite indication anywhere of either a mixture or of a special evolutionary tendency. Yet it occasions group differences that eventually might prove evolutionary, though they may merely represent the next or higher order of variability, namely, that of groups within a family.

ORBITAL DIMENSIONS AND INDEX IN ESKIMO SKULLS

Area	Males			Females		
	Mean height	Mean breadth	Mean index	Mean height	Mean breadth	Mean index
	(13)	(13)	(13)	(13)	(13)	(13)
South and midwestern	3. 63	4. 01	*90. 6*	3. 56	3. 87	*92. 1*
	(6)	(6)	(6)	(6)	(6)	(6)
Northwestern	3. 62	4. 02	*90. 1*	3. 51	3. 92	*89. 7*
	(5)	(5)	(5)	(5)	(5)	(5)
Northern Arctic and northeastern	3. 65	4. 07	*89. 5*	3. 54	3. 91	*90. 6*

The group differences in the orbital index of the Eskimo skull are shown in the next table. They elude a satisfactory explanation, unless recourse is had to the above suggested theory of normal group variability within a family. They have about the same range in the three large areas, which would seem to support this theory.

Group relations are indicated in the cases of Pastolik-Yukon Delta-St. Michael Island; Point Barrow-Barrow; and Old Igloos-Greenland.

ESKIMO SKULLS: MEAN INDEX OF THE ORBITS

BOTH SEXES TAKEN TOGETHER IN ASCENDING ORDER

Southwestern and midwestern

	(10)		(271)
Mumtrak	88. 4	St. Lawrence Island	91. 7
	(11)		(24)
Little Diomede Island	89. 4	Nelson Island	91. 9
	(6)		(13)
Cape Nome and Port Clarence	89. 7	Hooper Bay	92. 5
	(101)		(29)
Nunivak Island	90. 1	Pastolik	93. 2
	(31)		(7)
Indian Point (Siberia)	90. 3	Togiak	93. 3
	(5)		(4)
Chukchee	90. 6	Yukon Delta	93. 8
	(6)		(13)
Pilot Station, Lower Yukon	91. 0	St. Michael Island	94. 4
	(5)		
Southwest Alaska	91. 4		

Northwestern

	(3)		(200)
Kotzebue	86. 1	Point Hope	90. 4
	(20)		(53)
Shishmaref	88. 9	Barrow	91. 1
	(34)		(43)
Wales	89. 4	Igloos north of Barrow	91. 1
	(85)		
Point Barrow	90. 3		

Northern and northeastern

	(9)		(16)
Smith Sound	87. 6	Northern Arctic	91. 0
	(13)		(94)
Southampton Island	88. 4	Greenland	91. 6
	(28)		(7)
Baffin Land and vicinity	90. 0	Hudson Bay and vicinity	92. 3

THE UPPER ALVEOLAR ARCH

The dental arches correlate with function (use), with stature, with the dimensions of the face, and with those of the teeth. The western as well as other Eskimo show arches that are about equal in absolute dimensions to those of our taller Indians, such as the Munsee, Arkansas, and Louisiana;[10] but relatively to stature the Eskimo arch is decidedly larger.

The upper dental arch index $\left(\frac{L \times 100}{B}\right)$, now being used in preference to the unwieldy "uranic index" $\left(\frac{B \times 100}{L}\right)$ of Turner, is rather high, showing that the arch is relatively, as well as absolutely, broad. The same index in the Munsee averaged in the males *82.8*, in the females *82.7*; in the Arkansas and Louisiana mound skulls *84.4* in the males and *85.1* in the females. Data are needed here for more extensive comparisons.

ESKIMO CRANIA: ALVEOLAR ARCH

	Males				Females			
	External length	External breadth	Module (mean diameter)	Index $\frac{L \times 100}{B}$	External length	External breadth	Module (mean) (diameter)	Index $\frac{L \times 100}{B}$
11 groups: Southwestern and midwestern	5. 56	6. 66	6. 11	*83. 5*	5. 34	6. 38	5. 86	*83. 8*
6 groups: Northwestern	5. 63	6. 61	6. 12	*85. 1*	5. 38	6. 31	5. 85	*85. 2*
5 groups: Northern Arctic and northeastern	5. 68	6. 75	6. 21	*84. 2*	5. 37	6. 28	5. 83	*85. 6*

[10] See Bull. 62, Bur. Am. Ethn., and writer's Report on an Additional Collection of Skeletal Remains from Arkansas and Louisiana, published with Clarence B. Moore's report on the Antiquities of the Ouachita Valley, Philadelphia, 1909.

ESKIMO SKULLS: LENGTH-BREADTH INDEX OF THE UPPER ALVEOLAR ARCH BOTH SEXES TAKEN TOGETHER IN ASCENDING ORDER

Southwestern and midwestern

	(5)		(10)
Pilot Station, Lower Yukon	79. 4	St. Michael Island	84. 3
	(8)		(22)
Togiak and vicinity	80. 5	Pastolik	84. 4
	(4)		(90)
Chukchee	81. 1	Nunivak Island	84. 4
	(12)		(4)
Hooper Bay	81. 7	Southwest Alaska	84. 7
	(9)		(5)
Mumtrak	81. 7	Cape Nome and Port Clarence	84. 9
	(9)		(22)
Little Diomede Island	82. 2	Indian Point (Siberia)	85. 0
	(234)		(22)
St. Lawrence Island	83. 0	Nelson Island	85. 5

Northwestern

	(39)		(31)
Igloos north of Barrow	84. 1	Wales	84. 9
	(14)		(38)
Shishmaref	84. 4	Barrow	85. 8
	(171)		(66)
Point Hope	84. 6	Point Barrow	87. 1

Northern and northeastern

	(9)		(23)
Smith Sound	82. 7	Baffin Land and vicinity	85. 7
	(13)		(89)
Southampton Island	83. 7	Greenland	85. 9
	(7)		(10)
Hudson Bay and vicinity	84. 4	Northern Arctic	86. 5

Sex differences in the index are small, nevertheless the females tend to show a slightly higher index, due to relatively slightly smaller breadth of the arch.

The size of the arch and its index differ but little over the three main areas of the Eskimo territory, yet there are slight differences. They appear plainly in the following table. Notwithstanding the fact that on the whole the southwestern and midwestern groups are somewhat taller than those of the far north and northeast, the largest palate, in the males at least, is found in the latter area.

In the southwest and midwest the upper alveolar arch is relatively (as well as absolutely, barring one group) somewhat broad and short. This may be in correlation with the broader head in this area, just as the absolutely slightly longer palates over the rest of the Eskimo territory and particularly (in males) in the northeast may correlate with the longer heads in those regions. This point may be

tested on our splendid material from St. Lawrence Island. Taking the broadest and the narrowest skulls from this locality, the following data are obtained for the proportions of the upper dental arch:

ESKIMO CRANIA: DENTAL ARCH AND FORM OF SKULL

ST. LAWRENCE ISLAND MATERIAL

	Males		Females	
	Narrowest skulls (C. I. 70.7–73.5)	Broadest skulls (80.6–83.1)	Narrowest skulls (70.3–74.2)	Broadest skulls (80.9–83.8)
Length	5. 68	5. 58	5. 52	5. 20
Breadth	6. 83	6. 77	6. 66	6. 36
Index	*83. 2*	*82. 4*	*82. 9*	*82. 7*
Mean diameter	6. 26	6. 18	6. 09	5. 78
Mean cranial diameter (cranial module) of same skulls	15. 61	15. 49	14. 97	14. 73
Percentage relation of mean dental arch diameter to the mean diameter of the skull	*40. 1*	*39. 3*	*40. 7*	*39. 2*
Length of same skulls	19. 21	18. 10	18. 35	17. 25
Percentage relation of length of dental arch to that of skull	*29. 5*	*30. 3*	*30. 1*	*30. 1*

The above figures show several conditions. The first is that the arch is quite distinctly larger in the narrow than in the broad skulls in both sexes. The second fact is that the skull (vault) itself is slightly larger in the narrow-headed. The third is that the length of the arch is somewhat greater in the narrow and long skulls than it is in the broad and shorter, relatively to the skull size. The fourth is that there appears a close correlation, more particularly in the females, between the length of the arch and that of the skull.

THE BASION-NASION DIAMETER

The anterior basal length (basion-nasion) is a measurement of importance, though its full meaning in anthropology is not yet entirely clear. From data quoted by Martin (Lehrb., 715–716) it appears to average in whites up to 10.3 centimeters in males and up to 10.1 centimeters in females, and is known to correlate closely with the length of the vault. Secondarily it also correlates with stature.

Data on American Indians are not yet generally available, though in preparation. The Munsee skulls gave the writer for the diameter the means of 10.27 for the males and 10.02 for the females; the mound skulls from Arkansas and Louisiana gave 10.45 for the males and 9.77 for the females.

An abstract of the data on the Eskimo skulls is given in the next table. The values for the measurement are rather high, especially for such short people. The percentage relation of the measurement to the length of the skull appears also to be high. Manouvrier (1882, quoted in Martin, Lehrb., 716) found this relation in French skulls to be *53.6* in the males and *54.7* in the females.

ESKIMO CRANIA: BASION-NASION LENGTH

	Groups of males		Corresponding groups of females	
	Basion-nasion diameter	Its percentage relation to length of skull	Basion-nasion diameter	Its percentage relation to length of skull
	(13)	(13)	(13)	(13)
Southwestern and midwestern	10. 38	*56. 4*	9. 85	*55. 7*
	(6)	(6)	(6)	(6)
Northwestern	10. 58	*56. 4*	10. 06	*56. 3*
	(5)	(5)	(5)	(5)
Northern Arctic and northeastern	10. 65	*56. 2*	10. 06	*55. 4*

The female measurement to that of the male, in the Eskimo, is as *94.9* to 100. As a similar relation of the cranial modules in the two sexes is close to *95.7*, the anterior basal length would seem to be at a little disadvantage in the female Eskimo skull.

The same condition is seen also when the basion-nasion diameter is compared with the length of the skull. In the males, notwithstanding the fact that the length of the vault is increased through the development of the frontal sinuses and not infrequently also through that of the occipital ridges, the percentage relation of the basion-nasion to the maximum total length of the vault is approximately *56.3*, in the females but 55.8. It seems therefore safe to say that in the Eskimo, in general, that part of the brain anterior to the foramen magnum is relatively somewhat better developed in the males than in the females.

But to this there are some exceptions. Thus it may be seen in the general table which follows that in the northwestern groups conditions in this respect are equalized; and in the succeeding detailed table it will be noted that while the males exceed the females in this particular in 14 of the groups, in 5 groups conditions are equal (or within one decimal), and in 5 the female percentage exceeds slightly that in the males. In the numerically best represented groups conditions are nearly equal, with the males nevertheless slightly favored.

ESKIMO SKULLS: BASION-NASION LENGTH AND ITS RELATION TO LENGTH OF SKULL

SEXES SEPARATELY IN ASCENDING ORDER

	Males		Females	
	B-N.	$\frac{BN \times 100}{Skull\ l}$	B-N.	$\frac{BN \times 100}{Skull\ l}$
Southwestern and midwestern				
	(4)		(7)	
Little Diomede Island	10. 18	*56. 2*	9. 91	*54. 9*
	(3)		(2)	
Chukchee	10. 20	*54. 8*	10. 00	*54. 8*
	(3)		(3)	
Pilot Station (Yukon)	10. 27	*54. 3*	9. 97	*56*
	(9)		(4)	
Hooper Bay	10. 29	*57. 6*	9. 70	*55. 7*
	(4)		(6)	
Mumtrak	10. 32	*57*	9. 52	*55. 1*
	(146)		(133)	
St. Lawrence Island	10. 36	*56. 3*	9. 93	*56. 1*
	(3)			
Yukon Delta	10. 37	*55. 8*	----------	
	(11)		(18)	
Pastolik	10. 41	*56. 5*	9. 98	*56. 3*
	(8)		(6)	
St. Michael Island	10. 44	*57. 3*	9. 98	*56. 3*
	(9)		(15)	
Nelson Island	10. 46	*55. 8*	9. 73	*55. 9*
	(3)		(7)	
Togiak	10. 47	*57. 2*	9. 56	*55. 7*
	(3)		(2)	
Southwestern Alaska	10. 47	*57. 6*	9. 80	*54. 8*
	(15)		(16)	
Indian Point and Puotin	10. 54	*56. 5*	9. 97	*56. 5*
	(46)		(69)	
Nunivak Island	10. 55	*56. 1*	10. 02	*56*
Northwestern				
	(2)			
Kotzebue	10. 45	*57. 3*	----------	
	(133)		(82)	
Point Hope	10. 48	*57*	10. 00	*56. 9*
	(12)		(8)	
Shishmaref	10. 50	*56. 8*	10. 20	*57. 5*
	(47)		(52)	
Point Barrow	10. 54	*56. 2*	9. 94	*55. 5*
	(35)		(34)	
Barrow	10. 61	*55. 9*	10. 01	*56. 3*
	(19)		(15)	
Wales	10. 64	*56. 7*	10. 01	*55. 5*
	(27)		(24)	
Igloos north of Barrow	10. 70	*55. 6*	10. 18	*56. 2*

ESKIMO SKULLS: BASION-NASION LENGTH AND ITS RELATION TO LENGTH OF SKULL—Continued

SEXES SEPARATELY IN ASCENDING ORDER

	Males		Females	
	B-N.	$\frac{BN \times 100}{Skull\ l}$	B-N.	$\frac{BN \times 100}{Skull\ l}$
Northern and northeastern				
	(16)		(17)	
Baffin Land and vicinity	10. 51	*55. 6*	10. 11	*55. 2*
	(5)		(2)	
Hudson Bay and vicinity	10. 60	*56. 4*	9. 75	*55. 6*
	(48)		(52)	
Greenland	10. 60	*55. 9*	10. 13	*56. 2*
	(5)		(10)	
Northern Arctic	10. 68	*56. 1*	10. 07	*55. 3*
	(7)			
Smith Sound	10. 70	*56. 4*		
	(9)		(5)	
Southampton Island	10. 83	*57. 3*	10. 34	*56. 9*

An interesting point is that in the north and northeast, where the skulls are longest, there is evidently a slightly greater relative development of the occipital portion of the vault, or slightly lesser development of the frontal portion.

Some additional points of interest appear when the basion-nasion: skull-length index, taken collectively for the two sexes, is compared in the different groups. All these comparisons suffer, naturally, from unevenness and often insufficiency of the numbers of specimens, yet some of the results are very harmonious with those brought out repeatedly by other data. Thus the St. Lawrence material stands once more close to the medium of the southwestern and midwestern groups; Barrow and Point Barrow are almost identical; and so are the Old Igloos from near Barrow and Greenland. The St. Michael islanders show very favorably in the midwest, the Shishmarefs in the northwest and the Southampton islanders in the northeast.

ESKIMO SKULLS: BASION-NASION LINE IN RELATION TO SKULL LENGTH

$$\left(\frac{BN \times 100}{SL}\right)$$

BOTH SEXES TOGETHER IN ASCENDING ORDER

Southwestern and midwestern

	(5)		(5)
Chukchee	54. 8	Southwestern Alaska	56. 2
	(6)		(29)
Pilot Station, Lower Yukon	55. 2	Pastolik	56. 4
	(11)		(10)
Little Diomede Island	55. 6	Togiak	56. 5
	(24)		(31)
Nelson Island	55. 9	Indian Point and vicinity (Siberia)	56. 5
	(115)		(13)
Nunivak Island	56. 0	Hooper Bay	56. 6
	(10)		(14)
Mumtrak	56. 1	St. Michael Island	56. 8
	(279)		
St. Lawrence Island	56. 2		

Northwestern

	(51)		(34)
Igloos southwest of Barrow	55. 9	Wales	56. 1
	(99)		(215)
Point Barrow	55. 9	Point Hope	57. 0
	(69)		(20)
Barrow	56. 1	Shishmaref	57. 1

Northern and northeastern

	(33)		(100)
Baffin Land and vicinity	55. 4	Greenland	56. 1
	(10)		(7)
Northern Arctic	55. 7	Smith Sound (male)	56. 4
	(7)		(14)
Hudson Bay and vicinity	56. 0	Southampton Island	57. 1

The next table gives the percentage relations of the basion-nasion diameter to the mean diameter of the skull. The correlation of the two is even closer than in the case of the skull length, and the grouping, while in the main alike, seems in general even more in harmony with that in previous comparisons. The St. Lawrence Island females are very exceptional, as was also apparent in other connections. The unusual smallness of their skull (compare section on Cranial module) is evidently due to a poor development of its posterior half.

ESKIMO CRANIA: PERCENTAGE RELATION OF THE BASION-NASION DIAMETER TO MEAN CRANIAL DIAMETER (CRANIAL MODULE)

$$\left(\frac{BN \times 100}{CM}\right)$$

BOTH SEXES TOGETHER IN ASCENDING ORDER

Southwestern and midwestern		*Northwestern*	
Pilot Station, Yukon	65. 6	Wales	67. 7
Chukchee	66. 0	Point Barrow	67. 8
Little Diomede Island	66. 1	Point Hope	68. 1
Hooper Bay	66. 4	Barrow	68. 4
Nelson Island	66. 7	Old Igloos	69. 0
Togiak	66. 9	Shishmaref	69. 2
Southwest Alaska	67. 3		
Indian Point, Siberia	67. 4	*Northern Arctic and northeastern*	
Mumtrak	67. 4	Baffin Land	67. 4
Nunivak Island	67. 6	Hudson Bay	67. 6
Pastolik	67. 6	Smith Sound (male)	67. 6
St. Michael Island	68. 0	North Arctic	68. 1
St. Lawrence Island:		Greenland	68. 5
Male	67. 2	Southampton Island	68. 7
Female	(69. 6)		

PROGNATHISM

Since better understood, the subject of facial prognathism has lost much of its allure in anthropology; yet the matter is not wholly without interest.

Facial protrusion is as a rule secondary to and largely caused by alveolar protrusion, which in turn is caused by the size and shape of the dental arch; and the dental arch is generally proportional to the size of the teeth. The form of the arch is, however, quite influential. With the teeth identical in size a narrow arch will be more, a broad arch less protruding, and a narrow arch with small teeth may protrude more than a broad one with larger teeth. Another influence is that of the height of the upper face, the same arch protruding more in a low face than in a high one. And still another factor is the incline of the front teeth, though this affects merely the appearance of prognathism and not its measurements.

There are different ways of measuring facial prognathism, and with sufficient care all may be effective; I prefer, for practical reasons, linear measurements from the basion, which, together with the facial and subnasal heights, give triangles that can readily be reconstructed on paper and allow a direct measurement of both the facial and the alveolar angle. The three needed diameters from basion are taken, the first to the "prealveolar point," or the *most anterior* point on the upper dental arch above the incisors; the second to the "subnasal point," or the point on the left (for convenience) of the nasal aperture, where the outer part of its border passes into that which belongs to the subnasal portion of the maxilla

(the point where the subnasal slant begins); and the third to nasion. The facial height is that from the alveolar point (*lowest* point of the upper alveolar border in the median line) to nasion; while for the subnasal height, which can not be measured directly, I utilize the difference between the facial and nasal heights, which is very close to the needed dimension.

The important basion-nasion diameter has already been considered. That to the subnasal point needs no comment. That to the prealveolar point shows in the western and other Eskimo as follows:

ESKIMO CRANIA: BASION-PREALVEOLAR POINT DIAMETER

ALL ESKIMO

Males:		
Mean diameter	centimeters	10. 54
Mean relation to length of skull	per cent	*56. 3*
Females:		
Diameter	centimeters	9. 99
Relation	per cent	*55. 8*

MALES

A=Basion prealveolar point diameter
B=Its relation to length of skull

Southwestern and midwestern		Northwestern		Northern Arctics and northeastern	
A	*B*	*A*	*B*	*A*	*B*
10. 38	*56. 4*	10. 58	*56. 4*	10. 65	*56. 2*
Mean skull lengths					
18. 41		18. 75		18. 96	
FEMALES					
9. 85	*55. 7*	10. 06	*56. 3*	10. 06	*55. 4*
Mean skull lengths					
17. 69		17. 86		18. 15	

As in other details, so here there is a remarkable similarity between the skulls from the three large areas, pointing both to the unity of the people and to absence of heterogeneous admixtures. As the skull length increases so does the basi-alveolar line, but the relative proportions of the two remain very nearly the same.

The relative value of the basi-alveolar length in the males, compared to the length of the skull, is in general about 0.5 per cent higher than it is in the females. This is just about the excess of the relative proportion of the length of the male dental arch when compared to the same skull dimension. The general mean skull length in the Eskimo male approximates 18.705, in female 17.899 centimeters; the mean length of the arch is, in the male, close to 5.625, in the female 5.365 centimeters; and the percentage relation of the latter to the former is *30.6* in the males, *30* in the females. The relatively slightly greater basi-alveolar length in the males is evidently, therefore, at least partly due to the relatively longer male

dental arch, which in turn is doubtless due to the somewhat larger teeth in the males.[11]

Notwithstanding the just discussed slight sex difference in the Eskimo, the facial angle, i. e., the angle between the basi-alveolar line and the line nasion-alveolar point, is equal in the two sexes. This equalization is due largely, if not wholly, to the effect in the males of the relatively longer basio-nasion diameter (v. a.), while the alveolar angle, or that between the basi-alveolar and the subnasal lines, is in general by about 1 per cent lower in the females (males, 56°; females, 55°), indicating a slightly greater slant of the subnasal region in the female, which can only be due to a relatively slightly shorter in this sex of the basion-subnasal point diameter. As a matter of fact, the percentage relation of this diameter to the length of the skull amounts in the males to *56.3*, in the females to but *55.6*.

Compared to that in the Indians, the facial angle in the Eskimo skulls shows close affinities. Its value (69°) is very nearly the same as in the mound skulls from Arkansas and Louisiana (males 70.7°, females 69°). In other Indians it ranges from close to 68° to 71.5°. In the Munsee it reached 73.5°. In whites, according to Rivet's data,[12] it ranges from about 72° to 75°; in a group of negroes it was 68.5°. In American and other negro crania measured by me[13] it ranged from 67° to 70.5°, in Melanesians from 66° to 68°, in Australians from 67° to 69°.

The *alveolar angle* is more variable. It shows considerable individual, sex, and group differences. It averages slightly to moderately higher, which means a more open angle or less slant in the males than in the females. In the Eskimo as a whole it was seen to be approximately 56° in the males, 55° in the females; in the Munsee Indians (Bull. 62, Bur. Amer. Ethn.) it was males 59°, females 57°; in the Arkansas and Louisiana skulls (J. Ac. Sci., Phila., 1909, XIV) it averaged males 55°, females 52°. In my catalogue material it shows a group variation of 46.5° to 55.5° in the negro, 47.5° to 52.5° in the Australians, 46.5° to 50.5° in the Melanesians. In the whites it generally exceeds 60°.

Differences in facial and alveolar protrusion among the Eskimo according to area are small, yet they are not wholly absent. The figures below show that in the southwesterners and midwesterners, where the skull is more rounded, the prognathism is smallest; and that toward the north and northeast, where the skull is narrower and the palate (dental arch) tends to become longer, prognathism increases. The "Old Igloo" group shows once more such affinity with the Greenlanders that it is placed with the third subdivision.

[11] Compare writer's Variation in the dimensions of lower molars in man and anthropoid apes, Am. J. Phys. Anthrop., VI, 423–438, Washington, 1923.

[12] Rivet, P., Recherches sur le prognathisme. L'Anthropologie, XX, pp. 35, 175; Paris, 1909. XXI, pp. 505, 637, 1910.

[13] Cat. Crania, U. S. Nat. Mus., etc., No. 3. Washington, 1928, 88, 105, 139.

ESKIMO SKULLS: FACIAL AND ALVEOLAR ANGLE WITH PRINCIPAL AREAS

	Males			Females		
	South- and midwest	Northwest	North and northeast	South- and midwest	Northwest	North and northeast
Groups	(13)	(5)	(6)	(13)	(5)	(6)
Facial angle	68	69	70	67. 5	69	70
Alveolar angle	55	56	55	54	55	54. 5

Individual group differences in the facial and alveolar angle are moderate, yet evidently not negligible. (See next table.) The most prognathic, especially in the subnasal region, are the skulls from Nelson Island. A marked alveolar slant is also present in the Pilot Station Yukon group, and in Greenland. The least prognathic are the St. Michael Islanders, the Point Hope people, and those from Southampton Island. St. Lawrence stands once more near the middle of the southwesterners and midwesterners, and there are to be seen the principal old relations.

The main points shown by the above conditions are the group variability, particularly in the southwest and midwest; the tendency, on the whole, toward a slightly greater prognathy, both facial and alveolar, in this same area; and the evidence that the alveolar slant has some individuality.

ESKIMO SKULLS: GROUP CONDITIONS IN FACIAL AND ALVEOLAR ANGLE [13a]

South and midwest	Facial angle	Alveolar angle	*Northwest*	Facial angle	Alveolar angle
	(20)			(11)	
Nelson Island	66. 3	51. 5	Sledge Island	69. 5	54. 9
	(4)			(31)	
Southwest Alaska	66. 8	54. 5	Wales	67. 8	56. 0
	(4)			(17)	
Chukchee	66. 8	57. 0	Shishmaref	68. 3	55. 8
	(21)			(73)	
Indian Point	67. 0	56. 5	Point Barrow	69. 5	56. 0
	(8)			(43)	
Togiak	67. 0	54. 0	Barrow	69. 8	56. 8
	(242)			(181)	
St. Lawrence Island	67. 8	55. 3	Point Hope	70. 5	56. 5
	(86)				
Nunivak Island	67. 8	56. 5	*North and northeast*		
	(23)			(11)	
Pastolik	68. 3	54. 8	North Aretic	68. 5	54. 5
	(10)			(24)	
Hooper Bay	68. 3	55. 3	Baffin Land	70. 0	55. 0
	(10)			(87)	
Little Diomede Island	68. 5	57. 5	Greenland	69. 8	53. 8
	(9)			(35)	
Mumtrak	68. 8	55. 3	Old Igloos near Barrow	70. 3	55. 8
	(5)			(7)	
Pilot Station, Yukon	68. 8	52. 0	Hudson Bay	70. 3	56. 8
	(10)			(12)	
St. Michael Island	70. 0	56. 8	Southampton Island	71	55

[13a] Lower angles mean higher, higher angles lower facial or alveolar protrusion.

ESKIMO CRANIA

Southwestern and Western Alaska, Bering Sea Islands, and Asiatic Coast

MALES

	Prince William Sound	Kodiak Island	Unalaska Peninsula	Nushagak Bay and Kanakanak	Togiak	Mumtrak	Nunivak Island	Nelson Island Tanunok Village	Hooper Bay	Lower Yukon and delta	Pilot Station, lower Yukon	Kotlik and Pastolik	St. Michael Island	St. Lawrence Island	Little Diomede Island	Northeastern Asia		
																Indian Point (E. Cape)	Puotin (NW. of E. Cape)	Chukchi (in or near Bering Strait)
Vault:	(1)	(1)	(1)	(1)	(4)	(4)	(46)	(9)	(9)	(3)	(3)	(11)	(8)	(153)	(5)	(14)	(2)	(3)
Length	18.1	18.6	17.8	17.4	18.30	18.10	18.81	18.73	17.86	18.57	18.90	18.44	18.23	18.40	18.12	18.59	18.95	18.63
	(1)	(1)	(1)	(1)	(4)	(4)	(46)	(9)	(9)	(3)	(3)	(11)	(8)	(153)	(5)	(14)	(2)	(3)
Breadth	13.8	14.4	14.1	14.4	14.20	14.20	14.09	14.44	14.43	14.13	15.07	13.90	13.84	14.19	14.28	14.32	14.45	14.67
	(1)	(1)	(1)	(1)	(4)	(4)	(46)	(9)	(9)	(3)	(3)	(11)	(8)	(145)	(5)	(13)	(2)	(3)
Height	12.8	14	13.6	13.4	13.25	13.35	13.69	13.60	13.60	13.67	13.77	13.60	13.83	13.68	13.60	13.68	14.30	13.37
	(1)	(1)	(1)	(1)	(4)	(4)	(46)	(9)	(9)	(3)	(3)	(11)	(8)	(145)	(5)	(13)	(2)	(3)
Cranial module	14.90	15.67	15.17	15.07	15.25	15.22	15.53	15.59	15.30	15.46	15.91	15.31	15.30	15.42	15.33	15.54	15.90	15.56
	(1)	(1)		(1)	(3)	(4)	(46)	(9)	(9)	(3)	(3)	(11)	(8)	(142)	(5)			(3)
Capacity	1,380	1,485		1,440	1,447	1,465	1,504	1,556	1,519	1,490	1,660	1,486	1,461	1,462	1,470			1,490
	(1)	(1)	(1)	(1)	(4)	(4)	(46)	(9)	(9)	(3)	(3)	(11)	(8)	(153)	(5)	(14)	(2)	(3)
Cranial index	76.2	77.4	79.2	82.3	77.6	78.5	75	77.2	80.8	76.1	79.7	75.4	75.9	77.1	78.8	77	76.3	78.7
	(1)	(1)	(1)	(1)	(4)	(4)	(46)	(9)	(9)	(3)	(3)	(11)	(8)	(145)	(5)	(13)	(2)	(3)
Mean height index	80.3	84.8	85.3	84.3	81.6	82.7	83.2	82	84.2	83.6	81.6	84.1	86.2	84	83.9	83	85.6	80.3
	(1)	(1)	(1)	(1)	(4)	(4)	(46)	(9)	(9)	(3)	(3)	(11)	(8)	(145)	(5)	(13)	(2)	(3)
Height-breadth index	90.7	97.2	96.4	93	93.3	94	97.1	94.2	94.2	96.7	91.4	97.8	99.9	96.4	95.2	96.2	98.9	91.1
Face:		(1)		(1)	(2)	(3)	(24)	(7)	(7)		(3)	(7)	(2)	(24)				
Menton-nasion		11.8		12.6	12.90	12.17	12.95	13	12.44		12.40	12.67	12.20	12.70				
Nasion-upper alveolar point	(1)	(1)		(1)	(3)	(3)	(43)	(9)	(8)	(3)	(2)	(9)	(7)	(139)	(5)	(10)	(2)	(2)
	7.5	7.8		7.6	8	7.60	7.83	8.19	7.69	7.87	7.85	7.78	7.86	7.82	7.58	7.91	8.05	8.10
Diameter-bizygomatic maximum	(1)	(1)	(1)	(1)	(3)	(4)	(45)	(9)	(9)	(3)	(3)	(9)	(8)	(148)	(5)	(14)	(2)	(3)
	13.4	14.8	14.1	14.6	14.07	13.90	14.32	14.44	14.17	14.30	14.97	14.13	13.99	14.20	13.52	14.37	14.65	14.53
		(1)		(1)	(2)	(3)	(24)	(7)	(7)		(2)	(7)	(2)	(24)				
Facial index, total		79.7		86.3	95.6	88.8	90.3	90.6	87.4		82.4	90.1	87.8	88.3				
	(1)	(1)		(1)	(3)	(3)	(43)	(9)	(8)	(3)	(2)	(9)	(7)	(13)	(5)	(10)	(2)	(2)
Facial index, upper	66	49.3		52.1	56.9	55.5	54.6	56.7	54.1	55	52.2	55	56.4	55.1	56.1	55.7	55	55.7

Basio-facial:																								
Basion alveolar point	11	(1)	10	(1)	10.43	(3)	10.37	(3)	10.65	(42)	10.61	(7)	10.25	(8)	10.20	(3)	10.35	(2)	10.40	(7)	10.21	(7)	10.43	(131)	10.40	(8)	10.95	(2)	10.50	(2)
	(1)	10.5	(1)		(3)		(4)		(44)		(9)		(9)		(3)		(3)		(10)		(8)		(143)		(13)		(2)		(3)
Basion-subnasal point	9.4	9.4	8.6	9	9.37		9.12		9.51		9.28		9.12		9.20		9.07		9.17		9.04		9.26		9.35		9.80		9.10	
	(1)	(1)	(1)	(1)	(3)		(4)		(46)		(9)		(9)		(3)		(3)		(11)		(8)		(145)		(13)		(2)		(3)	
Basion-nasion	10.4	10.8	9.9	10.2	10.47		10.32		10.55		10.46		10.29		10.37		10.27		10.41		10.44		10.36		10.48		10.90		10.20	
	(1)	(1)	(1)		(4)		(3)		(41)		(7)		(8)		(3)		(2)		(7)		(7)		(131)		(8)		(2)		(2)	
Facial angle	65.5	72	67.5		68		69		68		66		68		69		70.5		69		69		67.5		67		68		66	
	(1)	(1)	(1)		(4)		(3)		(41)		(7)		(8)		(3)		(2)		(7)		(7)		(131)		(8)		(2)		(2)	
Alveolar angle	48.5	56.5	49		56.5		55		58		53		55.5		59.5		53		56		56.5		56.5		57		58		57.5	
	(1)	(1)	(1)		(3)		(4)		(42)		(9)		(9)		(3)		(3)		(11)		(8)		(145)		(14)		(2)		(3)	
Orbits:																								
Mean height	3.47	3.55	3.67	3.62	3.64		3.45		3.59		3.75		3.66		3.76		3.57		3.67		3.74		3.68		3.80		3.60		3.66	
	(1)	(1)	(1)	(1)	(3)		(4)		(42)		(9)		(9)		(3)		(3)		(11)		(8)		(145)		(14)		(2)		(3)	
Mean breadth	3.85	4.07	3.9	4	3.95		4.00		4.02		4.08		3.92		3.94		4.07		3.98		4.04		4.03		4.10		4.25		4.01	
	(1)	(1)	(1)	(1)	(3)		(4)		(42)		(9)		(9)		(3)		(3)		(11)		(8)		(146)		(14)		(2)		(3)	
Mean index	90.2	87.1	94.2	90.7	92.2		84.8		89.2		92		98.4		96.5		87.7		92.3		93.8		91.2		92.7		84.7		91.1	
	(1)	(1)	(1)	(1)	(3)		(4)		(44)		(9)		(9)		(3)		(3)		(11)		(8)		(148)		(14)		(2)		(3)	
Nose:																								
Height	4.9	5.1	5.3	5.4	5.57		5.49		5.35		5.59		5.41		5.45		5.37		5.44		5.36		5.42		5.57		5.47		5.63	
	(1)	(1)	(1)	(1)	(3)		(4)		(44)		(9)		(9)		(3)		(3)		(11)		(8)		(148)		(14)		(2)		(3)	
Breadth	2.4	2.45	2.45	2.45	2.35		2.54		2.35		2.41		2.43		2.23		2.57		2.51		2.26		2.45		2.55		2.50		2.30	
	(1)	(1)	(1)	(1)	(3)		(4)		(44)		(9)		(9)		(3)		(3)		(11)		(8)		(148)		(14)		(2)		(3)	
Index	49	48	45.4		42.2		46.8		48.8		43		44.9		41		47.8		46.2		42.1		45.2		44.6		45.7		40.8	
	(1)	(1)			(3)		(3)		(44)		(8)		(8)		(3)		(2)		(7)		(7)		(121)		(5)		(2)		(2)	
Upper alveolar arch:																								
Length	5.9	5.6	5.5		5.60		5.40		5.66		5.73		5.46		5.40		5.70		5.57		5.44		5.63		5.38		5.57		5.70		5.95	
	(1)	(1)	(1)		(3)		(3)		(44)		(8)		(8)		(3)		(2)		(7)		(7)		(121)		(5)		(8)		(2)	
Breadth	6.9	6.8	6.6		6.43		6.63		6.79		6.68		6.65		6.63		7.40		6.70		6.63		6.79		6.46		6.66		6.60		7.15	
	(1)	(1)	(1)		(3)		(3)		(44)		(8)		(8)		(3)		(2)		(7)		(7)		(121)		(5)		(3)		(2)		(2)	
Index	87	82.4	83.3		87		81.4		83.4		85.8		82.1		81.4		77		83.4		82.1		82.9		85.3		83.6		86.4		88.2	
		(1)	(1)		(2)		(4)		(28)		(8)		(8)				(3)		(11)		(2)		(26)				(2)					
Lower jaw: Height at symphysis		3.3	4		3.8		3.55		4		3.91		3.63				3.63		3.75		3.65		3.62				3.90					

ESKIMO CRANIA—Continued

Seward Peninsula to Point Barrow and Eastward to Greenland

MALES

	Golovnin Bay	Cape Nome	Sledge Island	Port Clarence	Wales	Shishmaref	Kotzebue	Point Hope	Barrow and vicinity	Old Igloos, southwest of Barrow	Point Barrow	Northern Arctic	Melville Peninsula	Southampton Island	Hudson Bay and Ungava Bay	Baffin Land, northern Devon, and vicinity	Smith Sound	Greenland
Vault:	(3)	(1)	(5)	(4)	(19)	(13)	(2)	(131)	(37)	(27)	(49)	(5)	(1)	(9)	(5)	(16)	(7)	(49)
Length	19.23	18	19.16	18.88	18.75	18.49	18.25	18.40	18.90	19.25	18.74	19.04	19.6	18.91	18.78	18.91	18.96	18.97
	(3)	(1)	(5)	(4)	(19)	(13)	(2)	(131)	(37)	(27)	(49)	(5)	(1)	(9)	(5)	(16)	(7)	(49)
Breadth	13.67	13.5	13.72	13.78	13.64	13.65	13.50	13.86	13.73	13.30	13.84	14.08	13.7	14.03	14.10	13.83	14.37	13.61
	(3)	(1)	(5)	(3)	(19)	(12)	(2)	(128)	(35)	(27)	(47)	(5)	(1)	(9)	(5)	(16)	(7)	(49)
Height	14.13	13.6	14.02	13.90	13.92	13.48	13.40	13.90	13.78	14.02	13.78	13.76	13.6	14.01	13.76	13.87	14.06	13.95
	(3)	(1)	(5)	(3)	(19)	(12)	(2)	(128)	(35)	(27)	(47)	(5)	(1)	(9)	(5)	(16)	(7)	(49)
Cranial module	15.68	15.03	15.63	15.57	15.66	15.19	15.05	15.39	15.46	15.52	15.44	15.63	15.63	15.65	15.55	15.55	15.81	15.51
	(3)	(1)	(5)	-------	(18)	(11)	(2)	(126)	-------	-------	(5)	-------	-------	(9)	(1)	-------	(7)	(42)
Capacity	1,483	1,325	1,498	-------	1,474	1,395	1,398	1,474	-------	-------	1,324	-------	-------	1,563	1,450	-------	1,566	1,518
	(3)	(1)	(5)	(4)	(19)	(13)	(2)	(131)	(37)	(27)	(49)	(5)	(1)	(9)	(5)	(16)	(7)	(49)
Cranial index	71.1	75	71.6	73	72.8	73.8	74	75.3	72.6	69.1	73.9	74	70	74.2	75.1	73.1	75.8	71.8
	(3)	(1)	(5)	(3)	(19)	(12)	(2)	(128)	(35)	(27)	(47)	(5)	(1)	(9)	(5)	(16)	(7)	(49)
Mean height index	85.9	86.1	85.3	84.3	85.9	84	84.4	86.2	84.6	86.2	84.7	83.1	81.7	85.1	83.7	84.9	84.4	85.7
	(3)	(1)	(5)	(3)	(19)	(12)	(2)	(128)	(35)	(27)	(47)	(5)	(1)	(9)	(5)	(16)	(7)	(49)
Height-breadth index	103.4	100.7	102.2	99	102	98.8	99.3	100.3	99.6	105.5	99.6	97.7	99.3	99.8	97.6	100.5	97.8	102.5
Face:	(3)	(1)	(4)	(1)	(12)	(6)	(1)	(4)	-------	(16)	(2)	(1)	(1)	(6)	(4)	(6)	(6)	(12)
Menton-nasion	12.67	12.6	12.73	13	12.74	12.30	(11.8)	12.40	-------	12.39	13.10	14	12.8	12.63	12.18	12.27	12.13	12.38
	(3)	(1)	(5)	(3)	(16)	(10)	(1)	(118)	(21)	(261)	(37)	(5)	(1)	(9)	(5)	(12)	(7)	(46)
Upper alv. pt.-nasion	7.97	8	7.83	7.73	7.81	7.60	(7.3)	7.52	7.89	7.71	7.86	8.02	8	7.67	7.56	7.61	7.64	7.61
Diameter-bizygomatic	(3)	(1)	(5)	(3)	(18)	(10)	(2)	(124)	(26)	(26)	(44)	(5)	-------	(9)	(5)	(16)	(7)	(47)
maximum	14.37	14.3	14.20	14.17	14.16	14.20	(13.85)	14.31	14.34	14.16	14.26	14.44	-------	14.48	14.06	14.22	14.69	14.05
	(3)	(1)	(4)	(1)	(12)	(6)	(1)	(4)	-------	(16)	(2)	(1)	-------	(6)	(4)	(6)	(6)	(12)
Facial index, total	88.2	88.1	89.3	89.7	90	87.2	88.1	86.7	-------	86.9	90.7	94.6	-------	87.2	87	85.9	82.4	87.1
	(3)	(1)	(5)	(3)	(16)	(10)	(1)	(114)	(20)	(24)	(36)	(5)	-------	(9)	(5)	(12)	(7)	(45)
Facial index, upper	55.5	55.9	55.2	54.6	55.2	53.6	54.5	52.5	55	54.5	55.1	55.5	-------	53	53.8	53.7	52	54.1

Basio-facial:	(2)	(1)	(5)	(3)	(17)	(10)	(1)	(105)	(21)	(20)	(36)	(5)		(8)	(6)	(12)	(7)	(42)
Basion-alveolar point	10.4	10.9	10.62	10.87	10.55	10.60	10.7	10.31	10.39	10.45	10.39	10.46		10.76	10.58	10.41	10.26	10.54
	(3)	(1)	(5)	(3)	(18)	(11)	(2)	(123)	(28)	(27)	(45)	(5)		(9)	(5)	(16)	(7)	(47)
Basion-subnasal point	9.57	9.9	9.58	9.63	9.43	9.44	(9.20)	9.28	9.31	9.33	9.23	9.20		9.52	9.52	9.24	9.39	9.32
	(3)	(1)	(5)	(3)	(19)	(12)	(2)	(128)	(35)	(27)	(47)	(5)		(9)	(5)	(16)	(7)	(48)
Basion-nasion	10.87	10.8	10.88	10.77	10.64	10.50	(10.45)	10.49	10.61	10.70	10.54	10.68		10.83	10.60	10.51	10.70	10.60
	(2)	(1)	(5)	(3)	(16)	(10)	(1)	(105)			(56)	(5)		(9)	(5)		(7)	(42)
Facial angle	69.5	67.5	70	68	68.5	68.5	68.5	70			69	69		69	69.5		71.4	70
	(2)	(1)	(5)	(3)	(16)	(10)	(1)	(105)			(36)	(5)		(9)	(5)		(7)	(42)
Alveolar angle	60.5	59	57	53.5	57	56	54	57			56	55		58	59		57.7	56
Orbits:	(3)	(1)	(5)	(3)	(19)	(11)	(2)	(118)	(28)	(25)	(43)	(5)	(1)	(9)	(5)	(15)	(7)	(47)
Mean height	3.66	3.42	3.64	3.62	3.67	3.60	3.48	3.63	3.60	3.62	3.61	3.82	3.9	3.67	3.58	3.56	3.54	3.64
	(3)	(1)	(5)	(3)	(19)	(11)	(2)	(118)	(28)	(25)	(43)	(5)	(1)	(9)	(5)	(15)	(7)	(47)
Mean breadth	4.20	4.05	4.03	4.03	4.09	3.98	4.05	4.03	4.04	3.97	4.02	4.22	4.3	4.06	3.97	3.98	4.11	3.99
	(3)	(1)	(5)	(3)	(19)	(11)	(2)	(118)	(28)	(25)	(43)	(5)	(1)	(9)	(5)	(15)	(7)	(47)
Mean index	87.1	84.6	90.3	89.9	89.8	90.4	85.9	90.1	89.2	91.3	89.9	90.5	90.7	90.3	90	88.8	86.7	91.4
Nose:	(3)	(1)	(5)	(3)	(19)	(11)	(2)	(126)	(29)	(27)	(46)	(5)	(1)	(9)	(5)	(16)	(7)	(48)
Height	5.57	5.7	5.59	5.37	5.39	5.35	(4.95)	5.36	5.52	5.45	5.48	5.44	5.4	5.43	5.14	5.32	5.73	5.24
	(3)	(1)	(5)	(3)	(19)	(11)	(2)	(126)	(29)	(27)	(46)	(5)	(1)	(9)	(5)	(16)	(7)	(48)
Breadth	2.35	2.55	2.35	2.36	2.41	2.39	2.22	2.39	2.39	2.37	2.31	2.32	2.45	2.30	2.23	2.31	2.27	2.27
	(3)	(1)	(5)	(3)	(19)	(11)	(2)	(126)	(29)	(27)	(46)	(5)	(1)	(9)	(5)	(16)	(7)	(48)
Index	42.2	44.7	42	43.8	44.8	44.6	44.9	44.6	43.4	43.6	42.2	42.6	45	42.3	45.3	43.4	39.7	43.3
Upper alveolar arch:	(3)	(1)	(6)	(3)	(17)	(9)	(1)	(99)	(15)	(23)	(33)	(4)		(9)	(5)	(11)	(7)	(44)
Length	6.13	6.1	5.70	5.90	5.69	5.74	5.5	5.55	5.59	5.57	5.63	5.80		5.84	6.78	5.63	6.50	5.63
	(3)	(1)	(5)	(3)	(17)	(9)	(1)	(99)	(15)	(23)	(33)	(4)		(9)	(5)	(11)	(7)	(44)
Breadth	7	6.9	6.83	6.80	6.76	6.79	5.8	6.54	6.45	6.68	6.47	6.70		6.94	6.72	6.72	6.74	6.63
	(3)	(1)	(5)	(3)	(17)	(9)	(1)	(99)	(15)	(23)	(33)	(4)		(9)	(5)	(11)	(7)	(44)
Index	87.6	88.4	83.5	86.8	84.2	84.6	94.8	84.9	86.6	83.4	86.9	86.6		84.2	86	83.8	81.6	85
Lower jaw: Height at symphysis	(3)	(1)	(4)	(1)	(16)	(7)	(1)	(4)	(2)	(22)	(2)	(1)		(6)	(4)	(7)	(6)	(16)
	4	3.85	3.61	4.2	3.91	3.78	3.8	3.82	3.95	3.72	3.9	4.2		3.67	3.56	3.83	3.52	3.76

ESKIMO CRANIA—Continued

Western, Northern, and Eastern Eskimo

FEMALES

	Unalaska Peninsula	Togiak	Mumtrak	Nunivak Island	Nelson Island	Hooper Bay	Yukon Delta (Kashunok) and lower Yukon	Pilot Station, lower Yukon	Kotlik and Pastolik	St. Michael Island	St. Lawrence Island	Little Diomede Island	Northeastern Asia	
													Indian Point	Chukchee
Vault:	(2)	(7)	(6)	(70)	(17)	(4)	(2)	(3)	(18)	(6)	(140)	(7)	(16)	(2)
Length	17.90	17.17	17.27	17.89	17.42	17.42	18.7	17.8	17.72	17.72	17.69	18.04	17.64	18.25
	(2)	(7)	(6)	(70)	(17)	(4)	(2)	(3)	(18)	(6)	(140)	(7)	(16)	(2)
Breadth	13.70	14.17	13.92	13.65	13.71	13.70	13.95	14	13.62	13.38	13.60	13.71	13.74	14.30
	(2)	(7)	(6)	(70)	(16)	(4)	(2)	(3)	(18)	(6)	(128)	(7)	(16)	(2)
Height	13.10	12.86	12.85	13.15	12.78	12.62	13	13.20	13.04	13.07	13.21	13.50	13.25	13.60
	(2)	(7)	(6)	(70)	(16)	(4)	(2)	(3)	(18)	(6)	(128)	(7)	(16)	(2)
Cranial module	14.90	14.73	14.68	14.90	14.64	14.68	(15.22)	15	14.81	14.72	14.87	15.09	14.88	15.38
	(2)	(6)	(4)	(66)	(14)	(4)	----------	(3)	(18)	(6)	(120)	(6)	----------	(2)
Capacity	1,352	1,375	1,376	1,353	1,334	1,246	----------	1,442	1,359	1,293	1,335	1 359	----------	1,512
	(2)	(7)	(6)	(70)	(17)	(4)	(2)	(3)	(18)	(6)	(140)	(7)	(16)	(2)
Cranial index	76.6	82.7	80.6	76.3	78.7	78.6	74.6	78.7	76.8	76.6	77.4	76	77.9	78.4
	(2)	(7)	(6)	(70)	(16)	(4)	(2)	(3)	(18)	(6)	(128)	(7)	(16)	(2)
Mean height index	82.9	82	82.4	83.4	82.1	81.1	(79.2)	83	83.2	84	84.2	85	84.6	83.6
	(2)	(7)	(6)	(70)	(16)	(4)	(2)	(3)	(18)	(6)	(128)	(7)	(16)	(2)
Height-breadth index	95.6	90.7	92.3	96.4	93.2	92.2	(92.3)	94.3	95.8	97.6	96.5	98.4	96.4	95.1
Face:	----------	(2)	(4)	(27)	(10)	(2)	----------	(2)	(15)	(3)	(23)	----------	----------	(1)
Menton-nasion height	----------	12.1	11.3	11.62	11.62	11.80	----------	11.90	11.82	11.5	11.49	----------	----------	11.40
	(2)	(4)	(6)	(52)	(14)	(2)	----------	(3)	(16)	(3)	(120)	(6)	(13)	(2)
Alveolar point-nasion height	7.80	7.30	7.05	7.27	7.18	7.30	----------	7.40	7.49	7.13	7.29	7.38	7.41	7.40
Diameter bizygomatic maximum	(2)	(4)	(6)	(63)	(15)	(4)	(1)	(3)	(16)	(5)	(128)	(7)	(14)	(2)
	13.40	13.12	13.15	13.27	13.37	13.37	13.9	13.47	13.26	13.12	13.31	13.09	13.34	13.25
	----------	(2)	(4)	(26)	(10)	(2)	----------	(2)	(15)	(3)	(23)	----------	----------	(1)
Facial index, total	----------	93.1	84.8	88.2	87	88.4	----------	89.1	89	88.2	86.9	----------	----------	85.7
	(2)	(4)	(6)	(51)	(14)	(2)	----------	(3)	(16)	(3)	(120)	(6)	(12)	(2)
Facial index, upper	58.2	56.6	53.6	54.8	53.6	54.7	----------	55	56.5	54.7	54.8	56	55	55.9

Basio-facial:	(2)	(4)	(6)	(45)	(14)	(2)		(3)	(16)	(3)	(111)	(6)	(13)	(2)
Basion-alveolar point	10.05	9.78	9.53	10.17	10.06	9.60		10.17	10.09	9.77	10.04	9.73	10.14	10.10
	(2)	(4)	(6)	(60)	(15)	(4)	(1)	(3)	(18)	(6)	(119)	(6)	(15)	(2)
Basion-subnasal point	8.80	8.55	8.50	8.97	8.76	8.55	8.9	8.80	8.86	8.80	8.88	8.78	8.95	9.05
	(2)	(7)	(6)	(69)	(15)	(4)	(1)	(3)	(18)	(6)	(128)	(7)	(16)	(2)
Basion-nasion	9.80	9.56	9.52	10.02	9.73	9.70	10.2	9.97	9.98	9.98	9.93	9.91	9.97	10
	(2)	(4)	(6)	(45)	(13)	(2)		(3)	(16)	(3)	(111)	(6)	(13)	(2)
Facial angle	65.5	66	68.5	67.5	66.5	68.5		67	67.5	71	68	69	67	67.5
	(2)	(4)	(6)	(45)	(13)	(2)		(3)	(16)	(3)	(111)	(6)	(13)	(2)
Alveolar angle	54.5	51.5	55.5	55	50	55		51	53.5	57	54	59.5	54	56.5
Orbits:	(2)	(3)	(6)	(59)	(15)	(4)	(1)	(3)	(18)	(5)	(121)	(6)	(15)	(2)
Mean height	3.65	3.59	3.53	3.51	3.50	3.56	3.5	3.54	3.62	3.61	3.60	3.60	3.59	3.41
	(2)	(3)	(6)	(59)	(15)	(4)	(1)	(3)	(18)	(5)	(121)	(6)	(15)	(2)
Mean breadth	3.92	3.85	3.81	3.86	3.81	3.89	3.8	3.89	3.86	3.78	3.91	4.01	3.90	3.79
	(2)	(3)	(6)	(59)	(15)	(4)	(1)	(3)	(18)	(5)	(121)	(6)	(15)	(2)
Index	93	93.5	92.6	91	91.8	91.7	92.1	91	94.1	95.5	92.1	89.7	91.9	90.1
Nose:	(2)	(5)	(6)	(63)	(14)	(4)	(1)	(3)	(18)	(5)	(127)	(6)	(15)	(2)
Height	5.32	5.06	5.03	4.99	5.06	4.95	5.5	5	5.19	4.95	5.13	5.15	5.16	5.20
	(2)	(5)	(6)	(63)	(14)	(4)	(1)	(3)	(18)	(5)	(127)	(6)	(15)	(2)
Breadth	2.58	2.32	2.23	2.32	2.34	2.35	2.45	2.33	2.31	2.17	2.39	2.28	2.45	2.65
	(2)	(5)	(6)	(63)	(14)	(4)	(1)	(3)	(18)	(5)	(127)	(6)	(15)	(2)
Index	47.5	45.8	44.2	46.4	46.3	47.5	44.5	46.7	44.5	43.8	46.6	44.4	47.4	50.5
Palate:	(2)	(4)	(6)	(46)	(14)	(2)		(3)	(15)	(3)	(109)	(4)	(12)	(2)
Length	5.55	5.18	5.03	5.39	5.39	5.25		5.40	5.45	5.40	5.37	5.30	5.44	5.45
	(2)	(4)	(6)	(46)	(14)	(2)		(3)	(15)	(3)	(109)	(4)	(12)	(2)
Breadth	6.55	6.40	6.13	6.31	6.32	6.45		6.60	6.38	6.23	6.46	6.52	6.40	6.90
	(2)	(4)	(6)	(46)	(14)	(4)		(3)	(15)	(3)	(109)	(4)	(12)	(2)
Index	84.7	80.9	82.1	84.4	85.3	81.4		81.8	85.4	86.6	83.0	81.2	85	79
		(2)	(3)	(32)	(11)	(4)		(2)	(17)	(4)	(25)			(1)
Lower jaw: Height at symph		*3.50	3.30	3.48	3.40	3.40		3.67	3.56	3.39	3.18			3.2

ESKIMO CRANIA—Continued

WESTERN, NORTHERN, AND EASTERN ESKIMO—Continued

FEMALES

	Seward Peninsula			Port Clarence	Wales	Shishmaref	Kotzebue Sound and Kobuk River	Point Hope	Barrow and vicinity	Old Igloos north of Barrow	Point Barrow	Northern Arctic	Southampton Island	Hudson Bay and vicinity	Baffin Land, North Devon, and vicinity	Smith Sound	Greenland
	Golovnin Bay	Capa Nome	Sledge Island														
Vault:	(4)	(2)	(9)	(3)	(15)	(10)	(1)	(92)	(36)	(25)	(52)	(10)	(6)	(2)	(17)	(2)	(52)
Length	17.92	17.70	18.13	17.63	18.05	17.73	17.2	17.57	17.77	18.11	17.91	18.21	18.17	17.55	18.33	18	18.04
	(4)	(2)	(9)	(3)	(15)	(10)	(1)	(92)	(36)	(25)	(52)	(10)	(6)	(2)	(17)	(2)	(52)
Breadth	13.22	13.25	13.50	13.50	13.35	13.29	13.4	13.43	13.23	12.72	13.32	13.36	13.70	13.60	13.44	13.80	12.98
	(4)	(2)	(9)	(3)	(15)	(9)	(1)	(89)	(34)	(24)	(52)	(10)	(6)	(2)	(17)	(2)	(52)
Height	13.20	13	13.22	12.90	13.21	13.16	13.4	13.20	12.97	13.21	13.03	12.99	13.69	12.55	13.34	13.65	13.12
	(4)	(2)	(9)	(3)	(15)	(9)	(1)	(89)	(34)	(24)	(52)	(10)	(6)	(2)	(17)	(2)	(52)
Cranial module	14.78	14.65	14.95	14.68	14.87	14.72	14.67	14.72	14.66	14.72	14.75	14.85	15.18	14.57	15.04	15.15	14.72
	(4)	(2)	(8)	(1)	(15)	(6)		(89)			(3)		(6)			(1)	(43)
Capacity	1,345	1,290	1,374	1,285	1,359	1,239		1,316			1,235		1,443			1,510	1,324
	(4)	(2)	(9)	(3)	(15)	(10)	(1)	(92)	(36)	(25)	(52)	(10)	(6)	(2)	(17)	(2)	(52)
Cranial index	78.8	74.8	74.5	76.6	73.9	75	77.9	76.4	74.5	70.2	74.4	73.4	75.4	77.5	73.3	76.7	73
	(4)	(2)	(9)	(3)	(15)	(9)	(1)	(89)	(34)	(24)	(52)	(10)	(6)	(2)	(17)	(2)	(52)
Mean height index	84.8	83.9	83.6	82.9	84	84.9	87.6	85.2	82.9	86.4	83.4	82.3	85.9	80.6	84	85.8	84.6
	(4)	(2)	(9)	(3)	(15)	(9)	(1)	(89)	(34)	(24)	(52)	(10)	(6)	(2)	(17)	(2)	(52)
Height-breadth index	98.8	98.1	97.9	95.5	99	98.9	100	98.2	98.1	104.6	97.8	97.2	99.9	92.3	99.3	98.9	101
Face:	(3)		(3)		(11)	(1)	(1)	(2)		(15)		(1)	(3)		(5)	(2)	(5)
Menton-nasion height	12.03		11.93		11.85	12	11.9	12.05		11.21		12.7	11.7		11.60	11.20	11.52
	(3)	(1)	(7)	(1)	(16)	(9)	(1)	(78)	(22)	(18)	(40)	(7)	(5)	(2)	(12)	(2)	(45)
Alveolar point-nasion height	7.40	7.3	7.30	6.7	7.39	7.20	7.1	7.06	7.18	7.01	7.22	7.43	7.14	6.95	7.10	6.80	7.05
Diameter bizygomatic maximum	(4)	(2)	(7)	(1)	(1)	(8)	(1)	(84)	(23)	(24)	(46)	(7)	(5)	(2)	(14)	(2)	(50)
	13.25	13.15	13.26	13.1	13.29	13.21	13.4	13.32	13.16	13.08	13.06	12.96	13.82	12.65	13.27	13.20	13.03
	(3)		(3)		(1)	(1)	(1)	(2)		(15)			(3)		(5)	(2)	(5)
Facial index, total	90.9		90.9		89.6	91.6	88.5	88.3		86.8			84.8		86.6	84.9	85.7
	(3)	(1)	(7)	(1)	(1)	(8)	(1)	(77)	(21)	(18)	(39)	(6)	(5)	(2)	(11)	(2)	(45)
Facial index, upper	55.8	55.7	55.1	51.1	55.6	54.7	53	53.1	54.7	53.8	55.3	57.8	51.7	54.9	53.9	51.5	54.1

Basio-facial:	(3)	(1)	(6)	(1)	(15)	(8)	(1)	(76)	(22)	(15)	(37)	(6)	(4)	(2)	(12)	(2)	(45)
Basion-alveolar point	10.27	10.3	10.25	9.8	10.24	10.38	9.2	9.72	9.85	10.13	9.77	10.03	10.02	9.4	10.13	9.35	10.09
	(4)	(2)	(7)	(2)	(16)	(8)	(1)	(83)	(27)	(21)	(46)	(10)	(4)	(2)	(13)	(2)	(50)
Basion-subnasal point	9	8.85	9.16	8.8	9.04	9.25	7.9	8.72	8.86	9.12	8.73	8.85	9.02	8.35	9.05	8.35	8.94
	(4)	(2)	(8)	(3)	(16)	(9)	(1)	(89)	(34)	(24)	(52)	(10)	(5)	(2)	(17)	(2)	(52)
Basion-nasion	10.10	10.05	10.29	9.93	10.01	10.16	9.5	9.89	10.01	10.18	9.94	10.07	10.34	9.75	10.11	0.65	10.13
		(1)	(6)	(1)	(15)	(8)		(75)			(37)	(6)		(2)			(45)
Facial angle		67	69	66	67	68		70			69	68		71.5			70
		(1)	(6)	(1)	(15)	(8)		(75)			(37)	(6)		(2)			(45)
Alveolar angle		54	53	41.5	55	55.5		56.5			55	54		54.5			54
Orbits:	(4)	(2)	(7)	(2)	(16)	(10)	(1)	(83)	(25)	(18)	(42)	(10)	(5)	(2)	(13)	(2)	(47)
Mean height	3.57	3.52	3.58	3.55	3.52	3.43	3.30	3.54	3.61	3.47	3.55	3.50	3.64	(3.60)	3.53	3.51	3.55
	(4)	(2)	(7)	(2)	(16)	(10)	(1)	(83)	(25)	(18)	(42)	(10)	(5)	(2)	(13)	(2)	(47)
Mean breadth	3.86	3.92	3.98	3.95	3.94	3.90	3.82	3.90	3.88	4.01	3.90	3.83	4.05	(3.80)	3.88	3.96	3.85
	(4)	(2)	(7)	(2)	(16)	(10)	(1)	(83)	(25)	(18)	(42)	(10)	(4)	(2)	(13)	(2)	(47)
Index	92.5	89.8	90	89.4	89.3	88.1	86.3	90.8	93	91	90.7	91.4	86.6	(94.7)	91.3	88.6	92.4
Nose:	(4)	(2)	(7)	(1)	(16)	(10)		(86)	(27)	(21)	(46)	(9)	(5)	(2)	(13)	(2)	(50)
Height	5.20	5.02	5.10	4.9	5.08	4.93	4.9	5.04	5.19	5.02	5.11	4.83	5.06	4.90	4.98	5.30	4.99
	(4)	(2)	(7)	(1)	(16)	(10)	(1)	(86)	(27)	(21)	(46)	(9)	(5)	(2)	(13)	(2)	(50)
Breadth	2.32	2.50	2.26	2.3	2.32	2.33	2.6	2.28	2.32	2.23	2.29	2.14	2.21	2.15	2.20	2.32	2.20
	(4)	(2)	(7)	(1)	(16)	(10)	(1)	(86)	(27)	(21)	(46)	(9)	(5)	(2)	(13)	(2)	(50)
Index	44.6	49.8	44.3	46.9	45.7	47.3	53.1	45.3	44.7	44.4	44.9	44.4	43.7	43.9	44.3	43.9	44
Palate:	(3)	(1)	(6)	(1)	(15)	(6)		(73)	(23)	(16)	(33)	(6)	(4)	(2)	(12)	(2)	(45)
Length	5.77	5.5	5.61	5.3	5.61	5.67	5.5	5.21	5.22	5.34	5.25	5.38	5.50	4.85	5.44	5.20	5.35
	(3)	(1)	(6)	(1)	(15)	(6)	(1)	(73)	(23)	(16)	(33)	(6)	(4)	(2)	(12)	(2)	(45)
Breadth	6.73	6.4	6.46	6.6	6.57	6.67	6.4	6.19	6.13	6.29	6.01	6.22	6.60	5.85	6.22	6.20	6.16
	(3)	(1)	(6)	(11)	(15)	(6)	(1)	(73)	(23)	(16)	(33)	(6)	(4)	(2)	(12)	(2)	(45)
Index	85.7	85.9	86.8	80.3	85.3	85	85.9	84.3	85.1	84.9	87.4	86.5	83.3	82.9	87.6	83.9	86.8
	(3)	(1)	(4)		(14)	(1)	(1)	(3)	(3)	(17)		(1)	(2)	(2)	(5)	(2)	(13)
Lower jaw: Height at symph	3.73	3.7	3.60		3.56	3.8	3.9	3.38	3.27	3.38		3.7	3.20	3.15	3.46	3.42	3.40

SKULLS OF ESKIMO CHILDREN

A special effort in our work has been made to secure well-preserved skulls of children. As elsewhere, so among the Eskimo, more children die than adults, but conditions are not favorable for the preservation of their skeletal remains. Most of the bones are done away with or damaged by animals (foxes, dogs, mice, etc.), while others decay, so that generally nothing remains of the youngest subjects and but a few bones and a rare skull of the older children. The total number of such skulls in our collection now reaches 25. They are all of children of more than 2 but mostly less than 6 years old, and are all normal specimens. The principal measurements of their vault—a study of the face is a subject apart and needing more material—are given in the following tables.

CRANIA OF ESKIMO CHILDREN

Catalogue No.	Collector	Locality	Deformation	Vault			Cranial index	Mean height index	Height-breadth index	Basion-nasion	Basion-nasion diameter vs. length of skull
				Length	Breadth	Height					
U.S.N.M.											
332563	A. Hrdlička	Pastolik		16. 4	13. 1		*79. 9*				
332566	do	do		15. 6	13		*82. 8*				
332564	do	do		16. 6	13. 8	12	*83. 1*	*79*	*87*	8. 4	*50. 6*
339037	Collins and Stewart	Togiak		16. 5	13. 4	12. 2	*81. 2*	*81. 6*	*91*	9. 2	*55. 8*
339087	do	Nelson Island		16. 1	13. 5	12. 8	*83. 8*	*86. 5*	*94. 8*	9. 2	*57. 1*
339088	do	do		16. 2	13. 6	11. 6	*84*	*77. 9*	*85. 3*	7. 8	*48. 1*
339056	do	Mumtrak		16. 3	13. 8	12. 8	*84. 7*	*85*	*92. 7*	8. 9	*54. 6*
339063	do	do		15. 7	14	12. 2	*89. 2*	*82. 2*	*87. 1*	8. 6	*54. 8*
339113	do	Hooper Bay		16. 2	13. 8		*85. 2*				
				(9)	(9)	(6)	(9)	(6)	(6)	(6	(6)
Total				144. 6	122	73. 6				52. 1	
Average				*16. 07*	*13. 56*	*12. 27*	*84. 4*	*82. 5*	*89. 6*	*8. 68*	*54*
SOUTHWESTERN AND MIDWESTERN ESKIMO											
339172	H. B. Collins, jr., and T. D. Stewart.	Nunivak Island		16. 9	12. 6	12	*74. 6*	*81. 4*	*95. 2*	9. 1	*53. 8*
339153	do	do		17. 4	13. 4	12. 4	*77*	*80. 5*	*92. 5*	9. 2	*52. 9*
339198	do	do		16. 6	12. 8	12. 7	*77. 1*	*86. 4*	*99. 2*	8. 6	*51. 8*

CRANIA OF ESKIMO CHILDREN—Continued

SOUTHWESTERN AND MIDWESTERN ESKIMO—Continued

Catalogue No.	Collector	Locality	Deformation	Vault			Cranial index	Mean height index	Height-breadth index	Basion-nasion	Basion-nasion diameter vs. length of skull
				Length	Breadth	Height					
U.S.N.M.											
339222	H. B. Collins, jr., and T. D. Stewart.	Nunivak Island		16. 8	13. 4	12. 2	*79. 8*	*80. 8*	*91*	9	*53. 6*
339197	do	do		17	13. 6	12. 4	*80*	*81*	*91. 2*	9. 1	*53. 5*
339199	do	do		16. 1	13. 3		*82. 6*				
339152	do	do		17	14. 5	12. 6	*85. 3*	*80*	*86. 9*	8. 7	*51. 2*
				(7)	(7)	(6)	(7)	(6)	(6)	(6)	(6)
Total				117. 8	93. 6	74. 3				53. 7	
Average				*16. 83*	*13. 37*	*12. 38*	*79. 5*	*81. 6*	*92. 5*	*8. 95*	*52. 8*
279569	R. D. Moore	St. Lawrence Island		17. 6	13. 4	12. 2	*76. 1*	*78. 7*	*91*	9. 3	*52. 8*
279568	do	do		17. 1	13. 2	12. 8	*77. 2*	*84. 5*	*97*	9. 3	*54. 4*
279495	do	do		16. 8	13. 1	12. 6	*78*	*84. 3*	*96. 2*	9. 1	*54. 2*
279479	do	do		16. 8	13. 2	12. 8	*78. 6*	*85. 3*	*97*	9	*53. 6*
279462	do	do		16. 2	13	12. 8	*80. 3*	*87. 7*	*98. 5*	9. 2	*56. 8*
279421	do	do		16. 4	13. 4	12. 1	*81. 7*	*81. 2*	*90. 3*	8. 4	*51. 2*
279448	do	do		16. 4	13. 5		*82. 3*				
279591	do	do		14. 7	12. 4		*84. 3*				
279443	do	do		16. 4	13. 9	12. 4	*84. 8*	*81. 8*	*89. 2*	8. 6	*52. 4*
				(9)	(9)	(7)	(9)	(7)	(7)	(7)	(7)
Total				146. 4	119. 1	87. 7				62. 9	
Average				*16. 27*	*13. 23*	*12. 53*	*81. 4*	*84. 1*	*94. 1*	*8. 99*	*54. 5*

A. M. N. H.											
99–4106	G. Comer	Southampton Island		17. 4	13. 3	12. 8	*76. 4*	*83. 4*	*96. 2*	8. 8	*50. 6*
4657	do	Hudson Bay		16. 9	13. 2	12. 2	*78. 1*	*81. 1*	*92. 4*	9. 1	*53. 8*
7690	Capt. Bartlett	Etah, Smith Sound		16. 6	13. 4	12. 7	*80. 7*	*84. 7*	*94. 8*	9. 2	*55. 4*

PRINCIPAL CRANIAL INDICES IN CHILDREN COMPARED WITH THOSE IN ADULTS

		Cranial index	Mean height index	Height-breadth index	BN-skull length index	Percentage relation of dimensions of the vault in adults and children (adults=100)			
						Length	Breadth	Height	Basion-nasion diameter
Southwestern and midwestern Eskimo[1]	Children	84. 4	82. 5	89. 6	54	90. 1	96. 7	93. 2	86. 5
	Adults (both sexes)	79. 3	82. 3	93	56				
Nunivak Island	Children	79. 5	81. 6	92. 5	52. 8	91. 7	96. 4	92. 3	87. 1
	Adults (both sexes)	75. 6	83. 3	96. 7	56				
St. Lawrence Island	Children	81. 4	84. 1	94. 1	54. 5	90. 2	95. 2	93. 2	88. 6
	Adults (both sexes)	77. 3	84. 1	96. 5	56. 2				
All	Children	*81. 8*	*82. 7*	*92. 1*	*53. 8*	*90. 8*	*96. 1*	*92. 9*	*87. 4*
	Adults	*77. 4*	*83. 2*	*95. 4*	*56. 1*				

[1] Sama group for adults as for children.

The main interest centers in the comparison of the relative proportions of these skulls with those of the adults from the same localities. These comparisons, given in the smaller table, are of considerable interest.

The cranial index is considerably higher in the children. On analysis this is found to be due almost wholly to a greater relative breadth of the child's skull. During later growth the Eskimo cranium advances materially more in length than in breadth. A further expansion in breadth is evidently hindered by some factor outside of the bones themselves, for nothing appears in these that could constitute such a hindrance. And the only evident outside factor capable of producing such an effect are the strong pads of the temporal muscles.

The mean height index $\left(\frac{H \times 100}{\text{mean of } L+B}\right)$ remains much the same in the children and adults, indicating that the relative increase during growth in skull length compensates for the lagging increase in breadth, while the proportion of the height to the mean of the length and breadth remains fairly stable.

The much greater growth in length than in breadth of the Eskimo skull from childhood onward is shown even better in the second part of the table by a direct comparison of the mean dimensions. The length of the adult skull is by over 9 per cent, the breadth by less than 4 per cent, greater than that in childhood in the same groups.

The adult Eskimo skull has also grown very perceptibly more in height than in breadth, though somewhat less so than in length. The result is a notably higher height-breadth index in the adult. Compared to that in childhood the adult Eskimo skull is therefore relatively markedly longer, higher, and narrower.

These facts are probably of more significance than might seem at first glance; for it is precisely by the same characters, carried still further, that some of the Eskimo differ from others. Let us compare two of our largest and best groups, those of St. Lawrence Island and Greenland:

	Number of skulls (both sexes)	Skull length	Breadth	Height
St. Lawrence Island	(293)	18. 05	13. 90	13. 45
Greenland	(101)	18. 51	13. 30	13. 54

The Greenland skull is longer, narrower, and somewhat higher. The differences are less than those between a child and an adult

western Eskimo, but of the same nature. This apparently speaks strongly for the development of the Greenland type of Eskimo cranium from the western. On the other hand, the type of skull shown by the Eskimo child approaches much more closely than that of the Eskimo adult to the type of the skull of the Mongol.

The above are mere observations, not theories, and they carry a strong indication that mostly we are still floundering only on the borders of true anthropology, embracing all phases of life and development, which, if mastered, would give us with beautiful definition many now vainly sought or barely glimpsed solutions.

A highly interesting feature is the relatively great development in the Eskimo, between childhood and the adult stage, of the anterior half of the skull or basion-nasion dimension. This augments, it is seen, by even 3.4 per cent more than the length. This growth must involve some additional factor to those inherent in the bones themselves and in the attached musculature, and this can only be, it seems, the development of the anterior half of the brain. Evidently this portion of the brain between childhood and adult life grows in the Eskimo more rapidly than that behind the vertical plane corresponding to the basion. It is a very suggestive condition calling for further study, and thus far almost entirely wanting in comparative data on other human as well as subhuman groups.

THE LOWER JAW

The lower jaw of the Eskimo deserves a thorough separate study. For this purpose, however, more jaws in good condition are needed from various localities, and particularly more jaws accompanying their skulls. As it is, a large majority of the crania are without the lower jaw, or the alveolar processes of the latter have become so affected in life through age and loss of teeth that their value is diminished or lost. Still another serious difficulty is that the measuring of the lower jaw is difficult and has not as yet been regulated by general agreement, so that there is much individualism of procedures with limited possibilities of comparison.

One of the principal measurements taken on the available Eskimo mandibles was the symphyseal height. This is taken by the sliding calipers and is the height from the lower alveolar point (highest point of the normal alveolar septum between the middle lower incisors) to the lowest point on the inferior border of the chin in the median line.[14] The results are given in the following tables.

[14] Should there be a decided notch in the middle, as happens in rare specimens, it is rational to take the measurement to the side of the notch.

ESKIMO LOWER JAW: HEIGHT AT SYMPHYSIS

	Male			Female		
	Southwestern and midwestern	Northwestern	Northern and eastern	Southwestern and midwestern	Northwestern	Northern and eastern
Groups (main)	(9)	(5)	(5)	(9)	(5)	(5)
Specimens	(116)	(143)	(40)	(121)	(134)	(25)
Average	3. 75	3. 76	3. 67	3. 38	3. 34	3. 39
General mean in western Eskimo	3. 76			3.36		
Percental relation of female to male (M=100)	*89. 4*					

	Males, 19 groups (399 jaws)	Females, 19 groups (280 jaws)
General mean for all Eskimo (approximate)	3. 73	3. 37
Percental relation of female to the male		*90. 4*
General mean of total facial height	12. 47	11. 60
Percental relation of height of jaw to total facial height	*30*	*29*
General mean of upper facial height	7. 76	7. 20
Percental relation of height of jaw to upper facial height	*48*	*47*

Just what these figures mean will best be shown by a table of comparisons.[15] All these are my own measurements.

LOWER JAW OF VARIOUS RACES: HEIGHT AT SYMPHYSIS

	Male	Female	Female versus male (M=100)
	(399)	(280)	
Eskimo (all)	3. 73	3. 37	*90. 4*
North American Indians:	(36)	(26)	
Sioux	3. 60	3. 22	*89. 4*
	(52)	(50)	
Arkansas	3. 66	3. 24	*88. 5*
	(29)	(21)	
Florida	3. 69	3. 38	*91. 4*
	(9)	(6)	
Munsee	3. 70	3. 40	*91. 9*
	(15)	(14)	
Louisiana	3. 72	3. 29	*88. 4*
	(44)	(30)	
Kentucky	3. 49	3. 18	*91. 1*

[15] From my Phys. Anthr. of the Lenape, etc., the Anthropology of Florida, and the Catalogue of Crania.

LOWER JAW OF VARIOUS RACES: HEIGHT AT SYMPHYSIS—Continued

	Male	Female	Female versus male (M=100)
	(50)	(30)	
U. S. whites (miscellaneous)	3. 29	2. 87	*87. 2*
	(41)	(8)	
Negro, full-blood, African and American	3. 54	3. 14	[1] *88. 7*
	(261)	(191)	
Australians	3. 44	3. 07	*89. 2*

[1] Approximately.

The table shows the Eskimo jaw to be absolutely the highest at the symphysis of all those available for comparison, with the female nearly the highest.[16] Relatively to stature it exceeds decidedly all the groups, the Indians that come nearest matching it in the absolute measurement being all much taller than the Eskimo. And the female Eskimo jaw is relatively high compared with that of the male, being exceeded in this respect only in three of the Indian groups, in two of which, however, the showing is due wholly and in one partly to a lesser height of the male jaw. The relative excess of the female jaw in this respect seems particularly marked in the northern and northeastern groups, though it must remain subject to corroboration by further material.

The white, Negro, and Australian data have an interest of their own.

STRENGTH OF THE JAW

The Eskimo jaw is generally stout. Barring rare exceptions there is nothing slender about it. The body, moreover, is frequently strengthened by more or less marked overgrowths of bone lingually below the alveoli and above the mylohyoid ridge. These neoformations will be discussed later.

The strength of the mandible may be measured directly in various locations on the body. Due to the peculiar build of the body, however, and especially to its variations, these measurements are by no means simple and wholly satisfactory. It is hardly necessary in this connection to review the various attempted methods, none of which has become standardized. As a result of experience I prefer since many years to measure the thickness of the body of the jaw at the

[16] Rudolf Virchow, as far back as 1870, in studying some mandibles of the Greenland Eskimo, found that the height of the body in the middle (3.5 centimeters) was greater than that of the lower jaws of any other racial group available to him for comparison. Archiv. für Anthrop., IV, p. 77, Braunschweig, 1870.

second molars, and that in such a way that either the molars, if the measurement is taken from above, or the lower border of the jaw if it is taken from below, lies midway between the two branches of the sliding calipers with which the measurement is taken. The two methods (from above or below) give results that are nearly alike. In some cases the one and in others the other is the easier, but wherever the teeth are lost the measurement from below is perhaps preferable. The records obtained on the lower jaws of the western Eskimo and other racial groups are given in the next table.

THICKNESS OF THE BODY OF THE LOWER JAW AT THE SECOND MOLARS IN THE WESTERN ESKIMO AND OTHER GROUPS

	Male		Female		Female versus male (M=100)
	Right side	Left side	Right side	Left side	
Western Eskimo—millimeters	(240) 16. 2	16. 3	(243) 15. 1	15. 1	*92. 9*
Florida Indians—do	(29) 16. 6		(28) 15. 5		*93. 4*
Louisiana Indians—do	(21) 16. 3		(16) 15. 3		*93. 9*
Arkansas Indians—do	(58) 15. 2		(47) 14. 7		*96. 7*
Kentucky Indians—do	(40) 14. 7		(22) 14. 2		*96. 6*
American whites (misc.)—do	(50) 14. 5		(20) 12. 8		*88. 3*

The figures show that the Eskimo jaw is very stout. It is exceeded in thickness only by the jaws of Florida, which in general are the thickest in America, and in males is about equaled, in females very slightly exceeded by those of the prehistoric Indians of Louisiana, who belong to the same Gulf type with the Indians of Florida. The old Arkansas Indians, though closely related to those of Louisiana, show a very perceptibly more slender jaw, particularly in the males; while in an old Kentucky tribe (Green River, C. B. Moore, collector) the jaws are still less strong. The lower jaws of the American whites (dissecting-room material) are slightly less stout than even those of the Indians of Kentucky in the males, and much less so in the females. The interesting sex differences are shown well in the last column of the above table.

Breadth of the Rami

Still another character that reflects the strength of the lower jaw is the breadth of the rami. The most practicable measurement of this is the breadth minimum at the constriction of the ascending branches. A great breadth of the rami is very striking, as is well known, in the Heidelberg jaw, and the Eskimo have long been known for a marked tendency in the same direction. The measurements of the lower jaws of the western Eskimo show as follows:

Lower Jaws of the Western Eskimo and Other Racial Groups: Breadth Minimum of the Ascending Branches

	Male		Female		Female versus male (M=100)
	Right	Left	Right	Left	
	(243)	(240)	(237)	(228)	
Western Eskimo---centimeters--	3. 99	4. 03	3. 68	3. 70	*92*
	(20)	(20)	(13)	(13)	
Florida Indians---------do----	3. 82	3. 85	3. 39	3. 34	*87. 7*
	(21)	(19)	(19)	(16)	
Louisiana Indians-------do----	3. 72	3. 72	3. 29	3. 27	*88. 2*
	(62)	(60)	(58)	(61)	
Arkansas Indians--------do----	3. 47	3. 47	3. 24	3. 23	*93. 2*
	(42)	(40)	(30)	(29)	
Kentucky Indians-------do----	3. 44	3. 44	3. 18	3. 21	*92. 9*
	(50)	(50)	(20)	(20)	
United States whites (miscellaneous)---------centimeters--	3. 17	3. 14	2. 89	2. 82	*90. 5*

The Eskimo jaws, and particularly that of the female (relatively to other females), have the broadest rami. Otherwise the series range themselves in the same order as under the measurement of the stoutness of the body.

Other Dimensions

Four other measurements were taken on the jaws, namely the length of the body (on each side); the height of the two rami; the bigonial diameter; and the body-ramus angle. The results of the first three may conveniently be grouped into one table.

ADDITIONAL MEASUREMENTS ON THE LOWER JAW

MALE

	Length of body, each side [1]		Length of body as a whole [2]	Height of ramus [3]		Diameter bigonial [4]
	Right	Left		Right	Left	
	(236)	(236)	(100)	(132)	(131)	(201)
Western Eskimo	10. 28	10. 28	8. 03	6. 45	6. 38	11. 42
			(24)	(18)		(22)
Florida Indian			8. 45	6. 72		10. 75
			(19)	(15)		(17)
Louisiana Indian			8. 44	7		10. 67
			(62)	(52)		(57)
Arkansas Indian			7. 88	6. 52		10. 49
			(42)	(37)		(38)
Kentucky Indian			7. 45	6. 48		10. 48
			(50)	(50)		(50)
U. S. whites (miscellaneous)			7. 57	6. 53		10. 11

FEMALE

	(230)	(228)	(100)	(134)	(128)	(199)
Western Eskimo	9. 61	9. 60	7. 47	5. 61	5. 57	10. 57
			(19)	(18)		(17)
Florida Indian			7. 72	6. 02		9. 70
			(16)	(15)		(15)
Louisiana Indian			7. 38	5. 77		9. 90
			(57)	(52)		(56)
Arkansas Indian			7. 46	5. 85		9. 58
			(30)	(25)		(30)
Kentucky Indian			7. 12	5. 64		9. 45
			(20)	(20)		(20)
U. S. whites (miscellaneous)			7. 02	5. 87		9. 12

[1] Sliding calipers: Separate measurement of each half of the body, from the lowest point on the posterior border of each ramus not affected by the angle to a point of corresponding height on the line of the symphysis. The anterior point may, in consequence of a lower or higher location of the posterior point, range from the chin to above the middle of the symphysis, but the results are much alike. The measurement leaves much to be desired, but is the best possible if the two halves of the body are to be measured separately.

[2] The length of the whole jaw is measured on Broca's mandibular goniometer, by laying the jaw firmly on the board, applying the movable plane to both rami, and recording the distance of the most anterior point of the chin from the base of the oblique plane. This measurement is easier than the previous, though on account of the variation in the angles and the lower part of the posterior border of the rami it is also not fully satisfactory, and it does not show the differences in the two halves of the body.

[3] Sliding calipers: One branch applied so that it touches the highest points on both the condyle and the coronoid, while the other is applied to the lowest point of the ramus anterior to the angle, if the bone here is prominent; if receding, the branch of the compass is applied to the midpoint on the lower border of the ramus.

[4] Sliding calipers: Maximum external diameter at the angles; the maximum points may, exceptionally, be either anterior to or a little above the angle proper.

FEMALES TO MALES (M=100)

	Length each side	Length as a whole	Height of rami	Diameter bigonial
Western Eskimo	*93. 4*	*93. 0*	*87. 3*	*92. 6*
Florida Indian	------	*91. 4*	*89. 6*	*90. 2*
Louisiana Indian	------	*87. 4*	*82. 4*	*92. 8*
Arkansas Indian	------	*94. 6*	*89. 7*	*91. 3*
Kentucky Indian	------	*95. 6*	*87. 0*	*90. 2*
U. S. whites (miscellaneous)	------	*92. 7*	*89. 9*	*90. 2*

The Eskimo lower jaw, which, as seen before, is characterized by a high and stout body and the broadest rami, shows further that these rami are remarkably low, and that the bigonial spread is extraordinarily broad. The length of the body, on the other hand, is not very exceptional, being perceptibly exceeded in some of the Indians.

THE ANGLE

The angle between the body and the ramus of the lower jaw is known to differ with the age and sex as well as individually. Not seldom it differs also, and that sometimes quite appreciably, on the two sides. Racial differences are as yet uncertain.

The angle, especially in some specimens, is not easy to measure, and the position of the jaw may make a difference of several degrees. Numerous trials have shown that the proper way is to measure the angle on the two sides separately, and to so place the jaw in each case that there is no interference with the measurement by either the posterior or the anterior enlarged end of the condyle.

Leaving out jaws in which extensive loss of teeth has in all probability resulted in changes in the angle, the western Eskimo material gives the following data:

WESTERN ESKIMO: ANGLE OF THE LOWER JAW

	Male	Female		Male	Female
Right side	(224) 119. 6°	(217) 124. 5°	Left side	(218) 119. 5°	(207) 124. 3°

In the male Munsee Indians the angle was 118°; in those of Arkansas and Louisiana, 118.5°; in those of Peru (Martin, Lehrb., 884), 119°. In the whites, males, the average angle approximates 122°; in the Negro, 121° (Topinard, Martin).

The angle in the female in the Eskimo is to that of the male as 104 to 100; in the Arkansas and Louisiana series it was 103. In the whites the proportion seems to be a little higher.

There are evidently, if we exclude the whites in whom the shortness of the jaw conduces probably to a wider angle, no marked racial differences, but the subject needs a more thorough study on large series of sexually well-identified specimens, carefully selected as to age.

The average angle on the right differs in the Eskimo but very slightly from that on the left, though individually there are frequent unequalities.

Résumé

The Eskimo lower jaw differs substantially in many respects from that in other races, particularly from that of the whites. It is characterized by a high and stout body; by broad but low rami; and by excessive breadth at the angles. The body-ramus angle is moderate. To which may be added that the chin is generally of but moderate prominence, and that the bone at the angles in males is occasionally markedly everted.

Mandibular Hyperostoses

These hypertrophies or hyperostoses are rarely met with also in the jaws of the Indian and other people. They are symmetric and characteristic, though often more or less irregular. They generally extend from the vicinity of the lateral incisors or the canines backward, forming when more developed a marked bulge on each side opposite the bicuspids, which gives the inner contour of the jaw when looked at from above a peculiar elephantine appearance. They may occur in the form of smooth, oblong, somewhat fusiform swellings, or as a continuous more or less uneven ridge, or may be represented by from one to four or five more or less rounded or flattened hard "buttons" or tumor-like elevations. In development they range from slight to very marked.

These hyperostoses have been reported by various observers (Danielli, Søren Hansen, Rudolf Virchow, Welcker, Duckworth & Pain, Oetteking, Hrdlička, Hawkes). They received due attention by Fürst and Hansen in their "Crania Groenlandica" (p. 178). They have been given the convenient, though both etiologically and morphologically inaccurate, name of "mandibular torus"; I think mandibular hyperostoses or simply welts would be better. Fürst and Hansen found them, taking all grades of development, in 182, or 85 per cent, of 215 lower jaws of Greenland Eskimo; in 28 jaws, or 13 per cent, they were pronounced, the remainder being slight to medium. A special examination of 62 lower jaws of children and 710

lower jaws of adult western Eskimo (with a small number from Greenland) gives the following record:

LINGUAL MANDIBULAR HYPEROSTOSES IN THE WESTERN ESKIMO

CHILDREN

[62 mandibles, completion of milk dentition to eruption of second permanent molar]

	None or indistinguishable	Slight to moderate	Medium	Pronounced
Specimens	47	[1] 10	[2] 5	--------
Per cent	*75. 8*	*16. 1*	*8. 1*	--------

ADULTS

[Both sexes. 710 mandibles]

Specimens	215	356	114	25
Per cent	*30. 3*	*50. 1*	*16. 1*	*3. 5*

[1] None in the younger children. [2] All in older children or adolescents.

ADULTS

[Sexes separately. M. 350; F. 360 mandibles]

	None or indistinguishable		Slight to moderate		Medium		Pronounced	
	Males	Females	Males	Females	Males	Females	Males	Females
Specimens	71	144	193	163	67	47	19	6
Per cent	*20. 3*	*40. 0*	*55. 1*	*45. 3*	*19. 1*	*13. 1*	*5. 4*	*1. 7*

The significance of these hyperostoses is not yet quite clear. Danielli, who in 1884 reported them [17] in the Ostiaks, Lapps, a Kirghiz, a Peruvian Indian, and four white skulls, offered no explanation. For Søren Hansen,[18] who first suggested the resemblance of these formations to the torus palatinus, "the significance of this feature, which also occurs in other Arctic races not directly related to the Eskimos, is not clear." R. Virchow,[19] who reports "wulstigen und knolligen Hyperostosen" on both the upper and lower jaws of a Vancouver Island Indian, restricts himself to a brief mention of the condition with a suggestion as to its causation (see later). Welcker [20] found them in the skulls of a German (Schiller?), Lett, and a Chinese, but has nothing to say as to their meaning. Duckworth

[17] Danielli, J., Arch. p. l'antrop. e l'etnol., 1881, xiv.
[18] Meddel. om. Grønl., 1887, No. 17.
[19] Beitr. Kraniol. d. Insul. w. Küste Amer., 1889, 398.
[20] Arch. Anthrop., 1902, xxvii, 70.

and Pain[21] report the "thickening" in 10 out of 32 Eskimo jaws, but do not discuss the causation; and the same applies to Oetteking,[22] who reported on a series of Eskimo from Labrador. In 1909 Gorjanović-Kramberger[23] somewhat indirectly notes the condition, without a true appreciation of its meaning.

In 1910 I had the opportunity to report on the mandibular hyperostoses in a rare collection of crania and lower jaws of the central and Smith Sound Eskimo.[24] Of 25 lower jaws of adults and 5 of children, 18, or 72 per cent, of the former and 2 of the latter showed distinct to marked lingual hyperostoses, while in the remaining cases the feature was either doubtful (absorption of the alveolar process) or absent. Two of the five children showed the peculiarity in a well-marked degree. A critical consideration of the condition leads me to the conclusion that it is not pathological, and my remarks were worded (p. 211) as follows: "A marked and general feature is a pronounced bony reinforcement of the alveolar arch extending above the mylohyoid line from the canines or first bicuspids to or near the last molars. This physiological hyperostosis presents more or less irregular surface and is undoubtedly of functional origin, the result of extraordinary pressure along the line of teeth most concerned in chewing; yet its occurrence in infant skulls indicates that at least to some extent the feature is already hereditary in these Eskimo."

In 1912, Kajava[25] reported lingual hyperostotic thickenings on the lower jaws of 68 adult Lapps, and found the condition in frequent association with pronounced wear of the teeth. In 1915, finally, Fürst and C. C. Hansen, in their great volume on "Crania Groenlandica," approach this question much more thoroughly. They, as also Kajava, did not know the writer's report of 1910. They found the "torus" (p. 181), "also in the mandibles of some various Siberian races in a not insignificant percentage * * * and also not infrequently among European races, especially in the Laplanders (30 to 35 per cent)." They also report the presence of the condition "in a Chinaman," and saw indications of a good development of it in 17 per cent of 164 middle ages to prehistoric, and in 12 per cent of later Scandinavian lower jaws. Their interesting comments on its possible causation, though at one point seemingly not harmonizing, are as follows (p. 180): "The possibility is not precluded that we have here a formation which, even though it has at first arisen and been acquired through mechanical causes, has in the end

[21] J. Anthr. Inst., 1900, xxx, 134.
[22] Abh. und Ber. Zool. und Anthr. Mus., Dresden, 1908, xii.
[23] Sitzber. preuss. Ak. Wiss., li–liii.
[24] Anthrop. Pap's. Am. Mus. Nat. Hist., v, pt. ii.
[25] Verh. Ges. Finn. Zahnarzte, 1912, ix.

WESTERN ESKIMO AND ALEUT (MIDDLE) LOWER JAWS, SHOWING LINGUAL HYPEROSTOSES. (U.S.N.M.)

become a racial character, albeit a variable one." And page 181: "There seems to be no doubt whatever that it is a formation connected with Arctic races or Arctic conditions of life; and, accordingly, it can not safely be assumed to be a racial character, however difficult it is to regard it as a formation only acquired individually."

With both the previously published and the present data, I believe the subject of these bony formations may now be approached with some hope of definite conclusions.

These hyperostoses give no indication of being pathological. They are formed largely, if not entirely, by compact bone tissues of evidently normal construction. They never show a trace of attending inflammation or of ulceration or of breaking down. They resemble occasionally the osteomae of the vault of the skull, and more distantly the osteomae of the auditory meatus, but in those cases where the bony swelling is uniform and in many others they show to be of quite a different category. (Pl. 61.)

As a rule these bony protuberances in the Eskimo are not connected with evidence of pyorrhoea, root abscesses, or any other pathological condition of the teeth, for those conditions are practically absent in the older Eskimo skulls; therefore they can not be ascribed to any irritation due to such conditions, and the Eskimo have no habits that could possibly be imagined as favoring, through mechanical irritation, the development of these bony swellings. Wear of the teeth, which has been thought to stand possibly in a causative relation to these developments, is common in many races and even in animals (primates, etc.), without being accompanied by any such formations.

The development of such overgrowths is not wholly limited, as already indicated from the cases reported by Danielli (1884) and Virchow (1889), to the lower jaw, but somewhat similar growths may also be observed, though much more rarely, both lingually and on the outer border of the alveolar process of the upper jaw in the molar region. When present in the latter position they interfere with the measurement of the external breadth of the dental arch.

But, if neither pathological themselves nor due to any pathological or mechanical irritation, then these hyperostoses can only be, it would seem, of a physiological, ontogenic nature; and if so, then they must be brought about through a definite need and for a definite purpose or function.

These views are supported by their marked symmetry, which is very apparent even where they are irregular; by the fact that in general they are not found in the weakest jaws (weak individuals), or again in the largest and stoutest mandibles (jaws that are strong enough as it is); and by the history of their development.

Our rather extensive present data on children show that these formations are absent in infancy. They begin to develop in older childhood, in adolescence, or even during the earlier adult life; they stop developing at different stages in different individuals, and they never lead to any deformity of the body of the mandible.

These overgrowths are further seen to be more common and to more frequently reach a pronounced development in the males than in the females.

What is the effect of these hyperostoses? They strengthen the dental arch. With them the arch is stronger; without them it would be weaker. The view is therefore justified that they augment the effectiveness of the dental arch; which is just what is needed or would be useful in such people as the Eskimo where the demands on the jaws exceed in general those in any other people.

All these appear to be facts of incontrovertible nature; but if so then we are led to practically the same conclusion that I have reached in the study of the central and Smith Sound Eskimo, which is that the lingual mandibular hyperostoses are physiological formations, developed in answer to the needs of the alveolar portions of the lower jaw. They could be termed synergetic hyperostoses.

The process of the development of these strengthening deposits of bone is probably still largely individual; yet the tendency toward such developments appears to be already hereditary in the Eskimo, as indicated by their beginning here and there in childhood. But their absence in nearly one-third of the Eskimo mandibles, their marked differences of occurrence and development in the two sexes, and their occasional presence in the jaws of various other peoples, including even the whites, speak against the notion of these hyperostoses being as yet true racial features.

Taking everything into consideration, the writer is more than ever convinced that the lingual hyperostoses of the normal lower (as well as the upper) jaw, in the Eskimo as elsewhere, are physiological, ontogenic developments, whose object and function is the strengthening of the lower alveolar process in its lateral portions. Only when excessively developed, which is very rare, they may, mechanically, perhaps cause discomfort and thereby approach a pathological condition.

Main References

Danielli,[26] 1884: "Saw the condition in lower jaws of 1 Swede, 1 Italian, 1 Terra di Lavoro jaw, 1 Slovene, 1 Hungarian, 1 Kirghis, 1 ancient Peruvian."

Found hyperostoses in 9 out of 14 Ostiak lower jaws.

[26] Danielli, Jacopo, Iperostosi in mandibole umano specialmente di Ostiacchi, ed anche in mascellari superiore. Archivio per l'antropologia e l'etnologia, 1884, XIV, 333–346.

Material: Young 2, adult 6, old 6.

Hyperostoses in young 1, adult 3, old 5.

Mantegazza, at his request, examined some Ostiak and Eskimo skulls in Berlin and found the hyperostoses in 2 Ostiak lower jaws (slight) and in 1 Eskimo skull from Greenland (marked).

Found also smaller hyperostoses in the upper jaw ventrally to the molars ("situate quasi sempre dalla parte interna in corrispondenza dei molari"):

Skulls: 2 Italians, 1 Hungarian, 7 Norwegians, 2 Lapps, 5 Ostiaks.

Plate shows 8 lower jaws, 1 with slight, 7 with marked hyperostoses (1 symphyseal swellings, 3 tumorlike).

Refrains from interpretation (could not reach conclusion).

Virchow,[27] 1889, page 392: In upper jaws of three Santa Barbara skulls: "An den Alveolarrändern der weiblichen Schädel Nr. 3–6 von S. Barbara besteht eine höchst eigenthümliche und seltene, knollige Hyperostosis s. Osteosclerosis alveolaris, wie ich sie in gleicher Stärke früher nur bei Eskimos gesehen hatte. Ein leichter Ansatz dazu zeigt sich auch bei dem männlichen Schädel Nr. 4 von S. Cruz. Es dürfte dieser Zustand, der mit tiefer Abnutzung der Zähne zusammenfält, durch besonders reizende Nahrung bedingt sein."

Vancouver Island skulls: "dagegen sehen wir dieselbe alveolare Hyperostose, die wir bei den Leuten von S. Barbara und weiterhin bei Eskimos kennen gelernt haben."

Virchow,[28] 1892: "Der Alveolarrand gleichfalls mit hyperostotischen Wülsten besetzt, jedoch mehr an der inneren Seite, besonders stark in der Gegend per Prümolares und Canini, weniger stark in der Gegend der Incisici."

Welcker,[29] 1902: "Exostosen der Alveolarränder. Von erheblicher Beweiskraft können Eigenthümlichkeiten und Abnormitäten des Knochengewebes under der Knochenoberfläche werden, wenn dieselben, bei an sich grosser Seltenheit ihres Vorkommens, an einem Oberschädel und Unterkiefer zugleich vorkommen.

"So fand ich am Unterkiefer der Gypsabgüsse des sogenannten Schillerschädels sehr merkwürdige, bis dahin nirgends erwähnte, erbsenförmige Exostosen an den Alveolen der Eck- und Schneidezähne. Ganz ähnliche, wenn auch etwas flächere Exostosen zeigen die Alveolen eben derselben Zähne des Oberschädels, und es beweist dieses seltene Vorkommen bei dem Zutreffen aller übrigen Zeichen das Zusammengehören beider Stücke mit hoher Sicherheit.

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[27] Virchow, R., in Beiträge zur Craniologie der Insulaner von der Westküste Nordamerikas. Zeitschr. f. Ethnol., Verhandl., 1889, xxi, 395, 401.

[28] Virchow, R., Crania Ethnica Americana. Berlin, 1892, Tafel xxiii. A "long-head" male adult of Koskimo, Vancouver Island.

[29] Welcker, H., Die Zugehörigkeit eines Unterkiefers zu einem bestimmten Schädel, nebst Untersuchungen über sehr auffällige, durch Auftrocknung und Wiederanfeuchtung bedingte Gröben und Formveränderungen des Knochens. Arch. f. Anthropol., 1902, xxvii, 70.

"In einer etwas anderen Form, in der dieselben einen geschlossenen, exostotischen Saum bilden, fand ich Alveolarexostosen bei einem Lettenschädel (G. Gandras, 47 J., Halle Nr. 52). Hier sind die Alveolarränder der Schneide-und Eckzähne mit flachen, am Oberkiefer streifenförmigen (senkrecht gestellten), am Unterkiefer mehr rundlichen Exostosen besetzt, so dass der sonst papierdünne Zahnflächenrand beider Kiefer in einen, die Zahnhälse begrenzenden wulst-förmigen Saum umgewandelt ist. Der gleiche Charakter dieser nicht häufigen Abnormität an beiden Kiefern giebt die vollste Ueberzeugung der Zusammengehörigkeit.

"In schwächerem Grade zeigt diesen Zustand ein Chinesenschädel der Halle'schen Sammlung (Lie Assie)."

Fürst,[30] 1908: "Wir haben hier auf diese interessante anatomische Bildung aufmerksam machen wollen, die, wenn nicht konstant, doch in sehr hohem Prozentsatze und in bestimmter charakteristischer Form bei den Eskimos auftritt und in verschiedenen Variationen auf dem Unterkiefer anderer Rassen, speziell nordischer oder arktischer, vorkommt. — Wir wollen später eine ausführlichere Beschreibung über den Torus mandibularis mitteilen."

Gorjanovič-Kramberger,[31] 1909: "Durch die Ausbiegung der seitlichen Kieferflächen wurde ferner die Druckrichtung der M und P eine gegen die innere Kieferwandung gerichtete. Als direkte Folge dieses Druckes hat man die starke Ausladung der entsprechenden lingualen Kieferseiten im Bereiche der P und M anzusehen, die da eine auffallende Einengung des inneren Unterkieferraumes bewerkstelligte."

Hrdlička (A.), 1910. See text.

Hansen,[32] 1914: "The lower jaws attached to the skulls are powerfully formed, high, and, above all, very thick, their inner surface being markedly protruding, rounded, and without any special prominence of linea mylohyoidea. This peculiarity, which is common enough among the Eskimo and certain Siberian tribes, but is otherwise exceedingly rare, must be regarded as a hyperostosis of the same nature as the so-called torus palatinus. It is a partly pathological formation due to a peculiar mode of life rather than a true morphological mark of race."

Fürst, C. M., and Hansen, C. C., 1915. See text.

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[30] Fürst, Carl M., Demonstration des Torus mandibularis bei den Askimos und anderen Rassen. Verhandlungen der Anatomischen Gesellschaft in Berlin, 1908, Ergänzhft z. Anatom. Anz., 1908, XXXII, 295–296.

[31] Gorjanovič-Kramberger, K., Der Unterkiefer der Eskimos (Grönländer) als Träger primitiver Merkmale. Sitzungsberichte der königlich preussischen Akademie der Wissenschaften, 1909, LI.

[32] Hansen, Søren, Contributions to the anthropology of the East Greenlanders. Meddelelser om Grønland, Copenhagen, 1914, XXXIX, 169.

Cameron,[34] 1923: "In some instances the bony thickening was excessive. For example, in mandible XIV H–8 the inward bulging of the bone was so marked that the transverse distance between the inner surfaces of the body opposite the first molars was reduced to 21.5 millimeters. This jaw had therefore an extraordinary appearance when viewed from below. (See fig. 5.) The writer would regard these bulgings as bone buttresses built up by nature to resist the excessive strain thrown upon the alveoli of the molar teeth. He exhibited the mandibles to Prof. H. E. Friesell, dean of the dental faculty, University of Pittsburgh, and this authority concurred in the opinion expressed above." A disagreement with this view is expressed by S. G. Ritchie, pages 64c–65c, same publication.

SKELETAL PARTS OTHER THAN THE SKULL

The skeletal parts of the western Eskimo, outside of the skull, are but little known. The only records are those on two skeletons (one male, one female) from Point Barrow by Hawkes,[35] and those on a few bones from Port Clarence by Cameron.[36] The data on the skeletal parts of the northern and eastern Eskimo are only slightly richer, being for the most part fragmentary and scattered.[37] Nor has the time arrived yet for a comprehensive study of such material, for notwithstanding the relative abundance in crania and the more resistant individual skeletal parts, the securing of anywhere near complete skeletons is very difficult. Nevertheless there is now a good number of the long bones of the western Eskimo in the possession of the National Museum and the main data on these, all secured personally by the writer, will be given. They must for the present remain essentially as so many figures without adequate discussion and comparisons. Nevertheless a few facts appear so plainly that they may well be pointed out before concluding this section.

[34] Cameron, John, The Copper Eskimos. Report of the Canadian Arctic Expedition, 1913–1918. Ottawa, 1923, XII, c. 55.

[35] Amer. Anthrop., 1916, LVIII, 240–243.

[36] Rep. Canad. Arct. Exp., 1913–1918, Pt. C, 1923, 56–57.

[37] Mainly by Turner (London, 1886); Duckworth (Cambridge, 1904); Hrdlička (New York, 1910); Cameron (Ottawa, 1913–1918); also a series of incidental references and comparisons.

WESTERN ESKIMO: THE LONG BONES

Bones of both sides taken together	Males				Females			
	Southwestern and midwestern groups [1]	Seward Peninsula [2]	Point Hope	Seward Peninsula and northwestern Eskimo in general [3]	Southwestern and midwestern groups	Seward Peninsula	Point Hope	Seward Peninsula and northwestern Eskimo in general
Humeri:	(143)	(261)	(67)	(100)	(136)	(26)	(55)	(83)
Length maximum	30.69	31.42	31.07	31.17	28.40	28.75	28.83	28.83
At middle—								
Diameter maximum	2.40	2.46	2.46	2.46	2.10	2.14	2.16	2.15
Diameter minimum	1.80	1.81	1.86	1.85	1.54	1.59	1.63	1.62
Index at middle	*75.1*	*73.8*	*75.8*	*75.1*	*73.2*	*74.4*	*75.4*	*75.1*
Radii:	(98)	(20)	(15)	(37)	(109)	(16)	(8)	(24)
Length maximum	22.90	23.63	23.44	23.50	20.50	21.26	[5] (21.58)	21.25
Radio-humeral index (approximate)	*74.5*	*75.2*	*75.4*	*75.4*	*72.2*	*74*	(74.8)	*74*
Femora:	(195)	(44)	(10)	(60)	(132)	(26)	----------	(31)
Length, bicond	42.50	43.20	(44.06)	43.46	39.36	40.12	----------	40.44
Humero-femoral index (approximate)	*72.2*	*72.7*	[4] (*70.5*)	*71.7*	*72.2*	*71.7*	----------	*71.8*
At middle—								
Diameter antero-posterior	3.08	3.17	(3.33)	3.21	2.69	2.85	----------	2.88
Diameter lateral	2.70	2.72	(2.68)	2.72	2.46	2.55	----------	2.56
Index at middle	*87.6*	*85.8*	(*80.4*)	*84.8*	*91.5*	*89.6*	----------	*88.9*
At upper flattening—								
Diameter maximum	3.35	3.34	(3.27)	3.32	3.02	3.04	----------	3.06
Diameter minimum	2.51	2.57	(2.58)	2.59	2.26	2.37	----------	2.40
Index at upper flattening	*75*	*77*	(*79*)	*78.1*	*74.5*	*78*	----------	*78.4*
Tibiae:	(141)	(35)	(41)	(79)	(147)	(18)	(17)	(36)
Length (in position)	33.86	34.52	36.40	35.52	31.32	31.90	32.90	32.50
Tibio-femoral index (approximate)	*79.7*	*79.9*	[4] (*82.6*)	*81.7*	*79.6*	*79.5*	----------	*80.4*
At middle—								
Diameter antero-posterior	3.12	3.13	3.26	3.19	2.71	2.71	2.80	2.75
Diameter lateral	2.12	2.12	2.20	2.16	1.89	1.93	1.92	1.92
Index at middle	*67.9*	*67.7*	*67.4*	*67.8*	*69.9*	*71.3*	*68.8*	*70*

[1] Principally Hooper Bay, Nunivak Island, Pastolik, and St. Lawrence Island.
[2] Mainly Shishmaref, Wales and Golovnin Bay.
[3] Including Point Hope.
[4] Number of femora insufficient.
[5] Number of radii insufficient.

The first fact shown by the preceding figures is the slightly greater length of all the long bones in the midwestern and northwestern groups as compared with those of the Bering Sea (midwestern and southwestern). This means naturally that the people of the Seward Peninsula and northward average somewhat taller in stature.

The second evident fact is that the people of the Seward Peninsula and the more northern groups (so far as represented in these collections) show a slightly greater stature of all the bones than the groups farther south, showing that they were both a somewhat taller and somewhat sturdier people.

The next fact of importance is the remarkable agreement in some respects in the relative proportions of the main skeletal parts between the people of the more southern and the more northern groups. The males are more regular in this respect than the females. The relative proportions of the humerus and again the tibia at their middle are identical in the males of the southwestern and midwestern groups and those farther northward; and the radio-humeral, humero-femoral, and tibio-femoral indices are all very closely related. Why there should be less agreement in these respects among the females it is difficult to say; in all probability the series of specimens are not sufficiently large.

The next table presents data and some racial comparisons. Here the western Eskimo are taken as a unit. They are seen to considerably resemble the Yukon Indians, but somewhat less so other Indians in the radio-humeral and tibio-femoral indices, and they resemble all the Indians in the relative proportions of the femur at its middle. In other respects there are somewhat more marked differences, especially between the western Eskimo and the Indians in general. Some irregularities in the Yukon series may be due to insufficiency of numbers.

When compared with the bones of the whites and the negroes the Eskimo and Indians separate themselves in many respects as a distinct group, while the white and the negro bones are particularly distinct through the greater relative thickness of the humerus and tibia at their middle, and of the femur at its upper flattening; in other words the Eskimo as well as the Indians are more platybrachic, platymeric and platycnemic than the whites or the negroes.

The basic relation of the Eskimo to the Indian bones is quite evident; though the Eskimo, when compared to Indians outside of Alaska, show a relatively shorter radius and tibia, indicating the already discussed relative shortness of the forearm and leg.

Long Bones in Eskimo and Stature

One of the most desirable of possibilities in the anthropometry of any people, but particularly in groups now extinct, is a correct esti-

WESTERN ESKIMO, LONG BONES: COMPARATIVE DATA

MALES

	Humerus: Index of shaft at the middle (all groups)	Radio-humeral index	Femur		Humero-femoral index	Tibia: Index of shaft at middle	Tibio-femoral index
			Index of shaft at middle	Index of shaft at upper flattening			
	[1] (243)	(135)	(255)	(255)	(243)	(220)	(220)
Western Eskimo	75. 1	75	86. 2	76. 5	72	67. 9	80. 7
	(10)	(10)	(14)	(14)	(10)	(14)	(14)
Yukon Indians	70	75. 7	87. 1	70. 7	74. 5	66	81. 5
	(448)	(370)	(902)	(902)	(378)	(1259)	(324)
Other Indians	73. 3	77. 7	87. 3	74	72. 5	66. 1	84. 4
United States whites (miscellaneous)	(1930)	(1052)	(207)	(836)	(800)	(1400)	(1216)
	83	73. 6	97	83	72. 5	71. 1	82. 1
	(112)	(74)	[2] (14)	(48)	(50)	(63)	(68)
United States negroes	84. 1	77. 3	(91. 2)	86. 8	71. 6	73. 9	84. 9

FEMALES

	(213)	(133)	(153)	(153)	(153)	(183)	(183)
Western Eskimo	74. 1	73. 1	90. 2	76. 5	71. 8	70	80
	(348)	(200)	(327)	(248)	(200)	(910)	(384)
Other Indians	70. 1	76. 6	91. 8	70	72. 5	70	84. 3
United States whites (miscellaneous)	(770)	(424)	(100)	(192)	(290)	(600)	(520)
	79. 3	72. 7	97	77. 7	71. 6	71. 9	81. 5
	(52)	(34)	[2] (17)	(48)	(52)	(44)	(48)
United States negroes	79. 2	77. 2	(100)	81. 1	70. 2	75. 9	83. 7

[1] Bones of both sides. [2] Numbers insufficient.

mation of their stature. For this purpose the most useful aid has been found in the long bones, and various essays have been made by Manouvrier, Rollet, Topinard, Pearson, and others [38] at preparing tables or arriving at methods that would enable the student to promptly and satisfactorily obtain the stature as it was in life from the length of the long bones. But all these essays were based on observations on white people, and it has always been recognized that they could not with equal confidence be applied to other racial groups. They would in all probability be especially inapplicable to the Eskimo with his relatively short forearms and legs; yet the possibility of estimating the stature in many localities of the Eskimo territory, where no living remain, would be of real value. Fortunately for this purpose there are now some data on hand which make this possible.

[38] See section on Estimation of Stature from Parts of the Skeleton, in author's Anthropometry, Wistar Inst., Philadelphia, 1920.

In 1910, in my Contributions to the Anthropology of the Central and Smith Sound Eskimo, I was able to report both the stature and the length of the long bones in two normally developed adult males and one adult female from Smith Sound. To this it is now possible to add larger though less direct data from the group of St. Lawrence Island. We have the stature of many of the living from this place and also the measurements of numerous long bones from the dead of the same group. The relations of the two are given below, together with corresponding data from Smith Sound. There is in general such a striking agreement in the relative proportions that the latter may, it would seem, be used henceforth for stature estimates also in other parts of the Eskimo region.

LENGTH OF PRINCIPAL LONG BONES, AND STATURE IN THE LIVING, ON THE ST. LAWRENCE ISLAND

	Male		Female	
	(63) Mean stature: 163.3		(48) Mean stature: 151.3	
	Mean dimensions	Percental relation to stature (S=100)	Mean dimensions	Percental relation to stature (S=100)
	(58)		(49)	
Humerus	30. 41	*18. 6*	27. 77	*18. 3*
	(23)		(35)	
Radius	23. 03	*14. 1*	20. 77	*13. 7*
	(100)		(38)	
Femur	32. 54	*27. 8*	38. 12	*25. 1*
	(58)		(50)	
Tibia	34. 16	*20. 9*	31. 13	*20. 5*

LONG BONES VS. STATURE IN ESKIMO OF SMITH SOUND [1]

	Male		Female
	a	*b*	
Stature	155. 0	164. 0	146. 7
Humerus:			
Mean length (of the two)	28. 95	29. 0	26. 55
Percental relation to stature	*18. 7*	*17. 7*	*18. 1*
Radius:			
Mean length	21. 3	23. 2	19. 85
Percental relation to stature	*13. 7*	*14. 1*	*13. 5*
Femur:			
Mean length	39. 1	42. 1	38. 55
Percental relation to stature	*25. 2*	*25. 7*	*26. 3*
Tibia:			
Mean length	30. 25	34. 45	30. 9
Percental relation to stature	*19. 5*	*21. 0*	*21. 1*

[1] Hrdlička, A., Contribution to the anthropology of central and Smith Sound Eskimo. Anthrop. Pap. Am. Mus. Nat. Hist., v, pt. 2, 280. New York, 1910.

A STRANGE GROUP OF ESKIMO NEAR POINT BARROW

In 1917–1919, in the course of the John Wanamaker Expedition for the University Museum, Philadelphia, W. B. Van Valin, with the help of Charles Brower, the well-known local trader and collector, excavated near Barrow a group of six tumuli, which proved in the opinion of Van Valin to be so many old igloos, containing plentiful cultural as well as skeletal material. The collections eventually reached the museum, but due to lack of facilities they were in the main never unpacked.

I heard of this material first from Mr. Brower, with whom I sailed in 1926 from Barrow southward, and later with Dr. J. Alden Mason I saw the collection still in the original boxes, at the University Museum. In April of this year the skeletal remains were transferred to the Wistar Institute, Philadelphia, and after their transfer I obtained the permission of Dr. Milton J. Greenman, director of the Wistar Institute, to examine the material, which was of importance to him in connection with his own collections from Barrow and southward. A due acknowledgment for the privilege is hereby rendered to both Doctor Greenman and Doctor Mason.

The study proved one of unexpected and uncommon interest. The material was found to consist of two separate lots. The first of these consisted of a considerable number of brown colored, more or less complete skeletons with skulls, proceeding from the "igloos"; while the second lot comprised a series of whitened isolated skulls, without other skeletal parts and mostly even without the component lower jaws, gathered on the tundra near Barrow. At first sight, also, the skulls of the two groups were seen to present important differences.

The "igloo" crania, while plainly pure Eskimo, proved to be of a decidedly exceptional nature for this location. The skulls, in brief, were not of the general western Eskimo type, but reminded at once strongly of the skulls from Greenland and Labrador. And they were exceptionally uniform, showing that they belonged to a definite and distinct Eskimo group.

After writing of this to Doctor Mason, he kindly sent me a copy of the notes and observations on the discovery of the material by W. B. Van Valin, who was in charge of the excavation. The detailed notes will soon be published by Doctor Mason. The main information they convey is as follows:

The excavations by Van Valin date from 1918–19. They were made in six large "heaps," approximately 8 miles southwest of Barrow and about 1,000 yards back from the beach on the tundra. Two of the heaps were on the northern and four on the southern side of a ravine

or draw formed by a drain flowing from inland to the sea. The Eskimo at Barrow knew nothing about these remains or their people.

Each of the heaps inclosed what in the excavator's opinion was an "igloo" made of driftwood and earth; and all contained evidently undisturbed human skeletons. The total number of bodies of all ages was counted as 83, and they ranged from infants to old people. There were many bird and other skins (for covers and clothing), and numerous utensils. The hair on the bodies was in general "black as a raven." Most of the bodies lay on "beds" of moss or "ground willows," or rough-hewn boards. There was no indication of any violence or sudden death. The bodies at places were in three levels, one above the other; but there was but moderate uniformity in the orientation of the bodies. There were found with the burials no traces of dogs (though there were some sled runners), and no metal, glass, pipes, labrets, nets, soapstone lamps or dog harness; but there were bows and arrows, bolas, and ordinary pottery. The cultural objects, Doctor Mason wrote me, resemble in a smaller measure those of the older Bering Sea, to a larger extent those of the old northern or "Thule" culture. There were some jadeite axes, indicating a direct or indirect contact with Kotzebue Sound and the Kobuk River.

Some of the bearskin coverings were "as bright and silvery" as the day the bear was killed (Van Valin); and the frozen bodies were evidently in a state of preservation approaching that of natural mummies.

Notwithstanding indications to the contrary, Van Valin reached the opinion that these remains were not those of regular burials, though offering no other definite hypothesis.

Desiring additional information about this highly interesting find, I wrote to Mr. Brower, who assisted at the excavations, and received the following answer:

These mounds are from 5 to 8 miles south of the Barrow village (Utkiavik). The largest that were opened were the farthest south, and seemed more like raised lumps on the land than ruins. No doubt that is the reason no one had bothered them.

The Eskimo have no traditions of these people. In fact they did not even suspect the mounds contained human remains until Mr. Van Valin started to investigate them.

While Van Valin thought they might be houses, I have always thought they were burial mounds, as there seemed no family to have been together at the time of death as often has happened. When whole families have died from some epidemic, then the man and wife are together under their sleeping skins. In these mounds each party was wrapped separate, either in polar bear or musk ox skins; none were wrapped in deer skins. If male, all his hunting implements were at his side, and if a female her working tools were with her, as scrapers, dishes of wood, and stone knives. The men had their bows, arrows,

spears, and often a heavy club, for what purpose unless used in fighting I could not make out. At the head of each person was a small receptacle, made of whalebone, and in it or alongside was a long wing bone that had been used as a drinking tube. In some cases there seemed to be the remains of food in the platters, but that was impossible to identify. Most of the bodies were laid on the ground, a few had the remains of scrub willow under them, while only in two or three cases had there been driftwood planks under the bodies; these were crudely hewn with their old stone adzes.

There seems to have been some sort of driftwood houses over these bodies at some time, but they decayed and have fallen on the remains, which were in some cases embedded in the ice. Often before the frame had broken down earth must have accumulated and covered the bodies. In these cases the flesh has the consistency of a fine meal. While with those in the ice in some cases part of the flesh still remained. In both cases when exposed to the air they rapidly disintegrated, leaving nothing except the bones. By measurements they must have been a larger race than the present people.

When your letter reached here I at once started making inquiries as to what mounds were still intact; and I find that as far as known only two of the larger ones have not been opened. The Eskimo have been opening the mounds ever since they were found, taking from them all the hunting implements and other material and selling them aboard the ships for curios. It seems a shame that all this should be lost to science, and if no one takes an interest in these places in a year or two they will all be gone.

I have again made inquiries as to what the present Eskimo think of these people, but they tell me they have no tradition regarding them and that they do not know if they were their ancestors or not. In fact, they are ignorant of where they came from or when they died.

To date I do not know of any whaling implement being found with these old people, neither is any of the framework of these mounds made from the bones of whales. In some of the implements ivory has been used. The mounds farthest from the shore were about 400 yards, those that remain are closer to the beach. Some of the smaller ones are on the banks of small streams but never very far from shore. Undoubtedly, however, they were at one time considerably farther from the sea, but the sea is every year claiming some of this land, especially where the banks are high along the beach. There the beach is narrow and during a gale the waves wash out the land at its base. This is about all that I can tell you of these people. All credit for finding these mounds belongs to Van Valin.

Yours truly, CHAS. D. BROWER.

The material.—The collection as received at the Wistar Institute was notable for its general dark color, enhanced in many of the specimens by dark to black remains of the tissues. There was no mineralization and but little bone decay, though the bones were somewhat brittle.

There is a scarcity of children and adolescents; there are in fact only two skulls of subjects less than 20 years of age in the collection.

The skulls and bones that remain show no violence.

The remains show a complete freedom from syphilis or other constitutional disease; the only pathological condition present in some of the bones being arthritis. This speaks strongly for their preced-

ing the contact with whites. The surface series, though smaller, shows three syphilitic skulls. An additional fact of interest is the absence in both the igloo and the surface series of all marks of scurvy. Such marks are fairly common farther southward. Finally, none of the skulls are deformed, either in life or posthumously.

Anthropological Observations and Measurements on the Collections

Age.—The first observations made on the igloo material were those as to the individual ages of the bodies. Such observations are necessarily rough, yet within sufficiently broad limits fairly reliable. The criteria are principally the condition of the teeth and that of the sutures. The possible error in such estimates is, experience has shown, as a rule well within 10 years in the older and within 5 years in the young adults or subadults.

One of the objects of these observations on the "igloo" material was to get some further light on whether the remains were those of a group that perished of an epidemic, famine, or some other sudden agency, or whether they represented just burials. The age distribution of the dead would differ considerably in the two cases.

Estimated Ages at Death

IGLOO MATERIAL

	20 to 25	30 to 40	45 to 55	Above 55
	Per cent	*Per cent*	*Per cent*	*Per cent*
Males (27)	11	15	41	33
Females (25)	16	24	44	16
Mean, both sexes	13. 5	19	42. 5	25
SURFACE SERIES				
Males (21)		5	48	48
Females (14)	29	36	36	
Mean, both sexes	11. 5	17	43	29. 5

The above table shows the data obtained, with those on the surface material from the same collection and known to be that of ordinary burials.

The results do not agree with the composition of the living population but are apparently near to what might be expected in burials. Taking the sexes apart, the series from the surface shows a somewhat more favorable condition for the men, but worse for the women. Taking the materials, however, regardless of sex, the proportions of

ages in the earlier igloos and in the late surface burials are practically identical. This points strongly against the idea of the igloo remains being those of people who either died there of starvation, of an epidemic, of being smothered, or of some other sudden affliction, and to their having been just ordinary burials.

To arrive at something still more definite, if possible, I appealed on the one hand to the United States Census and on the other to Doctor Dublin of the Metropolitan Life Insurance Co., New York, for data as to the distribution of ages among the dead, using the same age-categories as in the case of the "igloo" material. The data furnished by Miss E. Foudray through Dr. Wm. H. Davis, Chief Statistician of the Bureau of the Census, are particularly to the point. They are as follows:

PER CENT AGE DISTRIBUTION OF INDIAN POPULATION IN ALASKA AGED 20 YEARS AND OVER, ACCORDING TO THE CENSUS OF 1900

	20 to 24	25 to 44	45 to 54	55 and over
Males	17. 8	54. 2	15. 9	12. 1
Females	19. 4	53. 3	15. 9	11. 4
Both sexes	*18. 6*	*53. 7*	*15. 9*	*11. 8*

PER CENT AGE DISTRIBUTION AT DEATH (ESTIMATED) OF INDIAN POPULATION OF ALASKA IN 1900, WHO, HAD THEY LIVED, WOULD HAVE APPEARED IN THE CENSUS OF 1910 AT AGES 20 YEARS AND OVER

	20 to 24	25 to 44	45 to 54	55 and over
Males	13. 2	43. 9	21. 3	21. 6
Females	11. 9	47. 0	19. 5	21. 6
Both sexes	*12. 6*	*45. 4*	*20. 4*	*21. 6*

There is a remarkable agreement of these figures with those obtained on both the Igloo and the Barrow surface burial material, except that for the two middle age series the figures are reversed. This may mean an error in the two respective estimates on the Indians, or it may mean that for these two ages the conditions among the Eskimo concerned were better than they were in 1900 among the Alaska Indians.

All the above, together with the details on the orderly treatment of the bodies, and the absence of such conditions as were encountered in the dead villages on St. Lawrence Island (Hooper, Nelson), inclines one to the conclusion that the Igloo remains, however exceptional the method for the Eskimo, were just burials.

Physical Characteristics

The skull.—The most noteworthy feature about the Igloo remains is the marked distinctiveness of the skull. This strikes the observer at the first sight of the specimens, and the impression is only strengthened by detail examination. The skulls are very narrow, long, and high. They differ plainly from anything except occasional individual specimens, either about Barrow or along the rest of the west coast of Alaska, with the possible exception of a few groups of Seward Peninsula. They recall strongly the crania of Labrador and south Greenland. It is the Labrador-Greenland type throughout, men, women, and even the two children. It is a group outside of the range of local variation. It is a strange Eskimo group, either developed here in former times as it developed in Greenland and Labrador, and possibly the Seward Peninsula, or one that had come here from places where such type had already been realized.

The following data (the individual measurements will appear in a later number of the Catalogue of Crania) show the differences between the Igloo and the surface material, the latter both of the Van Valin and of the author's collections, and the valuable Stefánsson material, now at the American Museum, from Point Barrow. They need but little comment. They show clearly on one hand the wholly Eskimo nature of the Igloo skulls, and on the other their distinctness from those of the later burials, both of Barrow and Point Barrow. The vault especially is characteristic—narrow, long, high, more or less keel-shaped. The face in general is much more alike in the three groups; nevertheless its absolute height and breadth in the Igloo series are slightly smaller than in the other two, and there are minor differences in the orbits and the palate.

Eskimo Crania, Barrow and Vicinity

	Old Igloos		Surface burials, Barrow		Surface burials, Point Barrow	
	Males (27)	Females (25)	Males (37)	Females (36)	Males (49)	Females (52)
Vault:						
Length maximum	19. 25	18. 11	18. 90	17. 77	18. 74	17. 91
Breadth maximum	13. 30	12. 72	13. 73	13. 23	13. 84	13. 32
Basion-bregma height	14. 02	13. 21	13. 78	12. 97	13. 78	13. 08
Cranial index	*69. 1*	*70. 2*	*72. 6*	*74. 5*	*73. 9*	*74. 4*
Height-breadth index	*105. 5*	*104. 6*	*99. 6*	*98. 1*	*99. 6*	*97. 8*
Mean height index	*86. 2*	*86. 4*	*84. 6*	*82. 9*	*84. 7*	*83. 4*
Cranial module	15. 52	14. 72	15. 46	14. 66	15. 44	14. 75

ESKIMO CRANIA, BARROW AND VICINITY—Continued

	Old Igloos		Surface burials, Barrow		Surface burials, Point Barrow	
	Males (27)	Females (25)	Males (37)	Females (36)	Males (49)	Females (52)
Face:						
Height: menton-nasion	12. 4	11. 21				
Height: upper alveolar point-nasion	7. 7	7. 01	7. 89	7. 18	7. 86	7. 22
Breadth: Diameter bizygomatic maximum	14. 2	13. 08	14. 34	13. 16	14. 26	13. 06
Facial index, total	*86. 9*	*86. 8*				
Facial index, upper	*54. 5*	*53. 8*	*55*	*54. 7*	*55. 1*	*55. 3*
Basion-nasion	10. 70	10. 18	10. 61	10. 01	10. 54	9. 94
Basion - subnasal point	9. 33	9. 12	9. 31	8. 86	9. 23	8. 73
Basion - upper alveolar point	10. 45	10. 13	10. 39	9. 85	10. 39	9. 77
Lower jaw: Height at symphysis	3. 72	3. 38	3. 95	3. 27	3. 9	
Orbits:						
Mean height	3. 62	3. 47	3. 60	3. 61	3. 61	3. 55
Mean breadth	3. 97	4. 01	4. 04	3. 88	4. 02	3. 90
Mean index	*91. 3*	*91*	*89. 2*	*93*	*89. 9*	*90. 7*
Nose:						
Height	5. 45	5. 02	5. 52	5. 19	5. 48	5. 11
Breadth	2. 37	2. 23	2. 39	2. 32	2. 31	2. 29
Index	*43. 6*	*44. 4*	*43. 4*	*44. 7*	*42. 2*	*44. 9*
Alveolar arch:						
Length	5. 57	5. 34	5. 59	5. 22	5. 63	5. 25
Breadth	6. 68	6. 29	6. 45	6. 13	6. 47	6. 01
Index	*83. 4*	*84. 9*	*86. 6*	*85. 1*	*86. 9*	*87. 4*

Let us now contrast the Igloo skulls with those of southern Greenland from the collection of the United States National Museum.[39] The size of the series is such that they are nicely comparable. And to the two is added a small recent series (A. H., 1926, and Collins, 1928), from Golovnin Bay and Sledge Island (Seward Peninsula).

[39] The measurements of this series have been published by the writer in the first part of the Catalogue of Human Crania in the U. S. National Museum (Proc. U. S. N. M., 1924, LXIII, art. 12, p. 26), but as a few errors crept in, the whole series was remeasured by the writer.

MAIN MEASUREMENTS OF THE BARROW "IGLOO" AND OF GREENLAND ESKIMO CRANIA

	Males			Females		
	Golovnin Bay and Sledge Island	Igloos	Greenland	Golovnin Bay and Sledge Island	Igloos	Greenland
Number of specimens	(8)	(27)	(49)	(13)	(25)	(52)
Vault:						
Length	19. 20	19. 25	18. 97	18. 03	18. 11	18. 04
Breadth	13. 70	13. 30	13. 61	13. 36	12. 72	12. 98
Height	14. 08	14. 02	13. 95	13. 21	13. 21	13. 12
Cranial index	*71. 3*	*69. 1*	*71. 8*	*74. 1*	*70. 2*	*72*
Height - breadth index	*102. 8*	*105. 5*	*102. 5*	*97. 9*	*104. 6*	*101*
Mean height index	*85. 6*	*86. 2*	*85. 7*	*84. 2*	*86. 4*	*84. 6*
Module	15. 66	15. 52	15. 51	14. 87	14. 72	14. 72
Face:						
Menton-nasion height	12. 70	12. 39	12. 38	11. 98	11. 21	11. 52
Alveolar point-nasion height	7. 90	7. 71	7. 61	7. 35	7. 01	7. 05
Breadth	14. 29	14. 16	14. 05	13. 25	13. 08	13. 03
Facial index, total	*88. 9*	*86. 9*	*87. 1*	*90. 4*	*86. 8*	*85. 7*
Facial index, upper	*55. 3*	*54. 5*	*54. 1*	*55. 4*	*53. 8*	*54. 1*
Orbits:						
Mean height	3. 65	3. 62	3. 64	3. 58	3. 47	3. 55
Mean breadth	4. 11	3. 97	3. 99	3. 92	4. 01	3. 85
Mean index	*88. 8*	*91. 3*	*91. 4*	*91. 2*	*91*	*92. 4*
Nose:						
Height	5. 58	5. 45	5. 24	5. 15	5. 02	4. 99
Breadth	2. 35	2. 37	2. 27	2. 29	2. 23	2. 20
Index	*42. 1*	*43. 6*	*43. 3*	*44. 5*	*44. 4*	*44*

A comparison of the Igloo and Greenland series shows striking similarities; hardly any two geographically separate groups originating from a single source could reasonably be expected to come nearer. The Igloo skulls are even narrower in the vault than the Greenlanders, which means so much farther away from the southwestern, midwestern, and Asiatic Eskimo; and offer a few other differences, but all these are of small moment, not affecting the essential relations of the two groups.

A comparison of the Igloo and Greenland series with the material from Golovnin Bay and Sledge Island shows also numerous similarities but with them some rather material differences. The differences are especially marked in the females, whose characteristics approach

more those of the midwestern Eskimo, which suggests that an important proportion of them may have been derived from the latter. However, even the males tend to differ. Both sexes show absolutely a somewhat broader skull than that of the northerners; in both sexes the skull, as seen from the cranial module, is slightly larger in the Seward Peninsula series than in either of the other groups; but the principal differences are seen in the face, which in the Seward Peninsula group is perceptibly larger and especially higher than it is in either the Igloo or the Greenland series. The orbits also in the southerners are larger and the nose is slightly higher.

On the whole it may be said that the resemblance of the Igloo crania to those of Greenland is closer than that to either or both of the series of Golovnin Bay and Sledge Island. This suggests the possibility that a similar though not quite the same differentiation in the skull may have taken place both in the Seward Peninsula and in the far north; though the possibility of a derivation of any one of the three groups from any of the others can not be discarded. So far as the skull is concerned a definite solution of the identity of the Igloo material would have to be, it would seem, postponed to the future.

The used data on the Greenland Eskimo skulls agree closely with those of Fürst and Hansen (Crania Groenlandica, fol., 1915), and also with the much fewer and scattered records of Virchow, Davis, Duckworth, Oetteking, Pittard, etc.,[40] on Eskimo skulls from Labrador.

Stature and strength.—The bones of the skeleton of the Igloo series show the people to have been of good height and of above medium Eskimo robustness. The principal measurements are given below, together with the corresponding ones on the western and the Yukon Eskimo. The material is not all that could be wished for, either in numbers or representation, but it will suffice for rough comparisons. Regrettably nothing for comparison is available as yet from Greenland or other parts of the far northeast where we meet with long, narrow, and high skulls.

[40] For more exact references see writer's Contribution to the Anthropology of Central and Smith Sound Eskimo, Anthrop. Papers Am. Mus. Nat. Hist., N. Y., 1910, v, pt. 2; and the bibliography at the end of this volume.

THE LONG BONES OF THE IGLOO PEOPLE AND OTHER ESKIMO BONES OF THE TWO SIDES TOGETHER

	Male			Female		
	Igloo	Seward Peninsula and northwestern Eskimo	Yukon Eskimo	Igloo	Seward Peninsula and northwestern Eskimo	Yukon Eskimo
Humerus: Length-maximum	(35) 31. 17	(100) 31. 17	(16) 32. 10	(27) 28. 41	(83) 28. 82	(16) 28. 31
At middle:						
Diameter, major	2. 47	2. 46	2. 33	2. 11	2. 15	2. 07
Diameter, minor	1. 86	1. 85	1. 80	1. 60	1. 62	1. 51
Index	*75. 2*	*75. 1*	*78. 2*	*76. 1*	*75. 1*	*73. 2*
Radius: Length, maximum	(31) 23. 53	(37) 23. 50	(16) 23. 44	(17) 20. 98	(24) 21. 35	(16) 20. 18
Radio-humeral index	*75. 5*	*75. 4*	*73*	*73. 8*	*74*	*71. 3*
Femur: Length, bicondylar	(33) 43. 86	(60) 43. 46	(22) 43. 78	(25) 40. 31	(31) 40. 44	(27) 41. 11
Humero-femoral index	*71. 1*	*71. 7*	*73*	*70. 5*	*71. 3*	*69*
At middle:						
Diameter, antero-posterior	3. 37	3. 21	3. 05	2. 88	2. 88	2. 74
Diameter, lateral	2. 90	2. 72	2. 67	2. 51	2. 56	2. 44
Index	*86. 1*	*84. 8*	*87. 6*	*87. 3*	*88. 9*	*88. 8*
At upper flattening:						
Diameter, maximum	3. 51	3. 32	3. 31	3. 09	3. 06	3. 02
Diameter, minimum	2. 71	2. 59	2. 57	2. 30	2. 40	2. 27
Index	*77. 2*	*78. 1*	*77. 4*	*74. 4*	*78. 4*	*75. 4*
Tibia: Length in position	(29) 35. 60	(79) 35. 52	(22) 35. 14	(24) 31. 94	(36) 32. 50	(27) 32. 01
Tibio-femoral index	*81. 2*	*81. 7*	*80. 3*	*79. 2*	*80. 4*	*79. 3*
At middle:						
Diameter, antero-posterior	3. 26	3. 19	3. 16	2. 80	2. 75	2. 61
Diameter, lateral	2. 20	2. 16	2. 15	1. 87	1. 92	1. 90
Index	*67. 5*	*67. 8*	*68. 3*	*66. 7*	*70*	*72. 8*

The above table shows some remarkable and interesting conditions.

The first of the most apparent facts is that the type of the Yukon Eskimo stands well apart from both of the other series in a number of essentials, showing that it is not very nearly related and that it may be left out of consideration.

On the other hand the long bones from the Seward Peninsula and the northwest coast, especially those of the males, show very closely to

those of the Igloo group. The male bones of the two series are almost identical, except that the Igloo bones are somewhat stronger.

Such close resemblances can hardly be fortuitous. They speak strongly for the basic identity of the old Igloo people with those of at least parts of the Seward Peninsula and parts of the northwest coast. If we take the bones from the Seward Peninsula alone (see p. 314) it is found that these resemblances still hold.

The evidence thus shown constitutes a strong indication that the old Igloo group may be inherently related to that part of the Eskimo population of Seward Peninsula which shows the long and narrow skull; but the data offer no light on the questions as to whether the Igloo group may have been derived from that of the Seward Peninsula or vice versa, and on the true relation of either or both of these to the Eskimo of Baffin Land, Greenland, and Labrador.

To definitely decide the problem of the Igloo group there are needed data on the long bones of the northeasterners; in the second place it is highly desirable to know how large and how ancient was the group of the narrow-headed people on the Seward Peninsula and Sledge Island; and in the third place it is important that the cultural history of the two groups be known as thoroughly as possible. All of which are tasks for the future.

The possibility of a development of the Igloo cranial type on the northwest coast itself can not be denied, in view of the facts that all its characteristics are within the ranges of normal individual variations on that coast, and that similar developments have evidently been realized elsewhere. But in such a case it would be logical to expect, locally or not far away, some ancestry of the group, and the group would not probably be limited to a little spot and a few scores of persons. Had the group developed incidentally from a physically exceptional family, it could not be expected to have been anywhere nearly as uniform as the group under consideration. The high degree of uniformity of the Igloo contingent speaks for a well accomplished differentiation; and as there is no other trace of this in the conditions near Barrow, and there are no ruins denoting a long occupation, the evidence is against a local development and for an immigration of the group. A coming of a small-sized contingent from the Seward Peninsula would be easy; its coming from Greenland or Labrador or Baffin Land would surely be difficult, but not impossible to the Eskimo, who is known to have been a traveler.

Whatever may be the eventual solution of the Igloo problem, it is plain that the presence of that group near Barrow, together with the presence of evidently closely related groups in a part of the Seward Peninsula and again in the far east of the Eskimo region, offers much food for thought and investigation. The most plausible possibility

would seem to be a relatively late (within the present millennium) coming of a physically already well differentiated small group, from either the south or the east, with a relatively short settlement at the Barrow site, some local multiplication in numbers, and then extinction partly through disease, partly perhaps through absorption into a stronger and newer contingent derived from the western people.

ORIGIN AND ANTIQUITY OF THE ESKIMO

All anthropological research on the Eskimo has naturally one ultimate object, which is the clearing up of the problems of the origin and antiquity of this highly interesting human strain; and it may well be asked what further light on these problems has been shed by the studies here dealt with. To show this with a proper perspective it will be requisite to briefly review the previous ideas on these problems.

Origin of the Name "Eskimo"

According to Charlevoix (Nouv. France, III, 178), the term "Eskimo" is a corruption of the Abenaki Indian Esquimantsic or the Ojibway Ashkimeg, both terms meaning "those who eat raw flesh." In the words of Captain Hooper,[41] "Neither the origin nor meaning of the name 'Esquimaux,' or Eskimo, as it is now spelled, is known. According to Doctor Rink, the name 'Esquimaux' was first given to the inhabitants of Southern Labrador as a term of derision by the inhabitants of Northern Labrador, and means raw-fish eater. Dall says the appellation 'Eskimo' is derived from a word indicating a sorcerer or shaman in the language of the northern tribes."

For Brinton,[42] as for Charlevoix, the term "Eskimo" is derived from the Algonkin "Eskimantick," "eaters of raw flesh." According to Chamberlain,[43] Sir John Richardson (Arctic Searching Exp., p. 203) attempts to derive it from the French words ceux qui miaux (miaulent), referring to their clamorous outcries on the approach of a ship. Petitot (Chambers Encyc., Ed. 1880, IV, p. 165, article Esquimaux) says that at the present day the Crees, of Lake Athabasca, call them Wis-Kimowok (from Wiyas flesh, aski raw, and mowew to eat), and also Ayiskimiwok (i. e., those who act in secret). In Labrador the English sometimes call the Eskimo "Huskies" (loc. cit., p. ix. 7. Chambers Encyc, article Esquimaux. See Hind. Trav. in Int. of Labr., loc. cit., and Petitot loc. cit., p. ix.) and Suckemos

[41] Hooper, C. L., Cruise of the U. S. revenue steamer *Corwin*, 1881. Washington, 1884, p. 99.

[42] Brinton, D. C., Myths of the New World, 1868, p. 23. New York.

[43] Chamberlain, A. F., The Eskimo race and language. Proc. Canadian Inst., 3d ser., vol. VI, pp. 267–268. Toronto, 1889.

(Richardson, Arctic Searching Expedition, p. 202) and Dall (Proc. Am. Ass. Adv. Sci., 1869, p. 266) says that in Alaska the Tinneh Indians call them "Uskeeme" (sorcerers).

The Eskimo call themselves "Innuit," said to be the plural of in-nu, the man, hence "the people"; the same being as a rule the meaning of the name by which the various tribes of the Indian call themselves.

On the Asiatic coast the Eskimo is known as the "Yuit," "Onkilon," "Chouklouks," or "Namollo"; while in the east appears the name "Karalit."

None of this has thrown any light on the origin of the Eskimo.

Opinions By Former and Living Students

Origin in Asia.—Many opinions on the origin of the Eskimo have been expressed by different authors. Among the earliest of these were those of missionaries, such as Crantz (1779), and of the early explorers, such as Steller, v. Wrangell, Lütke and others. They were based on the general aspect of the Eskimo, particularly that of his physiognomy; and seeing that in many features he resembled most the mongoloid peoples of Asia they attached him to these, which meant the conclusion that he was of Asiatic derivation. Quite soon, however, there began to appear also the opinions of students of man. The first of these was that of Blumenbach, as expressed in his Inaugural Thesis of 1781. In this thesis, more particularly its second edition, he classifies the Eskimo expressly as a part of the Caucasian or white race. But after obtaining an Eskimo skull and an Eskimo body he changes his opinion and in 1795–1806 he comes out with a definite classification of the Eskimo as a member of the Mongolians; and a similar conclusion, with its implied or expressed consequence of a migration from Asia to America, has been reached since, mainly on somatological but also in part on linguistic and cultural bases, by a large number of authors, including Lawrence, Morton, Pickering, Latham, Flower, Peschel, Topinard, Brinton, Virchow (1877), Quatrefages and Hamy (1882), Thalbitzer, Bogoras and numerous others. With all of this, the conception of the Asiatic origin of the Eskimo has not passed the status of a strong probability, lacking a final conclusive demonstration.

A chronological list of the more noteworthy individual statements is given at the end of this section.

Origin in America.—Since the earlier parts of the nineteenth century the opinion began to be expressed that the Eskimo is not of Asiatic but of American origin. Already in 1847 Prichard tells us that there are those who "consider them as belonging to the American family," and he plainly favors this conception.

Between 1873 and 1890 the American origin of the Eskimo is repeatedly asserted by Rink, who for 16 winters and 22 summers lived with the eastern Eskimo, first as a scientific explorer and later as royal inspector or governor of the southern Danish settlements in Greenland (preface by R. Brown to Rink's Tales and Traditions, 1875). In this opinion, briefly, the Eskimo were derived from the inland Indian tribes of Alaska; without referring to the origin of the Indian.

Rink's authoritative opinion was followed or paralleled by Daniel Wilson (1876), Grote, Krause, Ray, Keane, Brown, and others. In 1887 Chamberlain expresses the somewhat startling additional theory that it was not the Eskimo who was derived from the Mongolians but the Mongolians from the Eskimo or their American ancestors. And in 1901–1910 Boas comes to the conclusion that the Eskimo probably originated from the inland tribes (Indian?) in the Hudson Bay region.

An interesting case in these connections is that of Rudolf Virchow. In 1877 (see details at the end of this section) he expresses the belief in the Eskimo coming from Asia; in 1878 he seems to be uncertain; and in 1885 he comes out in support of the opinion that the original home of the Eskimo may have been in the western part of the Hudson Bay region. Among later students of the problem, Steensby [44] and Birket-Smith [45] incline on cultural grounds to this hypothesis.

Wissler, not explicit as to the Eskimo in 1917 (The American Indian), in 1918 (Archæology of the Polar Eskimo) finds, after Steensby, the most acceptable theory of the Eskimo origin to be that "they expanded from a parent group in the Arctic Archipelago"; but in 1922, in the second edition of his The American Indian, he repeats word for word his opinion of 1917, which appears to favor an Asiatic derivation.

Origin in Europe—Identity with Upper Palæolithic man.—About the sixties of last century growing discoveries in France of implements, etc., of later palaeolithic man brought about a realization that not a few of these implements and other objects, particularly those of the Magdalenian period, resembled like implements and objects of the Eskimo; from which, together with the considerations of the similarities of fauna (reindeer, musk-ox, etc.), and of climate, there was but a step to a more or less definite identification of the Magdalenians and Solutreans with the Eskimo. In 1870 Pruner-Bey [46] claims a similarity between Solutrean and Eskimo skulls. In 1883

[44] Contr. Ethn. and Anthropogeog. Polar Eskimos, Med. om Gronl., xxxiv, Copenhagen, 1910; also, Origin of the Eskimo culture, *ibid.*, 1916, 204–218.

[45] Internat. Congr. Americanists, New York, 1928.

[46] In Ferry, H. de, Le Maconnais prehistorique, etc., 1 vol, Macon, 1870, with a section by Pruner-Bey.

these views received the influential support of De Mortillet (see details). In 1889 the theory receives strong support from the characteristics of the Chancelade (Magdalenian) skeleton which Testut declares are in many respects almost identical with those of the Eskimo. And within the next few years the notion is upheld by Hamy and Hervé. It remains sympathetic as late as 1913 to Marcellin Boule, and finds most recent champions in Morin and Sollas.

However, there were also many who opposed the effort at a direct connection of the upper palaeolithic man of Europe and the Eskimo. Among these were Geikie, Flower, Rae, Daniel Wilson, Robert Brown, Dechelette, Laloy. At present the theory is supported mainly by Morin and Sollas, opposed by Steensby, Burkitt, Keith, MacCurdy, and others; while most students of the Eskimo ignore the question.

Other hypotheses.—Besides the preceding ideas which attribute the origin of the Eskimo to Asia, or America, or old Europe, there were also others that failed to receive a wider support; and there were authors and students who remained undecided or were too cautious to definitely formulate their beliefs. Some of the former as well as the latter deserve brief mention.

Gallatin, in 1836, mainly on linguistic grounds, recognizes the fundamental relation of the Eskimo and the Indian and seems inclined to the American origin of the former, but makes no clear statement to that effect. For Meigs (1857), who probably followed an earlier opinion, the Eskimo came "from the islands of the Polar Sea." C. C. Abbott (1876) saw Eskimo in the early inhabitants of the Delaware Valley. To Grote (1875, 1877), the Eskimo were "the existing representatives of the man of the American glacial epoch"; they were modified Pliocene men. Nordenskiöld (1885) follows closely Meigs and Grote; the Eskimo may be "the true autochthones of the Polar regions," having inhabited them from before the glacial age, during more genial climate. Keane (1886) believed the Eskimo developed from the Aleuts. For De Quatrefages (1887), man originated in the Tertiary in northern Asia, spread from there, and some of his contingents may have reached America and been the ancestors of the Eskimo; the western tribes of the latter being a mixture of the Eskimo with Asiatic brachycephals. Nansen (1893) avoids a discussion of the origin of the Eskimo; and the same caution is observable more or less in most modern writers.

The following chart of the more noteworthy opinions regarding the origin of the Eskimo will show at a glance the diversity of the views and their lack of conclusiveness.

THEORIES AS TO THE ORIGIN OF THE ESKIMO

Asiatic:
- Steller 1743
- Cranz 1779
- Blumenbach 1795
- Lawrence 1822
- Von Wrangell 1839
- Morton 1839
- McDonald 1841
- Latham 1850
- Pickering 1854
- Wilson 1863
- Rae 1865, 1877–78, 1886
- Markham 1865, 1875
- Whymper 1869
- Peschel 1876
- Kuhl 1876
- Petitot 1876
- Topinard 1877
- Virchow 1877
- Dall 1877
- Palmer 1879
- Henry 1879
- Dawson 1880
- Quatrefages 1882, 1887
- Elliot 1886
- Flower 1886
- Brown 1888
- Ratzel 1897
- Hrdlička 1910, 1924

Asiatic—Con.
- Thalbitzer 1914
- Fürst and Hansen 1915
- Wissler 1917
- Mathiassen 1921
- Bogoras 1924, 1927

American:
- Prichard 1847
- Rink 1873, 1888
- Holmes 1873
- Wilson 1876
- Grote 1877
- Krause 1883
- Ray 1885
- Virchow 1885
- Keane 1886, 1887
- Brown 1888
- Murdoch 1888
- Chamberlain 1889
- Quatrefages 1889
- Boas 1907, 1910
- Wissler 1917

European or connected with Europe:
- Lartet and Christy 1864
- Dawkins 1866
- Hervé 1870
- Abbott 1876
- De Mortillet 1883

European—Con.
- Testut 1889
- Boule 1913
- Sollas 1924, 1927

Opposed to Europe:
- Brown.
- Burkitt.
- Dechelette.
- Flower.
- Geikie.
- Keith.
- Laloy.
- MacCurdy.
- Rae.
- Steensby.
- Wilson.
- Hrdlička (1910).

Miscellaneous and indefinite:
- Gallatin 1836
- Richardson 1852
- Meigs 1857
- Grote 1875
- Abbott 1876
- Nordenskiöld 1885
- Keane 1886
- Quatrefages 1887
- Nansen 1893
- Tarenetzky 1900
- Nadaillac 1902
- Jenness 1928

ASIATICS

Steller, 1743:[47] Several references which indicate that Steller regarded the Eskimo as related to the northeastern Asiatics.

Cranz, 1779:[48] Points out the resemblances of the Eskimo (and their product) to the Kalmuks, Yakuts, Tungus, and Kamchadales, and derives them from northeastern Asia (forced by other peoples through Tartary to the farthest northeast of Asia and then to America).

Blumenbach, 1781:[49] The first of the five varieties of mankind "and the largest, which is also the primeval one, embraces the whole

[47] Steller, G. W., Journal, 1743. Transl. and repr. in Bering's Voyages, Am. Geog. Soc. Research, ser. I, 2 vols., vol. II, p. 9 et seq. New York, 1922.

[48] Cranz, David, Historie von Grönland. Frankf. and Leipz., 1779, 300–301.

[49] Blumenbach, J. F., De generis humani varietate nativa. 2d ed., Goettingen, 1781; in The anthropological treatises of J. F. Blumenbach, Anthr. Soc. Lond., 1865, p. 99, ftn. 4.

of Europe, including the Lapps, * * * and lastly, in America, the Greenlanders and the Esquimaux, for I see in these people a wonderful difference from the other inhabitants of America; and, unless I am altogether deceived, I think they must be derived from the Finns."

But in his "Beiträge zur Naturgeschichte," 2d ed., Göttingen, 1806, Blumenbach classes both the Lapps and the Eskimo with the Mongolians (Anthr. Treatises of Blumenbach, Lond., 1865, p. 304): "The remaining Asiatics, except the Malays, with the Lapps in Europe, and the Esquimaux in the north of America, from Bering Strait to Labrador and Greenland. They are for the most part of a wheaten yellow, with scanty, straight, black hair, and have flat faces with laterally projecting cheek bones, and narrowly slit eyelids."

Von Wrangell, 1839:[50] "* * * ihre sclavische Abhängigkeit von den Rennthier-Tschuktschen beweist, dass die letztern spätere Einwanderer und Eroberer des Landes sind, welches sie jetzt inne haben."

Lawrence, 1822:[51] "The Mongolian variety * * * includes the numerous more or less rude, and in great part nomadic tribes, which occupy central and northern Asia: * * * and the tribes of Eskimaux extending over the northern parts of America, from Bering Strait to the extremity of Greenland. * * *.

"The Eskimaux are formed on the Mongolian model, although they inhabit countries so different from the abodes of the original tribes of central Asia."

Latham, 1850:[52] "Our only choice lies between the doctrine that makes the American nations to have originated from one or more separate pairs of progenitors, and the doctrine that either Bering Strait or the line of islands between Kamskatka and the Peninsula of Alaska, was the highway between the two worlds—from Asia to America, or vice versa. * * * Against America, and in favor of Asia being the birthplace of the human race—its unity being assumed—I know many valid reasons. * * * Physically, the Eskimo is a Mongol and Asiatic. Philologically, he is American."

1851:[53] "Just as the Eskimo graduate in the American Indian, so do they pass into the populations of northeastern Asia—language being the instrument which the present writer has more especially

[50] Von Wrangell, in Baer and Helmersen's "Beiträge zur Kenntniss des Russischen Reiches," pp. 58–59. St. Petersburg, 1839.

[51] Lawrence, W., Lectures on physiology, zoology, and the natural history of man, pp. 511–513. London, 1822.

[52] Latham, Robert Gordon, The Natural history of the varieties of man, pp. 289–291. London, 1850.

[53] Latham, Robert Gordon, Man and his migrations, p. 124. London, 1851.

employed in their affiliation. From the Peninsula of Alaska to the Aleutian chain of islands, and from the Aleutian chain to Kamskatka is the probable course of the migration from Asia to America—traced backwards, i. e., from the goal to the starting point, from the circumference to the center."

Pickering, 1854:[54] "The Aretic Regions seem exclusively possessed by the Mongolian race."

Wilson, 1863:[55] "The same mode of comparison which confirms the ethnical affinities between the Esquimaux and their insular or Asiatic congeners, reveals, in some respects, analogies rather than contrast between the doliehocephalic Indian crania and those of the hyperborean race."

Markham, 1856:[56] "The interesting question now arises—whence came these Greenland Esquimaux, these Innuit, or men, as they call themselves, and as I think they ought to be called by us? They are not descendants of the Skroellings of the opposite American coast, as has already been seen. It is clear that they can not have come from the eastward, over the ocean which intervenes between Lapland and Greenland, for no Esquimaux traces have ever been found on Spitzbergen, Iceland, or Jan Mayen. We look at them and see at once that they have no kinship with the red race of America; but a glance suffices to convince us of their relationship with the northern tribes of Siberia. It is in Asia, then, that we must seek their origin."

Whymper, 1869:[57] "That the coast natives of northern Alaska are but Americanized Tchuktchis from Asia, I myself have no doubt."

Peschel, 1876:[58] "The identity of their language with that of the Namollo, their skill on the sea, their domestication of the dog, their use of the sledge, the Mongolian type of their faces, their capability for higher civilization, are sufficient reasons for answering the question, whether a migration took place from Asia to America or conversely from America to Asia, in favor of the former alternative; yet such a migration from Asia by way of Bering Strait must have occurred at a much later period than the first colonization of the New World from the Old one * * *.

"It is not likely that the Eskimo spread from America to Asia, because of all Americans they have preserved the greatest resemblance in racial characters to the Mongolian nations of the Old

[54] Pickering, Charles, The races of man, p. 7. London, 1854.

[55] Wilson, Daniel, Physical ethnology. Smithsonian Report for 1862, p. 262. Washington, 1863.

[56] Markham, C. R., On the origin and migrations of the Greenland Esquimaux. J. Roy. Geog. Soc., xxxv, p. 90. London, 1865.

[57] Whymper, Frederick, Travels in Alaska and on the Yukon, p. 214. New York, 1869.

[58] Peschel, Oscar, The races of man, pp. 396–97. New York, 1876.

World, and in historical times their migrations have always taken place in an easterly direction."

Kuhl, 1876:[59] "Bilden so die Eskimo in der Sprache das Bindeglied zwischen America und Asien, so ist dies noch viel mehr der Fall in Bezug auf ihren Typus: dieser stimmt bei den Polarvölkern diesseits und jenseits der Beringsstrasse 'zum Verwechseln' überein, wie denn auch ein beständiger Verkehr hinüber und herüber stattfindet. Hierin liegt der unwiderstehliche Beweis, dass diese Polarvölker wenigstens von einer Herkunft sind und dass eine Einwanderung von einem Continente in das andere hier stattgefunden hat. Haben wir nun die Wahl, entweder die Eskimo aus Asien nach America, oder die Tschuktschen, die dort auf der Asiatischen Seite wohnen, aus America einwandern zu lassen—wofür sich auch Stimmen erhoben haben—so werden wir keinen Augenblick zweifelhaft sein: eine spätere Rückwanderung eines einzelnen Stammes in das Land der Väter wäre immerhin denkbar; aber wer über die Tschuktschen hinweg die Sache in's Grosse sieht, kann für die Urzeit nur eine Einwanderung von Asien nach America, nicht umgekehrt, annehmen, und hierfür finden wir ausser den allgemeinen Gründen, welche uns der Verlauf unserer Untersuchungen nahe gebracht, noch zwei besondere Beweise bei den Eskimo: einmal können wir die Spur ihrer Wanderungen historisch verfolgen, und diese waren nach Osten gerichtet, sodass sie Grönland, mit dem heute ihr Name so eng verbunden ist, zuletzt erreichten (S. 209); sodann haben die Eskimo allein unter den Americanischen Stämmen das Mongolische Gepräge ganz unversehrt bewahrt—dies bliebe unerklärlich, wenn sie Americanische Autochthonen wären * * * Einen deutlichen Hinweis auf die Urheimath Asien enthalten auch die Wanderungen der Stämme durch das Americanische Continent, soweit wir dieselben verfolgen können."

Dall, 1877:[60] "I see, therefore, no reason for disputing the hypothesis that America was peopled from Asia originally, and that there were successive waves of emigration.

"The northern route was clearly by way of Bering Strait; * * * Linguistically, no ultimate distinction can be drawn between the American Innuit and the American Indian. * * * I shall assume, what is also assumed by Mr. Markham, that the original progenitors of the Innuit were in a very primitive, low, and barbarous condition. * * *

"I assume, then, that the larger part of North America may have been peopled by way of Bering Strait. * * * I believe that this

[59] Kuhl, Dr. Joseph, Die Anfänge des Menschengeschlechts und sein einheitlicher Ursprung, pp. 315–16. Leipzig, 1876.

[60] Dall, W. H., Tribes of the extreme northwest. U. S. Geog. and Geol. Survey, 1, pp. 93–105. Washington, 1877.

emigration was vastly more ancient than Mr. Markham supposes, and that it took place before the present characteristics of races and tribes of North American savages were developed. * * *

"My own impression agrees with that of Doctor Rink that the Innuit were once inhabitants of the interior of America; that they were forced to the west and north by the pressure of tribes of Indians from the south; that they spread into the Aleutian region and northwest coast generally, and possibly simultaneously to the north; that their journeying was originally tentative, and that they finally settled in those regions which afforded them subsistence, perhaps after passing through the greater portion of Arctic America, leaving their traces as they went in many places unfit for permanent settlement; that after the more inviting regions were occupied, the pressure from Indians and still unsatisfied tribes of their own stock, induced still further emigration, and finally peopled Greenland and the shores of northeastern Siberia; but that these latter movements were, on the whole, much more modern, and more local than the original exodus, and took place after the race characteristics and language were tolerably well matured. * * *

"I conclude that at present the Asiatic Innuit range from Koliuchin Bay to the eastward and south to Anadyr Gulf. * * *

"To the reflux of the great wave of emigration, which no doubt took place at a very early period, we may owe the numerous deserted huts reported by all explorers on the north coasts of Asia, as far east as the mouth of the Indigirka. At one time, I thought the migration to Asia had taken place within a few centuries, but subsequent study and reflection has convinced me that this could not have been the case. No doubt successive parties crossed at different times, and some of these may have been comparatively modern."

Rae, 1878:[61] "All the Eskimos with whom I have communicated on the subject, state that they originally came very long ago from the west, or setting sun, and that in doing so they crossed a sea separating the two great lands.

"That these people (the Eskimos) have been driven from their own country in the northern parts of Asia by some unknown pressure of circumstances, and obliged to extend themselves along the whole northern coast line of America and Greenland, appears to be likely, and that the route followed after crossing Bering Strait was of necessity along the coast eastward, being hemmed in by hostile Indians on the south, and driven forward by pressure from the west * * *.

"Such were my opinions 12 years ago, and their correctness has been rather confirmed than otherwise, by all that we have since learned. * * *"

[61] Rae, John, Eskimo Migrations. Jour. Anthrop. Inst. Great Britain and Ireland, VII, pp. 130–131. London, 1878.

1887:[62] "Professor Flower said that his investigation into the physical characteristics of the Eskimos led him to agree entirely with Doctor Rae's conclusions derived from other sources. He looked upon the Eskimos as a branch of the North Asiatic Mongols (of which the Japanese may be taken as a familiar example), who in their wandering across the American continent in the eastward direction, isolated almost as perfectly as an island population would be, hemmed in on one side by the eternal polar ice, and on the other by hostile tribes of American Indians, with whom they rarely, if ever, mingled, have gradually developed special modifications of the Mongolian type, which increase in intensity from west to east, and are seen in their greatest perfection in the inhabitants of Greenland. * * *

"Doctor Rae also thinks that the Eskimos came from across Bering Strait from Asia. Their traditions and many other things point in that direction, and they are in no way related to the ancient cave men of Europe."

Dawson, 1880:[63] Eskimo: "On the eastern side of the continent these poor people have always been separated by a marked line from their Indian neighbors on the south, and have been regarded by them with the most bitter hostility. On the west, however, they pass into the Eastern Siberians, on the one hand, and into the West-coast Indians, on the other, both by language and physical characters. They and the northern tribes at least of West-coast Indians, belong in all probability to a wave of population spreading from Bering Strait."

Quatrefages et Hamy, 1882:[64] "Les Esquimaux ou Eskimos, qui se nomment eux-mêmes Innuits, constituent dans la série mongolique un groupe exceptionnel, qui diffère à maints égards de ceux qui viennent de passer sous nos yeux, mais dont l'origine asiatique n'est plus aujourd'hui contestée et dont les affinités occidentales frappent de plus en plus les observateurs spéciaux."

Brown, 1888:[65] "It is only when we come to the region beginning at Cape Shelagskii and extending to the East Cape of Siberia that we find any traces of them. This tract is now held by the coast Tchukchi, but it was not always their home, for they expelled from this dreary stretch the Onkilon or Eskimo race who took refuge in or near less attractive quarters between the East Cape and Anadyrskii Bay."

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[62] Rae, John, Remarks on the Natives of British North America. Jour. Anthrop. Inst. Great Britain and Ireland, XVI, p. 200. London, 1887.

[63] Dawson, J. W., Fossil men and their modern representatives, pp. 48–49. Montreal, 1880.

[64] Quatrefages, A. de, et Hamy, E. T., Crania ethnica. Les crânes des races humaines, p. 437. Paris, 1882.

[65] Brown, Robert, The origin of the Eskimo. The Archaeological Review, I, No. 4, pp. 238–289. London, 1888.

Ratzel, 1897:[66] "If we ask whence they came, Asia seems most obvious, since between the American and Asiatic coasts of Bering Straits, intercourse has always been ventured upon even in the rudest skin-boats. * * *

"Ethnographic indications also point predominantly to the west. * * *

"But we have an equal right to suppose a migration from America into Asia."

Thalbitzer, 1914:[67] "I still believe (like Rink), that the common Eskimo mother-group has at one time lived to the west at the Bering Strait, coming originally from the coasts of Siberia."

Fürst and Hansen, 1915:[68] "We are to some extent acquainted with the diffusion of the Eskimos over the earth, and know that they could not have come directly from Europe and that Greenland was populated from the west, one may naturally conclude, as has often been concluded before, that their descent is from the west, in other words from Asia, though the time at which such an immigration took place and the racial type which they then possessed must remain still more hypothetical than immigration itself."

Mathiassen, 1927:[69] "We must therefore imagine that the Thule culture, with all its peculiar whaling culture, has originated somewhere in the western regions, in an Arctic area, where whales were plentiful and wood abundant, and we are involuntarily led toward the coasts of Alaska and East Siberia north of Bering Strait, the regions to which we have time after time had to turn in order to find parallels to types from the Central Eskimo finds. There all the conditions have been present for the originating of such a culture, and from there it has spread eastward right to Greenland, seeking everywhere to adapt itself to the local geographical conditions. And it can hardly have been a culture wave alone; it must have been a migration. The similarities between east and west are in many directions so detailed that it is difficult to explain them without assuming an actual migration of people from the one place to the other."

Jochelson, 1928:[70] "In discussing the question of former Eskimo occupation of the Siberian Arctic coast a very remote period of time is not meant, so that in this sense the assumed recent Eskimo migrations from Asia into America and vice versa do not interfere with the general theory of the Asiatic origin of the American population."

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[66] Ratzel, Friedrich, The history of mankind, II, pp. 107–108. London, 1897.

[67] Thalbitzer, W., The Ammassalik Eskimo. Meddelelser om Grønland, vol. XXXIX, pt. 1, p. 717. Copenhagen, 1914.

[68] Fürst, Carl M., and Fr. C. C. Hansen, Crania Groenlandica, p. 228. Copenhagen, 1915.

[69] Mathiassen, Therkel, Archaeology of the central Eskimos. Report of the Fifth Thule Expedition 1921–1924, p. 184. Copenhagen, 1927.

[70] Jochelson, W., Peoples of Asiatic Russia. Am. Mus. Nat. Hist., p. 60. New York, 1928.

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Prichard, 1847:[71] "A question has been raised, to what department of mankind the Esquimaux belong. Some think them a race allied to the northern Asiatics, and even go so far as to connect them with the Mongolians. Others, with greater probability, consider them as belonging to the American family. All the American writers eminent for their researches in the glottology of the New World, among whom I shall mention Mr. du Ponceau and Mr. Gallatin, are unanimous in the opinion that the Esquimaux belong to the same great department of nations as the Hunting Tribes of North America."

Rink, 1890:[72] "* * * kann es wohl keinem Zweifel unterworfen sein, dass die Eskimos den sogenannten Nordwest-Indianern an der Küste Alaskas und weiter südwärts am nächsten stehen. Es dürfte deshalb der Untersuchung werth sein, ob sie nicht auch wirklich als das äusserste nördliche Glied dieser Völkerstämme zu betrachten wären. Man hat angenommen, dass diese letzteren, dem Laufe der Flüsse folgend, vom Binnenlande zur Küste gekommen sind. Sie lernten dann, theilweise und um so mehr wohl, je weiter nach Norden sich ihren Lebensunterhalt aus dem Meere zu verschaffen. Die Eskimos endigten damit, sich ausschliesslich der Jagd auf dem Meere zu widmen, und erlangten dadurch ihre merkwürdige Fähigkeit, allen Hindernissen des arktischen Klimas Trotz bieten zu können. Betrachten wir demnach, wie man vermeintlich noch jetzt die Spuren der Veränderungen beobachten kann, denen sie nach und nach unterworfen worden sind, indem sie sich, unserer Vermuthung zufolge, nach Norden und Osten verbreiteten."

Rink, 1873:[73] "As far as can now be judged, the Eskimo appear to have been the last wave of an aboriginal American race, which has spread over the continent from more genial regions, following principally the rivers and watercourses, and continually yielding to the pressure of the tribes behind them, until at last they have peopled the seacoast. * * *

"The author explains some of the most common traditions from Greenland as simply mythical narrations of events occurring in the far northwest corner of America, thereby pointing to the great probability of that district having been the original home of the nation, in which they first assumed the peculiarities of their present culture."

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[71] Prichard, James Cowles, Researches into the physical history of mankind, vol. v, p. 374. London, 1847.

[72] Rink, H., Die Verbreitung der Eskimo-Stämme. Congrès International des Américanistes, 1888, 221–22. Berlin, 1890.

[73] Rink, H., On the descent of the Eskimo. Mém. Soc. Roy. d. Antiquaires du Nord; Journ. anthrop. Inst., II, 1873, pp. 104, 106, 108.

Captain Pim also expressed his belief that "the Eskimo were pure American aborigines, and not of Asiatic descent."

Rink, 1875:[74] "If we suppose the physical conditions and the climate of the Eskimo regions not to have altered in any remarkable way since they were first inhabited, their inhabitants of course must originally have come from more southern latitudes, * * * it appears evident on many grounds that such a southern tribe has not been a coast people migrating along the seashore, and turning into Eskimo on passing beyond a certain latitude, but that they have more probably emerged from some interior country, following the river banks toward the shores of the polar sea, having reached which they became a coast people, and, moreover, a polar-coast people. The Eskimo most evidently representing the polar-coast people of North America, the first question which arises seems to be whether their development can be conjectured with any probability to have taken place in that part of the world. Other geographical conditions appear greatly to favor such a supposition * * *. The rivers taking their course to the sea between Alaska and the Coppermine River, seem well adapted to lead such a migrating people onward to the polar sea. * * *

"The probable identity of the 'inlanders' with the Indians has already been remarked on. When the new coast people began to spread along the Arctic shores, some bands of them may very probably have crossed Bering Strait and settled on the opposite shore, which is perhaps identical with the fabulous country of Akilinek. On the other hand, there is very little probability that a people can have moved from interior Asia to settle on its polar seashore, at the same time turning Eskimo, and afterwards almost wholly emigrated to America.

"On comparing the Eskimo with the neighboring nations, their physical complexion certainly seems to point at an Asiatic origin; but, as far as we know, the latest investigations have also shown a transitional link to exist between the Eskimo and the other American nations, which would sufficiently indicate the possibility of a common origin from the same continent."

Rink, 1875:[75] "The author, who has traveled and resided in Greenland for 20 years, and has studied the native traditions, of which he has preserved a collection, considers the Eskimo as deserving particular attention in regard to the question how America has been originally peopled. He desires to draw the attention of ethnologists to the necessity of explaining, by means of the mysterious early

[74] Rink, H., Tales and traditions of the Eskimo, pp. 70, 71, 72, 73. Edinburgh and London, 1875.

[75] Rink, H., On the descent of the Eskimo. In a Selection of Papers on Arctic Geography and Ethnology, Roy. Geog. Soc., pp 230, 232. London, 1875.

history of the Eskimo, the apparently abrupt step by which these people have been changed from probably inland or riverside inhabitants into a decidedly littoral people, depending entirely on the products of the Arctic Sea; and he arrives at the conclusion that, although the question must still remain doubtful, and dependent chiefly on further investigations into the traditions of the natives occupying adjacent countries, yet, as far as can now be judged, the Eskimo appear to have been the last wave of an aboriginal American race, which has spread over the continent from more genial regions, following principally the rivers and watercourses, and continually yielding to the pressure of the tribes behind them, until at last they have peopled the seacoast. * * *

"When we consider the existing intercourse between the inhabitants on both sides of Bering Strait, we find many circumstances to justify the conclusion that those traditions of the Greenland Eskimo refer to the origin of the Eskimo sledge dog from the training of the Arctic wolf, to the first journeys upon the frozen sea, and to intercourse between the aboriginal Eskimo and the Asiatic coast."

Rink, 1886:[76] "Grönland kann ja nur von Westen her seine eskimoische Bevölkerung empfangen haben. Dasselbe lässt sich mit Wahrscheinlichkeit auch von den nächsten Nachbarländern jenseits der Davisstrasse annehmen, und wenn wir diese Vermutung weiter erstrecken, gelangen wir zum Alaskaterritorium als der wahrscheinlichen Heimat der jetzt so weit zertreuten arktischen Volkes. Zunächst findet diese Annahme eine Bestätigung darin, dass die Eskimos hier nicht auf die Küste beschränkt, sondern auch längs der Flüsse ins Binnenland verbreitet sind, nur dass der ungeheure Fischreichtum dieser Flüsse es möglich gemacht haben kann, dass hier ursprünglich eine noch viel grössere Bevölkerung, als jetzt, sich sammelte, welche durch Auswanderung das notwendige Kontingent zur Entstehung der auf die Meeresküste beschränkten Stämme geliefert haben kann."

Wilson, 1876:[77] "Some analogies confirm the probability of a portion of the North American stock having entered the continent from Asia by Bering Strait or the Aleutian Islands; and more probably by the latter than the former. * * *

"In this direction, then, a North American germ of population may have entered the continent from Asia, diffused itself over the Northwest, and ultimately reached the valleys of the Mississippi, and penetrated to southern latitudes by a route to the east of the Rocky Mountains. Many centuries may have intervened between the first

[76] Rink, H., Die Ostgrönländer in ihrem Verhältnisse zu den Übrigen Eskimostämmen. Deutsch Geographische Blätter, IX, p. 229. Bremen, 1886.

[77] Wilson, Daniel, Prehistoric man, pp. 343–352. London, 1876.

immigration and its coming in contact with races of the southern continent; and philological and other evidence indicates that if such a northwestern immigration be really demonstrable, it is one of very ancient date. But so far as I have been able to study the evidence, much of that hitherto adduced appears to point the other way. * * *

"With Asiatic Esquimaux thus distributed along the coast adjacent to the dividing sea; and the islands of the whole Aleutian group in the occupation of the same remarkable stock common to both hemispheres: The only clearly recognizable indications are those of a current of migration setting toward the continent of Asia, the full influence of which may prove to have been more comprehensive than has hitherto been imagined possible. * * *"

Grote, 1877:[79] Regards the Eskimo as the original inhabitants of North America and believes they extended down to 50° in the eastern and 60° in the western part of the continent.

Krause, 1883:[80] "Ueberblickt man nun die gegenwärtige Verbreitung der Eskimos in Asien, so wird man der Ansicht von Dall und Nordenskiöld beistimmen, dass die asiatischen Eskimo aus Amerika eingewandert sind und nicht, wie Steller, Wrangell, und andere vermutheten, zurückgebliebene Reste einer ehemals zahlreicheren, nach Amerika hinübergezogenen Bevölkerung. Immerhin würde durch die Annahme eines amerikanischen Ursprunges der jetzigen Eskimobevölkerung die Möglichkeit früherer Wanderungen in entgegengesetzter Richtung nicht ausgeschlossen sein, nur giebt die gegenwärtige Verbreitung keinen Anhalt für eine solche, und historische Beweise fählen."

Ray, 1885:[81] "Of their origin and descent we could get no trace, there being no record of events kept among them. * * *

"That they have followed the receding line of ice, which at one time capped the northern part of this continent, along the easiest lines of travel is shown in the general distribution of a similar people, speaking a similar tongue, from Greenland to Bering Strait; in so doing they followed the easiest natural lines of travel along the watercourses and the seashore, and the distribution of the race today marks the routes traveled. The seashore led them along the Labrador and Greenland coasts; Hudson Bay and its tributary waters carried its quota towards Boothia Land; helped by Back's

[79] Grote, A. R., Buff. Daily Courier, Jan. 7, 1877 (q. by. R. Virchow, Z. Ethnol., Verh., IX, 1877, p. 69).

[80] Krause, Aurel, Die Bevölkerungsverhältnisse der Tschuktschenhalbinsel. Verh. Berl. Ges. Anthrop., etc., in Z. Ethn., XV. pp. 226-27. 1883.

[81] Ray, P. H., Ethnographic Sketch of the Natives. Report of the International Polar Expedition to Point Barrow, Alaska, pt. 2, p. 37. Washington, 1885.

Great Fish River, the Mackenzie carried them to the northwestern coast, and down the Yukon they came to people the shores of Norton Sound and along the coast to Cape Prince of Wales. They occupied some of the coast to the south of the mouth of the Yukon, and a few drifted across Bering Strait on the ice, and their natural traits are still in marked contrast with their neighbors, the Chuckchee. They use dogs instead of deer, the natives of North America having never domesticated the reindeer, take their living from the sea, and speak a different tongue. Had the migration come from Asia it does not stand to reason that they would have abandoned the deer upon crossing the straits."

Keane, 1886:[82] "Dr. H. Rink, in the current number of the Deutsche Geographische Blätter (Bermen, 1886) * * * makes it sufficiently evident that their primeval home must be placed in the extreme northwest, on the Alaskan shores of the Bering Sea * * * the Aleutian Islanders, who are treated by Doctor Rink as a branch of the Eskimo family, but whose language diverges profoundly from, or rather shows no perceptible affinity at all to, the Eskimo. The old question respecting the ethnical affinities of the Aleutians is thus again raised, but not further discussed by our author. To say that they must be regarded as 'ein abnormer Seitenzweig,' merely avoids the difficulty, while perhaps obscuring or misstating the true relations altogether. For these islanders should possibly be regarded, not 'as abnormal offshoot,' but as the original stock from which the Eskimos themselves have diverged. * * * Doctor Rink himself advances some solid reasons for bringing the Eskimo, not from Asia at all, or at least not in the first instance, but from the interior of the North American continent. He holds, in fact, with some other ethnologists, that they were originally inlanders, who, under pressure from the American Indians, gradually advanced along the course of the Yukon, Mackenzie, and other great rivers, to their present homes on the Bering Sea, and Frozen Ocean."

No individual or decided standpoint on the question is taken in the author's Man, Past and Present, 1920 edition.

Brown, 1881:[83] "The Eskimo are therefore an essentially American people, with a meridional range greater than that of any other race. * * *

"It is also clear that this migration has always been from west to east, as also has been that of the Indian tribes; * * *

"Did these hyperboreans come from Asia or are they evolutions, differentiations, as it were, of some of the other American races?

[82] Keane, A. H., The Eskimo. Nature, xxxv, pp. 309, 310. London, New York, 1886–87.
[83] Brown, Robert, The Origin of the Eskimo. The Archaeological Review, I, No. 4, pp. 240–250. London, 1888.

That all of the American peoples came originally from Asia, is, I think, an hypothesis for which a great deal might be said. Unless they originated there or were autochthonic, an idea which may at once be dismissed; they could scarcely have come from anywhere else, * * * but the central question is whether the Eskimo are of a later date than the Indians or are really Indians compelled to live under less favorable conditions than the rest of their kinsfolk. The latter will, I think, be found to be the most reasonable view to adopt. * * *

"Doctor Rink seems not far from the truth when he indicates the rivers of Central Arctic America as the region from whence the Eskimo spread northward. * * *

"It is not at all improbable that the original progenitors of the race may have been a few isolated families, members of some small Indian tribe, or the decaying remnants of a larger one. Little by little they were expelled from their hunting and fishing grounds on the original river bank until, finding no place amid the stronger tribes, they settled in a region where they were left to themselves. * * *

"It may, however, be taken as proved that the Eskimo are in no respect and never were a European people; that they are not and never were an Asiatic one, except to the small extent already described; that the handful of people settled on the Siberian shore migrated from America, and that it is very probable the Eskimo came from the interior of Arctic America, Alaska more likely than from any other part of the world."

Virchow, 1877:[84] "Ich möchte namentlich darauf aufmerksam machen, dass diejenigen, welche den nächsten Anknüpfungspunkt für die Urbevölkerung Amerika's bei den Eskimo's suchen, welche ferner die Sprache und die Formen der Eskimo's nach Asien hinein verfolgen, leicht ein petitio principii machen dürften, insofern als es wohl sein könnte, dass sie ein späteres Phänomen für ein früheres halten. Warum sollte nicht die Einwanderung der Eskimo's von Asien erst erfolgt sein, nachdem längst andere Theile des Continents ihre Bewohner erhalten hatten?"

1878:[85] "Nun ist es sehr bemerkenswerth, dass gegenüber dieser physiognomischen Aehnlichkeit der Eskimos und der Mongolen eine absolute Differenze Zwischen ihnen in Bezug auf die Schädelkapsel existirt" (examined six living Greenland Eskimos).

[84] Virchow, R., Anthropologie Amerika's. Verh. Berl. Ges. Anthr., etc., Jahrg. 1877 (with Z. Ethnol., 1877, IX), pp. 154–55.

[85] ——— Eskimos. Verh. Berl. Ges. Anthr., etc., 1878, pp. 185–189 (with Z. Ethnol., 1878, X), p. 186.

1885:[86] "Verbinden wir dieses mit dem Umstande, dass die Sagen der Ungava-Eskimos stets nach Norden über die Hudson-Strasse verlegt werden, dass man im Baffin-Lande stets über die Fury- und Hecla-Strasse fort nach Süden als dem Schauplatz alter Sagen hinweist, und dass die westlichen Eskimos ebenso den Osten als das Land ihrer sagenhaften Helden und Stämme betrachten, so gewinnt die Vermuthung an Wahrscheinlichkeit, dass im Westen des Hudson-Bay-Gebietes die Heimath der weitverbreiteten Stämme zu suchen ist."

Chamberlain, 1889:[87] "In a paper read before the Institute last year (Proc. Can. Inst., 3d. ser., Vol. V., Fasc. i., October, 1887, p. 70), I advanced the view that instead of the Eskimo being derived from the Mongolians of northeastern Asia, the latter are on the contrary descended from the Eskimo, or their ancestors, who have from time immemorial inhabited the continent of America."

Boas, 1901:[88] "All these data seem to me to prove conclusively that the culture of the Alaskan Eskimo is very greatly influenced by that of the Indians of the North Pacific coast and by the Athapascan tribes of the interior. This is in accord with the observation that their physical type is not so pronounced as the eastern Eskimo type. I believe, therefore, that H. Rink's opinion of an Alaskan origin of the Eskimo is not very probable. If pure type and culture may be considered as significant, I should say that the Eskimo west and north of Hudson Bay have retained their ancient characteristics more than any others. If their original home was in Alaska, we must add the hypothesis that their dispersion began before contact with the Indians. If their home was east of the Mackenzie, the gradual dispersion and ensuing contact with other tribes would account for all the observed phenomena. * * * On the whole, the relations of North Pacific and North Asiatic cultures are such that it seems plausible to my mind that the Alaskan Eskimo are, comparatively speaking, recent intruders, and that they at one time interrupted an earlier cultural connection between the two continents."

To which he adds in the second part of this work,[89] speaking of the Eskimo taboos: "It may perhaps be venturesome to claim that the marked development of these customs suggests a time when the Eskimo tribes were inland people who went down to the sea and gradually adopted maritime pursuits, which, however, were kept entirely apart from their inland life, although in a way this seems an attractive hypothesis.

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[86] Virchow, R., Eskimos. Verh. Berl. Ges. Anthr., etc., 1885, p. 165 (with Z. Ethnol., 1885, XVII).

[87] Chamberlain, A. F., The Eskimo Race and Language. Proc. Can. Inst., VI, p. 281. Toronto, 1889.

[88] Boas, F., Eskimo of Baffin Land and Hudson Bay. Bull. Am. Mus. Nat. Hist., XV, pp. 369–370. 1907.

[89] Ibid., XV, pt. 2, pp. 569–570. 1907.

Boas, 1910:[90] "There is little doubt that the Eskimos, whose life as sea hunters has left a deep impression upon all of their doings, must probably be classed with the same group of peoples. The much-discussed theory of the Asiatic origin of the Eskimos must be entirely abandoned. The investigations of the Jesup North Pacific Expedition, which it was my privilege to conduct, seem to show that the Eskimos must be considered as, comparatively speaking, new arrivals in Alaska, which they reached coming from the east."

Clark Wissler, 1917.[91] Page 363: "The New World received a detachment of early Mongoloid peoples at a time when the main body had barely developed stone polishing."

Pages 361–362: "Our review of New World somatic characters revealed the essential unity of the Indian population. It is also clear that there are affinities with the Mongoloid peoples of Asia. Hence, we are justified in assuming a common ancestral group for the whole Mongoloid-Red stream of humanity. We have already outlined the reasons for assuming the pristine home of this group to be in Asia."

Page 335: "For example, the Eskimos, whose first appearance in the New World must have been in Alaska, spread only along the Arctic coast belt to its ultimate limits."

1918[92]. Page 161: "The most acceptable theory of Eskimo origin is that they expanded from a parent group in the Arctic Achipelago."

1922.[93] Pages 368, 396, 398: Identical in every word again with that of 1917.

EUROPEAN

Dawkins, 1866:[94] "The sum of the evidence proves that man, in a hunter state, lived in the south of Gaul on reindeer, musk sheep, horses, oxen, and the like, at a time when the climate was similar to that which those animals now inhabit. To what race did he belong? In solving this the zoological evidence is of great importance. The reindeer and musk sheep now inhabit the northern part of the American Continent and are the principal land animals that supply the Esquimaux with food. The latter of these has departed from the Asiatic Continent, leaving remains behind to prove that it shared the higher northern latitudes of Asia with the reindeer, and this

[90] Boas, Franz, Ethnological Problems in Canada. Jour. Roy. Anthrop. Inst. Great Britain and Ireland, XL, p. 534. London, 1910.

[91] Wissler, Clark, The American Indian. New York, 1917.

[92] ——— Archaeology of the Polar Eskimo. Anthrop. Papers, Am. Mus. Nat. Hist., XXII, pt. 3, p. 161. New York, 1918.

[93] ——— The American Indian. New York, 1922.

[94] Dawkins, Boyd, In a Review of Lartet and Christy's "Cavernes du Périgord" (1864), in the Saturday Review, XXII, p. 713, 1866. [This review is not signed but is attributed to B. D.]

latter has retreated farther and farther north during the historical period. May not the race that lived on these two animals in southern Gaul have shared also in their northern retreat, and may it not be living in company with them still? The truth of such a hypothesis as this is found by an appeal to the weapons, implements, and habits of life of the Esquimaux. The fowling spear, the harpoon, the scrapers, the marrow spoons are the same in the ice huts of Melville Sound as in the ancient dwellings of southern Gaul. In both there is the same absence of pottery; in both bones are crushed in the same way for the sake of the marrow, and accumulate in vast quantities. The very fact of human remains being found among the relics of the feast is explained by an appeal to what Captain Parry observed in the island of Igloolik. Among the vast quantities of bones of walruses and seals, and skulls of dogs and bears found in the Esquimaux camp, were numbers of human skulls lying about among the rest, which the natives tumbled into the collecting bags of the officers without the least remorse. A similar carelessness for the dead was also observed by Sir J. Ross and Captain Lyon. This presence, then, of human remains in the south of Gaul is another link binding the ancient people then living there to the Esquimaux. Their small size also is additional evidence.

"The only inference that can be drawn from these premises is that the people in question were decidedly Esquimaux, related to them precisely in the same way as the reindeer and musk sheep of those days were to those now living in the high North American latitudes. The sole point of difference is the possession of the dog by the latter people, but in the vast lapse of time between the date of their sojourn in Europe and the present day the dog might very well have been adopted from some other superior race, or even reduced under the rule of man from some wild progenitor. By this discovery a new people is added to those which formerly dwelt in Europe. The severity of the climate in southern Gaul is proved by the northern animals above mentioned. As it became warmer musk sheep, reindeer, and Esquimaux would retreat farther and farther north until they found a resting place on the American shore of the great Arctic Sea. Possibly in the case of the Esquimaux the immigration of other and better-armed tribes might be a means of accelerating this movement."

Hamy, 1870:[95] "Il nous parait, comme à MM. de Quatrefages, Carter-Blake, Le Hon, etc., que les caractères anatomiques des races de Furfooz et de Cro-Magnon doivent leur faire prendre place dans le groupe hyperboréen."

[95] Hamy, E. T., Précis de paléontologie humaine, p. 355. Paris, 1870.

Dawkins, 1874[96]: In 1866, Boyd Dawkins, on the basis of the resemblances between the implements of the Eskimo and those of the later prehistoric man of Europe, advances the idea that the Eskimo were close kin to the palaeolithic man of Europe, before the scientific forum. In his Cave Hunting he says: "Palaeolithic man appeared in Europe with the arctic mammalia, lived in Europe along with them, and disappeared with them. And since his implements are of the same kind as those of the Eskimos, it may reasonably be concluded that he is represented at the present time by the Eskimos, for it is most improbable that the convergence of the ethnological and zoological evidence should be an accident."

1880:[97] "The probable identity of the cave men with the Eskimos is considerably strengthened by a consideration of some of the animals found in the caves. * * *

"All these points of connection between the cave men and the Eskimos can, in my opinion, be explained only on the hypothesis that they belong to the same race * * *."

The cave man: "From the evidence brought forward in this chapter, there is reason to believe that he is represented at the present time by the Eskimos."

Mortillet, 1889:[98] "Les Groënlandais, au point de vue paléoethnologique, présentent un très grand intérêt. Ils paraissent se relier très intimement aux hommes qui habitaient l'Europe moyenne pendant l'époque de la Madeleine. Ils seraient les descendants directs des Magdalèniens. Ils auraient successivement émigré vers le pôle, avec l'animal caractéristique de cette époque, le renne. Habitués aux froids les plus rigoureux de l'époque magdalénienne, ils se sont retirés dans les régions froides du Nord. * * *

"Comme on le voit, il y a la plus grande ressemblance, tant sous le rapport physique et moral que sous le rapport artistique et industriel entre les hommes de la Madeleine et les Groënlandais. Cette ressemblance est telle que nous pouvons en conclure que les seconds sont les descendants des premiers."

Testut, 1889:[99] "Parmi les races actuelles, celle qui me parait présenter la plus grande analogie avec l'homme de Chancelade est celle des Esquimaux qui vivent encore à l'état sauvage dans leg glaces de l'Amérique septentrionale. Ils ont, en effet, le même crâne que notre troglodyte quaternaire; leur face est constituée suivant le même type: ils ont, à peu de chose près, la même taille, le même indice pala-

[96] Dawkins, Boyd, Cave Hunting, p. 359. London, 1874.

[97] Dawkins, Boyd, Early Man in Britain, pp. 240, 241, 245. London, 1880.

[98] Mortillet, G. de, Les Groënlandais descendants des Magdaléniens. Bulletins de la Société d'Anthropologie, VI, pp. 868–870. Paris, 1883.

[99] Testut, L., Recherches anthropologiques sur le squelette quaternaire de Chancelade (Dordogne). Bull. Soc. d'anthrop., VIII, pp. 243–244. Lyon, Paris, 1889.

tin, le même indice nasal, le même indice orbitaire, le même degré de torsion de l'humérus, etc. * * *

"La découverte de Chancelade, en mettant en lumière une analogie frappante entre le squelette de notre troglodyte périgourdin et celui des Esquimaux actuels, apporte à cette opinion aussi séduisante que naturelle, l'appui de l'anthropologie anatomique qui, dans l'espèce, a une importance capitale. Elle lui est de tous points favorable et élève à la hauteur d'une vérité probable, je n'ose dire d'une vérité démontrée, ce qui n'était encore qu'une simple hypothèse."

Hervé, 1893:[1] "* * * * par leurs usages et par leurs moeurs, aussi bien que par leur matériel industriel et artistique, les Hyperboréens actuels (Tchouktches et Eskimaux) sont extrêmement voisins des Troglodytes magdaléniens de l'Europe occidentale; à ce point que Hamy a pu dire 'qu'ils continuent de nos jours, dan les régions circumpolaires, l'âge du renne de France, de Belgique, de Suisse, avec ses caractéristiques zoologiques, ethnographiques, etc.' (op. cit., 366). 'Nous avons vu, d'autre part, que les plus purs d'entre eux ne diffèrent pas anatomiquement des Magdaléniens. C'est donc au rameau hyperboréen que nous sommes amenés à rattacher, au point de vue ethnique, les dernières populations de l'Europe quaternaire.'"

Boule, 1913:[2] "On sait d'ailleurs, depuis les travaux de Testut sur l'Homme de Chancelade, que les relations des Esquimaux sont avec d'autres Hommes fossiles de nos pays, mais d'un âge géologique plus récent."

Sollas, 1924:[3] The Magdalenians are represented "in part, by the Eskimo on the frozen margin of the North American Continent and as well, perhaps, by the Red Indians. * * *" Due to pressure of stronger peoples, the ancestors of the Eskimo were present to the north; "but as there was no room for expansion in that direction, it was diverted toward the only egress possible, and an outflow took place into America over Bering Strait or the Aleutian Islands. The primitive Eskimo, already accustomed to a boreal life, extended along the coast."

1927:[4] "The assemblage of characters presented on the one hand by the Chancelade skull, and on the other by the Eskimo, are in very remarkable agreement, and that the onus of discovering a similar assemblage, but possessed by some other race, rests with those who refuse to accept what seems to me a very obvious conclusion. * * *

[1] Hervé, Georges, La Race des Troglodytes Magdaléniens. Rev. mens. de l'École d'anthrop., III, p. 188. Paris, 1893.

[2] Boule, Marcellin, L'Homme fossile de la Chapelle-aux-Saints, pp. 228. Paris, 1913.

[3] Sollas, W. J., Ancient hunters and their modern representatives, pp. 590, 592. New York, 1924.

[4] Sollas, W. J., The Chancelade skull. J. Roy. Anthrop. Inst., LVII, pp. 119, 121. London, 1927.

"Our only reason for any feeling of surprise is, not that Chancelade man should prove a close relation of the Eskimo, but that so far he is the only fossil example of his kind of which we have any certain knowledge."

OPPOSED TO EUROPEAN

Rae, 1887:[5] "The typical Eskimo is one of the most specialized of the human race, as far as cranial and facial characters are concerned, and such scanty remains as have yet been discovered of the prehistoric inhabitants of Europe present no structural affinities with him."

Laloy, 1898:[6] "Cette théorie est absolument contredite par les faits." (That is, the theory of the identity of the Eskimo with the European upper palaeolithic man.)

Déchelette, 1908:[7] "C'est en vain qu'on a noté certains traits d'analogie de l'art et de l'industrie * * * telles analogies s'expliquent aisément par la parité des conditions de la vie matérielle."

Burkitt, 1921:[8] "Again the Magdalenians have been correlated with the Eskimos, who inhabit to-day the icebound coastal lands to the north of the New World, and also the similar lands, on the other side of the straits, in the northeast corner of Asia. But the vast difference in place and in time would make any exact correlation very doubtful."

MacCurdy, 1924:[9] "If a Magdalenian type exists, it is probably best represented by the skeleton from Raymonden at Chancelade (Dordogne). One must not lose sight of the fact that the osteologic record of fossil man is even yet so fragmentary that there is grave danger of mistaking individual characters for those on which varieties or species should be based."

Keith, 1925:[10] "In the Chancelade man we are dealing with a member of a racial stock of a true European kind."

MISCELLANEOUS AND INDEFINITE

Gallatin, 1836:[11] "Whatever may have been the origin of the Eskimo, it would seem probable that the small tribe of the present

[5] Rae, Dr. John, Remarks on the natives of British North America. J. Roy. Anthrop. Inst. Great Britain and Ireland, XVI, pp. 200–201. London, 1887.
[6] Laloy, L'Anthr., IX, p. 586. 1898.
[7] Déchelette, J., Manuel d'Archéologie préhistorique, etc., pp. 312. Paris, 1908.
[8] Burkitt, M. C., Prehistory. p. 307. London, 1921.
[9] MacCurdy, G. G., Human Origins, v. I, pp. 406–407. New York and London, 1924.
[10] Keith, Arthur, The Antiquity of Man, p. 86. London, 1925.
[11] Gallatin, Albert, A Synopsis of the Indian Tribes of North America. Archaeologia Americana, II, pp. 13, 14. Cambridge, 1836.

sedentary Tchuktchi on the eastern extremity of Asia is a colony of western American Eskimo. The language does not extend in Asia beyond that tribe. That of their immediate neighbors, the "Reindeer," or "Wandering Tchuktchi," is totally different and belongs to the Kouriak family.

"There does not seem to be any solid foundation for the opinion of those who would ascribe to the Eskimaux an origin different from that of the other Indians of North America. The color and features are essentially the same; and the differences which may exist, particularly that in stature, may be easily accounted for by the rigor of the climate and partly, perhaps, by the nature of their food. The entire similarity of the structure and grammatical forms of their language with those of various Indian tribes, however different in their vocabularies, which will hereafter be adverted to, affords an almost conclusive proof of their belonging to the same family of mankind."

Richardson, 1852:[12] "The origin of the Eskimos has been much discussed as being the pivot on which the inquiry into the original peopling of America has been made to turn. The question has been fairly and ably stated by Doctor Latham in his recent work On the Varieties of Man, to which I must refer the reader; and I shall merely remark that the Eskimos differ more in physical aspect from their nearest neighbors than the red races do from one another. The lineaments have a decided resemblance to the Tartar or Chinese countenance. On the other hand, their language is admitted by philologists to be similar to the other North American tongues in its grammatical structure; so that, as Doctor Latham has forcibly stated, the dissociation of the Eskimos from their neighboring nations on account of their physical dissimilarity is met by an argument for their mutual affinity, deduced from philological coincidences."

Meigs, 1857:[13] "A connected series of facts and arguments which seem to indicate that the Eskimo are an exceedingly ancient people, whose dawn was probably ushered in by a temperate climate, but whose dissolution now approaches, amidst eternal ice and snow; that the early migrations of these people have been from the north southwards, from the islands of the Polar Sea to the continent and not from the mainland to the islands; and that the present geographical area of the Eskimo may be regarded as a primary center of human distribution for the entire polar zone."

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[12] Richardson, Sir John, Origin of the Eskimos. The Edinburgh New Philosophical Journal, LII, p. 323. Edinburgh, 1852.

[13] Meigs, J. Aitken, The cranial characteristics of the races of men. In Indigenous Races of the Earth, by Nott, J. C., and Gliddon, George R., Philadelphia, p. 266. London, 1857.

Abbott, 1876:[14] "It is fair to presume that the first human beings that dwelt along the shores of the Delaware were really the same people as the present inhabitants of Arctic America."

Grote, 1875:[15] Basing himself on certain biological reasonings, the author concludes "that the Eskimos are the existing representatives of the man of the American glacial epoch, just as the White Mountain butterfly (*Oeneis semidea*) is the living representative of a colony of the genus planted on the retiring of the ice from the valley of the White Mountains."

In a later communication[16] the author expresses the opinion that the peopling of America "was effected during the Tertiary; that the ice modified races of Pliocene man, existing in the north of Asia and America, forced them southward, and then drew them back to the locality where they had undergone their original modification. * * *

"During the process, then, which resulted in the race modification of the Eskimos, their original numbers must have been decreased by the slowly but ever increasing cold of the northern regions, until experience and physical adaptation combined brought them to a state of comparative stability as a race."

Baron Nordenskiöld[17] thought that the Eskimo might probably be the true "autochthones" of the polar regions, i. e., that they had inhabited the same previous to the glacial age, at a period when a climate prevailed here equal to that of northern Italy at present, as proved by the fossils found at Spitzbergen and Greenland. As it might be assumed that man had existed even during the Tertiary period, there was a great deal in favor of the assumption that he had lived in those parts which were most favorable to his existence. The question was one of the highest importance, as, if it could be proved that the Eskimo descended from a race which inhabited the polar regions in the very earliest times, we should be obliged to assume that there was a northern (polar) as well as an Asiatic cradle of the human race, which would open up new fields of research, both to the philologist and the ethnologist, and probably remnants of the culture and language of the original race might be traced in the present polar inhabitants of both Europe and Asia.

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[14] Abbott, C. C., Traces of American Autochthon. Am. Nat., p. 329. June, 1876.

[15] Grote, A. R., Effect of the Glacial Epoch Upon the Distribution of Insects in North America. Proc. Am. Ass. Adv. Sci., Detroit meeting, 1875. B. Natural History, p. 225.

[16] Grote, A. R., On the Peopling of America. Bull. Buffalo Soc. Nat. Sc., III, p. 181–185, 1877.

[17] Eskimo. Lecture before the Georgr. Soc. of Stockholm, Dec. 19, 1884; abstract in Proc. Roy. Georgr. Soc., VII, No. 6, p. 370–371. London, 1885.

Keane, 1886:[18] "The Aleutian Islanders, who are treated by Doctor Rink as a branch of the Eskimo family, but whose language diverges profoundly from, or rather shows no perceptible affinity at all to, the Eskimo. The old question respecting the ethnical affinities of the Aleutians is thus again raised, but not further discussed by our author. To say that they must be regarded as 'ein abnormer Seitenzweig,' merely avoids the difficulty, while perhaps obscuring or misstating the true relations altogether. For these islanders should possibly be regarded, not as 'an abnormal offshoot,' but as the original stock from which the Eskimo themselves have diverged."

Quatrefages, 1887:[19] From migrations of Tertiary man: Men originated in Tertiary in northern Asia; spread from here to Europe and over Asia; "D'autres aussi gagnèrent peut-être l'Amérique et ont pu être les ancêtres directs des Esquimaux, . . . Sans même supposer l'existence passée de la continuité des deux continents, les hommes tertiaires ont bien pu faire ce que font les riverains actuels du détroit de Behring, qui vont chaque jour d'Asie en Amérique et reciproquement." . . .

"Evidemment la race esquimale est américaine. Au Groënland, au Labrador, dont personne ne lui a disputé les solitudes glacées, elle a conservé sa pureté. Elle est encore restée pure quand elle a rencontré les Peaux-Rouges proprement dits, parce que ceux-ci lui ont fait une guerre d'extermination qui ne respectait ni les femmes ni les enfants. Mais, dans le nord-ouest américain, elle s'est trouvée en rapport avec des populations d'un caractère plus doux et des croisements ont eu lieu. Or, parmi ces populations, il s'en trouve de brachycéphales. Tels sont en particulier certaines tribus, confondues à tort sous un même nom avec les vrais Koluches . . . Ces tribus sont de race jaune et leur crâne ressemble si bien à celui des Toungouses que M. Hamy les a rattachées directement à cette famille mongole. Les Esquimaux se sont croisés avec elles; et ainsi ont pris naissance ces tribus, dont l'origine métisse est attestée par le mélange ou la fusion des caractères linguistiques aussi bien qu' anatomiques."

Nansen, 1893:[20] "So much alone can we declare with any assurance, that the Eskimos dwelt in comparatively recent times on the coasts around Bering Strait and Bering Sea—probably on the

[18] Keane, A. H., The Eskimo; a commentary. Nature, xxxv, p. 309. London, New York, 1886–1887.

[19] Quatrefages, A de, Histoire Générale des Races Humaines, introduction l'Etude des Races Humaines, pp. 136, 435. Paris, 1887.

[20] Nansen, Fridtjof, Eskimo Life, pp. 6, 8. London, 1893. (Translated by William Archer.)

American side—and have thence, stage by stage, spread eastward over Arctic America to Greenland. * * *

"The likeness between all the different tribes of Eskimos, as well as their secluded position with respect to other peoples, and the perfection of their implements, might be taken to indicate that they are of a very old race, in which everything has stiffened into definite forms, which can now be but slowly altered. Other indications, however, seem to conflict with such a hypothesis, and render it more probable that the race was originally a small one, which did not until a comparatively late period develop to the point at which we now find it, and spread over the countries which it at present inhabits."

Tarenetzky, 1900:[21] "Die Frage ist bis jetzt noch nicht entschieden und wird wahrscheinlich auch niemals definitiv entschieden werden ob die gegenwärtig die Nordostgrenze Asiens und die Nordwestgrenze Amerikas bewohnenden Polarvölker ursprünglich aus Asien nach Amerika oder in umgekehrter Richtung zu ihren Wohnsitzen wanderten."

De Nadaillac[22] believed that the Eskimo (with some other aboriginal Americans), now savage and demoralized, have issued from races more civilized and that they could raise themselves to the old social level were it not for their struggle with inexorable climate, famines, and lately also alcoholism.

Jenness, 1928:[23] "We still believe that the Eskimos are fundamentally a single people; that they had their origin in a homeland not yet determined; but we have learned that they reached their present condition through a series of complex changes and migrations, the outlines of which we have hardly begun to decipher."

DISCUSSION AND CONCLUSIONS INDICATED BY PRESENT DATA

The maze of thoughts on the origin of the Eskimo shows one fact conclusively, which is that the necessary evidence on the subject has hitherto been insufficient. From whatever side the problem has been approached, whether linguistically, culturally, from the study of myths, or even somatologically, the materials were, it is plain, more or less inadequate and there was not enough for satisfactory comparisons. The best contributions to Eskimo studies, from the oldest to the most recent, all accentuate the need for further research and more ample collections.

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[21] Tarenetzky, A., Beiträge zur Skelet-und Schädelkunde der Aleuten, Konaegen, Kenai und Koljuschen. Mem. Acad. imp d. sc., ix, No. 4, p. 7. St. Petersburg, 1900.

[22] Nadaillac, M. de. Les Eskimo. L'Anthropologie, XIII, p. 104. 1902.

[23] Jenness, D., Ethnological Problems of Arctic America. Amer. Geogr. Soc. Special Publ. No. 7. New York, 1928.

Another point is that heterogeneous and wide apart as many of the opinions may seem, yet when the subject is looked upon with a larger perspective they may often perhaps be harmonized. Thus a belief in an American origin of the Eskimo need not exclude that in the Asiatic derivation of his parental stock. Even in the case of the supposed European derivation the Eskimo are understood to have reached America through Asia; there is not one suggestion of any importance advocating the coming of the Eskimo over northwestern Europe and Iceland. Only the Meigs-Grote-Nordenskiöld theory of an ancient polar race and its descent southward appears now as beyond the bounds of what would be at least partly justifiable.

What is the contribution to the subject of the studies reported in this treatise, with its relatively great amount of somatological material? The answer is not easy.

Even the truly great and precious material at hand is not sufficient. There are important parts of the Arctic, such as the Hudson Bay region, Baffin Land, and the central region; several parts of the west coast, such as the inland waters of the Seward Peninsula and the Eskimo portions of the Selawik, Kobuk, Noatak, and Yukon Rivers; and above all the Eskimo part of northeastern Siberia, from which there are insufficient or no collections. There is, moreover, especially in this country, a great want of skeletal material from the non-Eskimo Siberian tribes, and also from the old European peoples that are of most importance for comparisons. It must be plain, therefore, that even at present no final deductions are possible. All that can be claimed for the evidence here brought forth is that it clears, or tends to settle, certain secondary problems, and that it presents indications of value for the rest of the question.

The secondary problems that may herewith be regarded as settled are as follows:

1. *Unity or plurality of the race.*—The materials at hand give no substantiation to the possibility of the Eskimo belonging to more than one basic strain of people. They range in color from tan or light reddish-yellow to medium brown; in stature from decidedly short to above the general human medium; in head from brachycephalic and low to extremely dolichocephalic, high and keel shaped; in eyes from horizontal to decidedly mongoloid; in orbits from microseme to hypermegaseme; in nose from fully mesorrhinic to extremely leptorrhinic; in physiognomy from pure "Indian" to extreme "Eskimo." Yet all through there runs, both in the living and in the skeletal remains, so much of a basic identity that no separation into any distinct original "races" is possible. At most it is permissible to speak of a few prevalent types.

2. *Relation.*—The general basic prototype of the Eskimo, according to all evidence, is so closely akin to that of the Indian that the two

can not be fully separated. They appear only as the thumb and the digits of the same hand, some large old mother stock from which both gradually differentiated. This appears to be an unavoidable conclusion from the present anthropological knowledge of the two peoples.

The next unavoidable deduction is that the mother stock of both the Eskimo and the Indian can only be identified with the great yellow-brown stem of man, the home of which was in Asia, but the roots of which, as has been discussed elsewhere, were probably in ancient (later paleolithic) Europe.[24] The latter fact may explain the cultural as well as somatological resemblances between the Eskimo, as well as the Indian (for the Indian, physically at least, has much in common with the upper Aurignacians), and the upper glacial European populations. But such an explanation can not in the light of present knowledge legitimately be extended to the assumption that either the Indian complex or the Eskimo originated as such in Europe; they could be at most but parts of the eventual more or less further differentiated Asiatic progeny of the upper paleolithic Europeans.

3. *Mixture.*—It has been assumed by Boas and others that the eastern Eskimo have become admixed with the eastern Indian and the western with the Alaskan Indian, that the physical and especially craniological differences between the eastern and western Eskimo were due to such a mixture, and that both extremes deviated from the type of the pure Eskimo, who was to be found somewhere in the central Arctic. The evidence of the present studies does not sustain such an assumption.

As shown before[25] and is seen more clearly from the present data, the western Eskimo type is also present or approached in various localities in the far north (part of Smith Sound, Southampton Island, part of the Hudson Bay coast, with probable spots in the central Arctic proper). There is no indication of any central region where the western Eskimo type would be much "purer" than elsewhere.

Individual skulls and skeletons in the west, particularly in certain spots (especially on Seward Peninsula), show the same characteristics as the most diverging skulls or skeletons in the farthest northeast.

And both in the west and in the east the most pronounced Eskimo characteristics exceed similar features in the Indian, indicating independent development. Such characteristics involve the stature

[24] Hrdlička, A., The Peopling of Asia. Proc. Am. Philos. Soc., LX, 535 et seq. 1921; and The Peopling of the Earth. Ibid., LXV, 150, et seq. 1926.

[25] Contrib. Anthrop. Central and Smith Sound Eskimo. Anthrop. Papers Am. Mus. Nat. Hist., 1910.

(taller in the west, shorter in the east than that of the Indian); the size of the head (everywhere averaging higher in the Eskimo); dolichocephaly, height of the head, its keel shape (all more pronounced in the eastern and now and then a western Eskimo than in any Indian group); the face, nose, orbits, and lower jaw; with the relative proportions and other characteristics of the skeleton. All these point to functional and other developments within the Eskimo groups and none suggest a large Indian admixture.

It is well known that more or less blood mixture takes place among all neighboring peoples where contact is possible, even if otherwise there be much enmity. Such enmity, often in an extreme form, existed everywhere it seems between the Eskimo and the Indian, as a result of the encroaching of the former on the latter; there are many statements to that effect. Within historic times also there are no records of any adoptions or intermarriages between the two peoples. Nevertheless where contact took place, as on the rivers and in the southwest as well as the southeast of the Eskimo territory, some blood mixture, it would seem, must have developed. The Indian neighbors show it, and it would be strange if it remained one-sided. But of a mixture extensive enough to have materially modified the type of the Eskimo in whole large regions, such as the entire Bering Sea and most of the far northeast, there is no evidence and little not only probability but even possibility. Nothing approaching such an extensive mixture is shown by the near-by Indians; and it would be most exceptional in people of this nature if a much greater proportion of the mixture was into the Eskimo.

Finally, a mixture of diverse human types, unless very old, may be expected to leave numerous physical signs of heterogeneity and disturbance, none of which is shown by either the western or eastern Eskimo. Such groups as that of the St. Lawrence Island, or that of Greenland, are among the most homogeneous human groups known. The range of variation of their characters is as a rule a strictly normal range, giving a uniform curve of distribution, which is not consistent with the notion of any relatively recent material mixture.

4. *The indications.*—The indications of the data and observations presented in this volume may be outlined as follows:

The Eskimo throughout their territory are but one and the same broad strain of people. This strain is fundamentally related to that (or those) of the American Indian. It is also uncontestably related to the yellow-brown strains of Asia.

In many respects, such as pigmentation, build of the body, physiognomy, large brain, fullness of forehead, fullness of the fronto-sphenotemporal region, largeness of face and lower jaw, height of the nose,

size and characteristics of the teeth,[26] smallness of hands and feet, etc., the Eskimos are remarkably alike over their whole territory. They differ in details, such as stature, form of the head, and breadth of the nose. But the distribution of these differences is of much interest and probably significance. Higher statures, broader heads, and broader noses are found especially in the west, the latter two particularly in the Bering Sea region; low group statures, narrow heads and narrow noses reach, with few exceptions, their extremes in the northeast. Between the two extremes, however, there is no interruption, but a gradation, with here and there an irregularity. These conditions speak not of mixture but rather of adaptation and differentiation.

They strongly suggest a moderate stream of people, rooted in Asia, of fairly broad and but moderately high head, of a good medium stature, with a mesorrhinic nose (and hence probably originally not far northern), and with many other characteristics in common, reaching America from northeasternmost Asia after the related Indians, spreading along the seacoasts as far as it could, not of choice, or choice alone, but mainly because of the blocking by the Indian of the roads toward the south and through the interior; and gradually modifying physically in adaptation to the new conditions and necessities; to climate, newer modes of life, the demands of the kayak, and above all to the results of the increased demands on the masticatory organs.

The narrowness, increased length and increased height of the Eskimo skull, without change in its size or other characteristics, may readily be understood as compensatory adaptations, the development of which was initiated and furthered by the development and mechanical effects of the muscles of mastication.

A similar conclusion has been reached in my former study on the central and Smith Sound Eskimo (1910). It has been approached or reached independently by other students of the Eskimo, notably Fürst and Hansen (1915) in their great work on the East Greenlanders. It is a conclusion of much biological importance for it involves not merely the development but also the eventual inheritance of new characters.

Former authors, it was seen, have advanced the theories of an American origin of the Eskimo. This could only mean that he developed from the American Indian. And such a development would imply physical and hereditary changes at least as great as those indicated in the preceding paragraphs, and in less time. A differentiation commenced well back in Asia, geographically and chronologically, and advancing, to its present limits, in America would seem the more probable.

[26] See Amer. J. Phys. Anthrop., VI, Nos. 2 and 4. 1923.

An origin of the Eskimo in Europe, during the last glacial invasion, would not only push into the hazy far past the same changes as here dealt with, but it would at the same time fail to explain the physical differences within the Eskimo group, and deny any substantial changes in him during the long time of his migration toward the American northern coasts.

Absolute proofs of the origin of the Eskimo, as of that of the various strains of the Indians, are hardly to be expected. Such origins are so gradual and insidious that they would escape detection even if watched for while occurring; they are noticed only after suf-

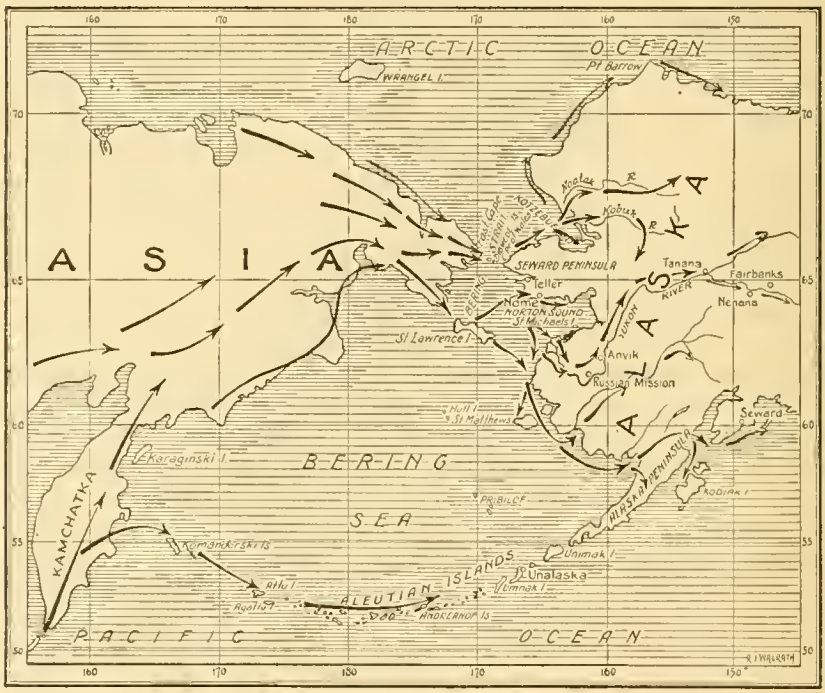

FIGURE 29.—Probable movements of people from northeastern Asia to Alaska and in Alaska. (A. Hrdlička)

ficient differences have developed and become established, which takes generations. The solving of racial origins must depend on sound scientific induction.

Such induction may not yet be fully possible in the case of the Eskimo. The evidence is not yet complete. But with the present and other most recent data there is enough on hand for substantial indications. The evidence shows that barring some irregularities, due possibly to later intrusions or refluxes, the farther east in the Eskimo territory the observer proceeds the more highly differentiated and divergent the Eskimo becomes, and there is a greater gap

between him and his Indian neighbors, as well as other races. Proceeding from the east westward, conditions are reversed. In general the farther west we proceed the less exceptional on the whole the Eskimo becomes and the more he approximates the Indian, particularly the Indian of Alaska and the northwest coast. As this can not, in the light of present evidence, be attributed alone to mixture, it is plain that if it were possible to proceed a few steps farther in this direction the differences between the Eskimo and the Indian would fade out so that a distinction between the two would become difficult if not impossible.

The facts point, therefore, to an original identity of the source from which were derived the Indian, more particularly his latest branches, and the Eskimo, and to the identification of this source with the palaeo-Asiatic yellow-brown people of lower northern Asia. The differentiation of the Eskimo from this source must have proceeded over a fairly long time, and probably started already it would seem on the northern coasts of Asia, where conditions were present capable of beginning to shape him into an Eskimo; to be carried on since in the Bering Sea area and especially in the Seward Peninsula and farther northward and eastward. In a larger sense the cradle of the Eskimo, therefore, while starting probably in northeast Asia, covered in reality a much vaster region, extending from northern Asia and the Bering Sea to the far American Arctic.

SUMMARY

What is the substance of the results of all these new observations and studies on the western Eskimo, who is the main subject of this report? In large lines this may be outlined as follows:

1. The western Eskimo occupied, uninterrupted by other people (save in a few spots by the Aleuts), the great stretch of the Alaskan coast from Prince William Sound and parts of the Unalaska Peninsula to Point Barrow, all the islands in the Bering Sea except the Aleutians and Pribilovs, and the northern and western coasts of the Chukchi Peninsula in Asia.

They extended some distance inland along the Kuskokwim and Yukon Rivers; along the interior lakes and rivers of the Seward Peninsula; along a part of the Selawik River, most (perhaps) of the Kobuk River, and apparently along the whole Noatak River, communicating over the land with the lower Colville Basin. But no traces of original Eskimo settlements have ever been found in the true Alaska inland or along those parts of the Alaska rivers that constitute the Indian territory.

2. The present population is sparse, with many unpeopled intervals, and not highly fecund, but, except when epidemics strike, it

no more diminishes; children and young people are now much in evidence, hygienic and economic conditions have improved, and the people in general are well advanced in civilization. Their condition and morale are rather superior, in places very perceptibly so, to those of the majority of the Alaska Indians.

3. Except where there has been more contact with whites, a large percentage of these Eskimo are still full bloods. They are a sturdy, cheerful, and liberal yet shrewd lot. They intermarry and mix not inconsiderably among themselves (between villages). Some of the white traders have married Eskimo women and raised promising families. Where larger numbers of whites were or are in proximity clandestine mixture is apparent. The better educated show often decidedly good mental, mechanical, business, and artistic abilities. In the isolated localities, such as St. Lawrence Island, the people have apparently escaped the period of demoralization that so often attends the passing from the old to new conditions.

Tuberculosis and venereal diseases are present but not prevalent; rachitis seems absent. The people show much endurance, but longevity as yet is not much in evidence. Alcoholism is almost nonexistent except on occasions when drink is provided by whites.

4. The region of the western Eskimo shows a former larger population of the same people. This is attested by many "dead" villages and old sites. And this population evidently goes back some centuries at least, for some of the remains are extensive and both their depth and their contents give the impression of prolonged duration; though seemingly all thus far seen could be comprised within the Christian era.

5. No habitations or remains belonging to a distinct people (Indians) have thus far come to light anywhere within the territory of the western Eskimo; and no trace has as yet been found of anything human that could be attributed to greater antiquity than that of the Eskimo. But the older beaches and banks where such remains might have existed have either been covered with storm-driven sands and are now perpetually frozen, or they have been "cut" away and lost; and there seems no hope for finding such remains in the interior away from the sea or streams, for such parts were never under recent geological conditions favorable for human habitation.

6. The now known remains consist of the ruins of dwellings and of accumulated refuse, the two together forming occasionally marked elevated heaps or ridges. Some of these ridges are over 18 feet deep. They contain many archeological specimens of stone, ivory, wood, and bone. The ivory in the older layers is more or less "fossilized." The upper layers of such remains usually contain some articles of white

man's manufacture (copper, iron, beads); lower layers are wholly aboriginal. Indian artifacts occur in Eskimo sites only in the proximity of the Indian on the rivers.

7. The prevalent or later culture shown by the remains is fairly rich, of good to relatively rather high grade, and of considerable uniformity. There are numerous indications of extensive trade in various articles, particularly those of the Kobuk "jade."

8. On the Asiatic coast, in the northern parts of the Bering Sea, on the Seward Peninsula, in the Kotzebue region and at Point Hope, the deeper portions of the remains give examples of the higher and richer "fossil ivory culture." This is distinguished by many objects of high-class workmanship, and by curvilinear to scroll designs. The art appears to have distinct affinities with, on one hand, deeper Asia, and on the other with the northwest coast of America and even farther south. It is not clearly separated from either the contemporaneous or the later Eskimo art, yet it is of a higher grade and delicacy and much distinctiveness. It is not yet known where this art begins geographically, what preceded it, whence it was derived, just how far it reached along the coasts, or even what was its main center. It seems best for the present to reserve to it the name of the "fossil ivory art" (rather than Jenness's too limiting "Bering Sea culture"), and to defer all conclusions concerning it to the future.

9. It seems justifiable, however, to point to the significance of what is already known. This "fossil ivory art" especially, but also the general culture of the western Eskimo, are highly developed and differentiated cultures, denoting considerable cultural background, extended duration, and conditions generally favorable to industrial and artistic developments. It has, it is already ascertained, certain affinities in Asia. If this art and the attending culture were advancing toward America, as seems most probable, then the question of cultural influences and introductions from Asia to America will have to be reopened.

10. Due to the perpetually frozen ground and the consequent necessity of surface burials, the area of the western Eskimo was, until recently, relatively rich in skeletal remains lying on the surface. It is no more so now, due to storms, beasts, missionaries, teachers, and scientific collectors. But while only a scattering remains of the surface material, there is much and that of special importance lying in the ground, mostly self-buried or assimilated by the tundra. This material, which now and then is accompanied by interesting archeological specimens, calls for prompt attention; it will help greatly in clearing local and other problems.

Occasionally burials were made or dead bodies were left in old houses. These remains, too, may prove of special value.

11. Observations on both the living and the skeletal remains in the western Eskimo area, supplemented by those on the northern and northeastern Eskimo, are now ample enough to justify certain generalizations. These are:

a. Barring the Aleuts, who are Indian, the Eskimo throughout belong somatologically to but one family, and this family appears as a remarkably pure racial unit, somewhat admixed in the south with the Aleut, on the western rivers with the Indian, and in the east and a few spots elsewhere with recent white people.

b. Within this family there is observable a considerable cranial change, with moderate differences in nasal breadth, stature, and color, but the general characteristics of the physiognomy, and of the body and the skeleton, remain remarkably similar.

c. The changes in the skull affect mainly the vault, which, in dimensions, ranges through all the intermediary grades from moderately broad, short, and moderately high to pronouncedly narrow, long, and high, and in form from moderately convex over the top to markedly keel shaped.

The distribution of skull form is somewhat irregular, but in general the broader and shorter heads predominate in the Asiatic and the southwestern and midwestern American portions of the Eskimo region, while the longest and narrowest heads are those of parts of the Seward Peninsula, and especially those from an isolated old settlement near Barrow with those of Greenland (exclusive of the Smith Sound), Baffin Land, and, judging from other data, also eastern Labrador. More or less transitional forms are found between the two extremes, without there being anywhere a clear line of demarcation.

The breadth of the nose, too, averages highest in the Asiatic, Bering Sea, and the more southern Eskimo of the Alaska coast, the least along the northern Arctic coast and in the northeast. The stature is highest along the western Alaska rivers and parts of the coast, least in Greenland and Labrador.

The skin, while differing within but moderate limits, is apparently lightest along parts (at least) of the northern Arctic.

12. The whole distribution of the physical characteristics among the Eskimo strongly suggests gradual changes—within the family itself; and as the long, narrow, high skull with keeled dome, occurring in a few limited localities in the west but principally in southern Greenland and neighboring territories, appears to be the farthest limit of the differentiation which finds no parallel in the neighboring or other peoples, while the form found in northeastern Asia, the

Bering Sea, and southwestern Alaska is near to those of various surrounding peoples, the inevitable resulting deduction is that, in the light of our present knowledge, the origin of the Eskimo is to be looked for in the western rather than the northern Arctic or the northeastern area, and that particularly in the northern Bering Sea and the adjacent, particularly perhaps the northern, Asiatic region. The author is, therefore, led to regard the area between 160° west and 160° east longitude and 60° to 75° north latitude as containing the primal Eskimo-genic center, and as the source of the oldest Eskimo or proto-Eskimo extensions, while the larger part of the Eskimo differentiations is in all probability American.

13. The earlier notions relating to the western Eskimo, namely, those that would attribute his physical characteristics to a large admixture with the Indian, are now untenable for the following reasons:

a. The distribution of the western Eskimo traits and measurements does not indicate any important heterogeneous mixture.

b. The groups most distant from the Indians, such as the St. Lawrence or Diomede islanders and the Asiatic Eskimo, show very nearly the same somatological characteristics as the rest of the southwestern and midwestern groups.

c. Among the western Eskimo there are no data, no traditions, and no linguistic or cultural evidence of any considerable Indian admixture.

d. The western contingents of the family do not represent a physical resultant or means of the more narrow and long-headed type with the neighboring Indians of Alaska (or elsewhere in the north), but they equal or even exceed the Indians in the principal features of the skull, face, and in other particulars.

14. The nearest physical relatives of the Eskimo are evidently some of the Chukchi, with probably some other north Asiatic groups; their nearest basic relatives in general are, according to many indications, the American Indians. The two families, Indian and Eskimo, appear much, it may be repeated, like the thumb and fingers of one and the same hand, the hand being the large, original palaeo-Asiatic source of both. But the Eskimo are evidently a younger, smaller and still a more uniform member; which speaks strongly for their later origin, migration and internal differentiation.

15. With his numbers, purity of blood, approachability, present facilities of language, many of the young speaking good English, and other favorable conditions, the Eskimo offers to anthropology one of its best opportunities for a thorough study of an important human group, adapted to highly exceptional natural conditions. His food, mode of life, the climate, and isolation, give promise of inter-

esting conditions of the internal organs, perhaps even blood, and of physiological as well as chemical and pathological peculiarities. This opportunity, together with the excellent and important opportunities for archeology in the Bering Sea and neighboring regions, should be utilized to the possible limit within the present generation, for the western Eskimo, on one hand, is rapidly becoming civilized, changing his food, clothing, housing, and habits; is also becoming more mixed with whites; and is most assiduously exploiting the archeological sites in his region for the sake of the income that comes to him from the ever-rising demand for beads, etc., and from "fossil" ivory.

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INDIAN TRIBES OF THE UPPER MISSOURI

By EDWIN THOMPSON DENIG

EDITED WITH NOTES AND BIOGRAPHICAL SKETCH

By J. N. B. HEWITT

PREFACE

This manuscript is entitled "A Report to the Hon. Isaac I. Stevens, Governor of Washington Territory, on the Indian Tribes of the Upper Missouri, by Edwin Thompson Denig." It has been edited and arranged with an introduction, notes, a biographical sketch of the author, and a brief bibliography of the tribes mentioned in the report.

The report consists of 451 pages of foolscap size; closely written in a clear and fine script with 15 pages of excellent pen sketches and one small drawing, to which illustrations the editor has added two photographs of Edwin Thompson Denig and his Assiniboin wife, Hai-kees-kak-wee-lāh, Deer Little Woman, and a view of Old Fort Union taken from "The Manoe-Denigs," a family chronicle, New York, 1924.

The manuscript is undated, but from internal evidence it seems safe to assign it to about the year 1854.

The editor has not attempted to verify the statements of the author as embodied in the report; he has, however, where feasible, rearranged some portions of its contents by bringing together under a single rubric remarks upon a common topic which appeared in various parts of the report as replies to closely related but widely placed questions; and he has attempted to do this without changing the phraseology or the terminology of Mr. Denig, except in very rare instances, and then only to clarify a statement. For example, the substitution of the native term for the ordinary English expression, the Great Spirit, and divining in the place of "medicine" in medicine man, practically displacing *medicine man* by the word *diviner*.

In his letter of transmittal "To his Excellency, Isaac I. Stevens, Governor of Washington Territory," Mr. Denig writes: "Being stimulated with the desire to meet your wishes and forward the views of government, I have in the following pages endeavored to answer the 'Inquiries' published by act of Congress, regarding the 'History, Present Condition, and Future Prospects of the Indian Tribes' with which I am acquainted. * * * Independent of my own personal observation and knowledge acquired by a constant residence of 21 years among the prairie tribes, in every situation, I have on all occasions had the advice of intelligent Indians as to the least important of these inquiries, so as to avoid, if possible, the introduction of error. * * *

"It is presumed the following pages exhibit a minutiæ of information on those subjects not to be obtained either by transient visitors or a residence of a few years in the country, without being, as is the case with myself, intimately acquainted with their camp regulations, understanding their language, and in many instances entering into their feelings and actions.

"The whole has been well digested, the different subjects pursued in company with the Indians for an entire year, until satisfactory answers have been obtained, and their motives of speech or action well understood before placing the same as a guide and instruction to others.

"The answers refer to the Sioux, Arikara, Mandan, Gros Ventres, Cree, Crow, Assiniboin, and Blackfeet Nations, who are designated as prairie, roving, or wild tribes—further than whom our knowledge does not extend.

"I am aware of your capacity to judge the merits of the work and will consider myself highly honored if I have had the good fortune to meet your approbation; moreover I shall rejoice if I have contributed in any degree toward opening a course of policy on the part of the Government that may result in the amelioration of the sad condition of the savages. Should the facts herein recorded ever be published or embodied in other work it is hoped the errors of language may be corrected, but in no instance is it desired that the meaning should miscarry."

Elsewhere in this letter Mr. Denig writes: "Some of their customs and opinions now presented, although very plain and common to us who are in their daily observance, may not have been rendered in comprehensible language to those who are strangers to these things, and the number of queries, the diversity of subjects, etc., have necessarily curtailed each answer to as few words as possible."

The report was made in response to a circular of "Inquiries, Respecting the History, Present Condition, and Future Prospects of the Indian Tribes of the United States," by Henry R. Schoolcraft, Office of Indian Affairs, Washington, D. C., printed in Philadelphia, Pa., in 1851. This circular is a reprint of the circular issued in July, 1847, in accordance with the provisions of section 5, chapter 66, of the Laws of the Twenty-ninth Congress, second session, and approved March 3, 1847, which read, "*And be it further enacted*, That in aid of the means now possessed by the Department of Indian Affairs through its existing organization, there be, and hereby is, appropriated the sum of five thousand dollars to enable the said department, under the direction of the Secretary of War, to collect and digest such statistics and material as may illustrate the history, the present condition, and future prospects of the Indian tribes of the United States."

The original circular recites that it was addressed to four classes of individuals, namely, "I. Persons holding positions under the department, who are believed to have it in their power to impart much practical information respecting the tribes who are, respectively, under their charge. II. Persons who have retired from similar situations, travelers in the Indian Territory, or partners and factors on the American frontiers. III. Men of learning or research who have perused the best writers on the subject and who may feel willing to communicate the results of their reading or reflections. IV. Teachers and missionaries to the aborigines."

The circular closes with an expression of the "anxiety which is felt to give to the materials collected the character of entire authenticity, and to be apprised of any erroneous views in the actual manners and customs, character, and condition of our Indian tribes which may have been promulgated. The Government, it is believed, owes it to itself to originate a body of facts on this subject of an entirely authentic character, from which the race at large may be correctly judged by all classes of citizens, and its policy respecting the tribes under its guardianship, and its treatment of them, properly understood and appreciated."

The 348 inquiries in the circular embrace the history (and archeology), the tribal organization, the religion, the manners and customs, the intellectual capacity and character, the present condition, the future prospects, and the language, of the Indian tribes of the United States.

But the report of Mr. Denig consists of brief and greatly condensed replies to as many of the questions propounded in the circular in question as concerned the native tribes of the upper Missouri River, to wit, the Arikara, the Mandan, the Sioux, the Gros Ventres, the Cree, the Crows, the Assiniboin, and the Blackfeet, tribes with whom he was thoroughly acquainted, although the Assiniboin seem to have been the chief subjects of his observations. It should be noted that the answers to some of the questions, if adequately treated, would have required nearly as much space as was devoted to the entire report.

While the facts embodied in the replies of Mr. Denig are, when unqualified, affirmed of all the eight tribes mentioned in his letter of transmittal, he is nevertheless careful, when needful, to restrict many of his answers to the specific tribes to which their subject matter particularly related. But, of course, all the tribes mentioned belonged measurably to a single cultural area at that time.

That Mr. Denig made use of the circular issued by Mr. Schoolcraft is clearly evident from the fact that on the left-hand margin of the manuscript he usually wrote the number of the question to which he was giving an answer.

In the manuscript there appear two quite distinct handwritings, and so it is possible that this particular manuscript is a copy of an original which was retained by the author.

Dr. F. V. Hayden made extensive use of this report in preparation of his "Contributions to the Ethnography and Philology of the Indian Tribes of the Missouri Valley," Philadelphia, C. Sherman & Son, 1862. But he did not give Mr. Denig proper credit for using verbatim numbers of pages of the manuscript without any indication that he was copying a manuscript work from another writer whose position and long experience among them made him an authority on the tribes in question. This piece of plagiarism was not concealed by the bald statement of Doctor Hayden that he was "especially indebted to Mr. Alexander Culbertson, the well-known agent of the American Fur Co., who has spent 30 years of his life among the wild tribes of the Northwest and speaks several of their languages with great ease. To Mr. Andrew Dawson, superintendent of Fort Benton; Mr. Charles E. Galpin, of Fort Pierre; and E. T. Denig, of Fort Union, I am under great obligations for assistance freely granted at all times."

Mr. Edwin Thompson Denig, the author of this manuscript report, was the son of Dr. George Denig and was born March 10, 1812, in McConnellstown, Huntingdon County, Pa., and died in 1862 or 1863 in Manitoba, probably in the town of Pilot Mound, in the vicinity of which his daughters live, or did live in 1910. His legally married wife was the daughter of an Assiniboin chief, by whom he had two daughters, Sara, who was born August 10, 1844, and Ida, who was born August 22, 1854, and one son, Alexander, who was born May 17, 1852, and who was killed by lightning in 1904.

To his early associates Mr. Denig was a myth, more or less, having gone West as a young man and having died there. He lost caste with his family because of his marriage with the Assiniboin woman.

Mr. Denig entered the fur trade in 1833 and became very influential among the tribes of the upper Missouri River. He was for a time a Government scout; then a bookkeeper for the American Fur Co. Earlier he had gone to St. Louis and became connected with the Choteaus and the American Fur Co. Before he was 30 years of age he was living among the Indians as the representative of these two companies in that vast and almost unknown region between the headwaters of the Mississippi and the Missouri Rivers inhabited by tribes of the Sioux.

Mr. Denig became a bookkeeper for the American Fur Co. at Fort Union, situated near the mouth of the Yellowstone River, of the offices of which for a time, about 1843, he was superintendent. Because of his thorough and comprehensive knowledge of the Indians

of his adopted tribe, their language, customs, and tribal relations, he was consulted by most of the noted Indian investigators of that period—Schoolcraft, Hayden, and others.

Being a Government scout, Mr. Denig was able to conciliate the Indians during the expedition of Audubon in 1843, making it possible for the great Frenchman to collect his wonderful specimens. A very colorful description of Fort Union was written by Mr. Denig July 30, 1843. This description is found in Volume II, page 180, of "Audubon and His Journals." In it Mr. Denig writes: "Fort Union, the principal and handsomest trading post on the Missouri River, is situated on the north side, about 6½ miles above the mouth of the Yellowstone River; the country around it is beautiful and well chosen for an establishment of the kind." Then after describing in detail the structure and furnishings of the fort, he says: "The principal building in the establishment, and that of the gentleman in charge, or bourgeois, is now occupied by Mr. Culbertson, one of the partners of the company," and farther on, "Next to this is the office, which is devoted exclusively to the business of the company. * * * This department is now under my supervision [viz, E. T. Denig]."

During this period Audubon sojourned with him for some time and spoke of him not only as an agreeable companion but also as a friend who gave him valuable information and enthusiastic assistance. One of his frequent companions at Fort Union was the Belgian priest, Father De Smet. Their correspondence was continued after De Smet had returned to Belgium. (See Life, Letters and Travels of Father De Smet, Chittenden and Richardson, 4 vols., New York, 1905.)

Several plausible but nevertheless quite unsatisfactory etymologic interpretations of the name, Assiniboin, have been made by a number of writers. Among these interpretations are "Stone Roasters," "Stone Warriors," "Stone Eaters," etc. These are unfortunately historically improbable. It appears that difficulty arises from a misconception of the real meaning of the limited or qualified noun it contains, namely, *boin*. This element appears in literature, dialectically varied, as *pour*, *pouar*, *poil*, *poual*, *bwân*, *pwan*, *pwât*, etc. Evidently, it was the name of a group of people, well known to the Cree and the Chippewa tribes, whom they held in contempt and so applied this noun, *boin*, *bwân*, *pwât*, etc., to them. The signification of its root *bwâ*(n) or *pwâ*(t) is "to be powerless, incapable, weak." So that *Pwâtak* or *Bwânŭg* (animate plurals) is a term of contempt or derision, meaning "The Weaklings, The Incapable Ones." This name was in large measure restricted to the nomadic group of Siouan tribes in contradistinction from the sedentary or eastern group of

Siouan peoples who were called Nadowesiwŭg, a term appearing in literature in many variant spellings. The name Dakota in its restricted use is the appellation of the group of tribes to which the name *Bwânŭg*, etc., was applied. This fact indicates that the *Assiniboin*, or *Assinibwânŭg*, were recognized as a kind of Dakota or Nakota peoples. Nakota is their own name for themselves. The rupture of the Dakota tribal hegemony thrust some of these peoples northward to the rocky regions about Lake Winnipeg and the Saskachewan and Assiniboin rivers. So it was these who were called Rock or Stone Dakota (i. e., *Bwânŭg*). It would thus appear that the rupture occurred after there were recognized the two groups of Siouan tribes in the past, namely, the nomadic or western, the Dakota, and the sedentary or eastern, the *Nadowesiwŭg* of literature.

Traditionally, the Assiniboin people are an offshoot of the Wazikute gens of the Yanktonai (Ihañktoⁿwaⁿna) Dakota.

Dr. F. V. Hayden in his "Contributions to the Ethnography and Philology of the Indian Tribes of the Missouri Valley" says that Mr. Denig was "an intelligent trader, who resided for many years at the junction of the Yellowstone and Missouri Rivers as superintendent of Fort Union, the trading post for the Assiniboins." Of the vocabulary of the Assiniboin language, recorded by Mr. Denig, Doctor Hayden wrote that it is "the most important" one theretofore collected. From the citation from Mr. Denig's description of Fort Union in a preceding paragraph it appears that Doctor Hayden is in error in making Mr. Denig superintendent of the fort rather than of the office of the American Fur Co. at that point.

In one of his letters Reverend Father Terwecoren wrote that Mr. Denig, of the St. Louis Fur Co., is "a man of tried probity and veracity."

From references in Audubon, Kurtz, De Smet, Hayden, and Schoolcraft, and as well from a perusal of this manuscript, it is evident that Mr. Denig was an exceptional man, and for more than 20 years was a prominent figure in the fur trade of the upper Missouri River.

In this summary report to Governor Stevens Mr. Denig has succinctly embodied in large measure the culture, the activities, the customs, and the beliefs of the native tribes who occupied the upper Missouri River 75 years ago, more than 75 per cent of which has been lost beyond recovery by contact with the white man. For more than 40 years the native life with which Mr. Denig was in contact has been largely a thing of the past, so that it is futile to attempt to recover it from the remnants of the tribes who formerly traded with Mr. Denig at Fort Union.

In addition to preparing this report to Governor Stevens Mr. Denig also recorded a Blackfoot Algonquian vocabulary of about 70 words, a Gros Ventres Siouan vocabulary, and an Assiniboin Siouan

vocabulary of more than 400 words, which was published by Schoolcraft in his fourth volume.

From a letter written February 27, 1923, by Dr. Rudolph Denig, of 56 East Fifty-eighth Street, New York, N. Y., the following interesting biographical matter relating to the ancestry of Mr. Denig is taken:

The Denigs, or "Deneges," trace their descent from one Herald Ericksen, a chieftain, or "smaa kongen," of the Danish island of Manoe in the North Sea, from whose descendant Red Vilmar, about 1460, they derive an unbroken lineage. They were seafarers, commanding their own vessels, and engaged in trade in the North and Baltic Seas.

About 1570 Thorvald Christiansen changed the tradition of the family by becoming a tiller of the soil, having obtained possession of a large farm near Ribe in northern Slesvig, which to this day bears its ancient name of Volling gaard. Christian Thomsen, 1636–1704, was the first of the family to take up a learned profession; he studied theology, and being ordained a minister in the Lutheran Church, he was also the first biographer of the family, in that he left a kind of genealogy inscribed on the flyleaves of his Bible.

His grandson, Frederick Svensen, took part as corporal in a Danish auxiliary corps at the age of 17 in Marlborough's operations in the Netherlands in the war of the Spanish Succession. Following the disbanding of his corps he took up his residence in Cologne, and after a few years he found a permanent home, about 1720, in Biebrich-Mosbach, opposite Mayence.

The two branches of the family at present are the descendants of Philip George and Johan Peter, both sons of Frederick. Johan Peter emigrated to America in 1745, leaving among his descendants Edwin Thompson Denig, the subject of this treatise; Commodore Robert Gracie Denig, United States Navy, his son; Major Robert Livingston Denig, United States Marine Corps, a distinguished soldier of the World War, and Dr. Blanche Denig, a well-known woman physician of Boston.

The descendants of Philip George include Dr. Rudolph C. Denig, professor of clinical ophthalmology in Columbia University, New York, N. Y.

Ethnologically, it may be of more than passing interest to know that the name Denig was originally Denek(e), then Deneg, which was taken as a family name by Frederick Svensen at the time he left Denmark in 1709. Until then the family had followed the old Scandinavian custom of the son taking his father's first name with the suffix sen or son as his family name.

The Denigs came to their present name in the following manner: After the Kalmar War, 1611–1613, conditions in Denmark became critical, and the Danes were hard pressed for all the necessaries of life, especially foodstuffs. They were therefore forced to import grain from neighboring countries. So it happened that Ludvig Thorvaldsen, born in 1590, was sent by his father, Thorvald Christiansen, to Valen in Westphalia, a district still renowned for its agriculture, to buy corn.

Ludvig went there every fall for three or four successive years. Eventually the Westphalians nicknamed him Deneke: "Den" meaning Dane, and the suffix "eke," like "ike," "ing," and "ig," a diminutive, derivative, or patronymic. Naturally this surname was not used at home, but it became useful when occasional trips took members of the family outside of Denmark.

The use of such a nom de guerre has always been popular with Scandinavian and kindred races like the Friesians. As the supply of available names did not meet the demand, frequent similarity of names made it difficult to avoid losing one's identity.

When Frederick Svensen Deneg had settled in Biebrich-Mosbach the name Deneg had to undergo another change. While in the north the syllable "eg" is pronounced like "ek," the Chatto-Franconian dialect around Mayence pronounces it like "esh." Automatically, for euphonic reasons the name was dialectically changed to Denig. In former times such capricious changes in names were frequently made. In perusing old chronicles many names are found written in three or four different ways within one century. An instance to the point is the Frankish name of King Meroveg, who was also called Merovig, and his descendants were called Meroveger, Meroviger, and Merovinger, according to dialects spoken in the different regions of the former Frankish empire. This parallels the change of Deneg to Denig.

Upon his arrival, September 5, 1851, at Fort Union, 3 miles above the mouth of the Yellowstone River on the Missouri, Mr. Frederick Kurz, the Swiss artist, of Berne, Switzerland, who had heard some ugly rumors about Mr. Denig, wrote in his Journal (yet in manuscript): "Bellange delivered the letter he brought to a small, hard-featured man, wearing a straw hat, the brim of which was turned up in the back. He was my new *bourgeois*, Mr. Denig. He impressed me as a rather prosy fellow. . . . He ordered supper delayed on our account that we might have a better and more plentiful meal. A bell summoned me to the first table with Mr. Denig and the clerks. My eyes almost ran over with tears. There was chocolate, milk, butter, omelet, fresh meat, hot bread—what a magnificent spread. I changed my opinion at once concerning

this new chief; a hard, niggardly person could not have reconciled himself to such a hospitable reception in behalf of a subordinate who was a total stranger to him" (pp. 205–206). Kurz remained with Denig three years.

Again, Kurz wrote: "In his relations with me he is most kind and agreeable. Every evening he sits with me either in my room or in front of the gate and relates experiences of his earlier life. As he has held his position in this locality for 19 years already, his life has been full of adventure with Indians—particularly since the advent of the whisky flask. He wishes me to paint, also, a portrait of himself and his dog, Natah (Bear), a commission I am very glad to execute" (p. 211).

Again, in speaking of the duties of Mr. Denig, Kurz wrote: "It goes without saying that a *bourgeois* who occupies the position of responsible warden, chief tradesman, and person in highest authority at a trading-post far removed, where he has fifty men under his direction, may regard himself of more importance than a man who directs five men" (p. 213).

Again Kurz wrote: "As a matter of course, Denig keeps the subordinate workmen strictly under his thumb—what is more, he has to, if he is to prevent their overreaching him. He feels, however, that one man alone is not sufficient to enforce good order among these underlings, for every one of them is armed and, though not courageous in general, are, nevertheless, touchy and revengeful. So, for purposes of order and protection he has attached to himself the clerks who stand more nearly on the same level with him in birth and education and afford, besides, the only support, moral as well as physical, upon which he can reckon" (p. 216).

Again Kurz wrote: "He talks to me continually about Indian legends and usages. As he writes the best of these stories for Pere De Smet, by whom they are published, there is no need of my preserving more than some bits of memoranda" (p. 238). This explains why the writings on these matters of Father De Smet have a close family resemblance with those of Mr. Denig.

Again Kurz wrote: "Mr. Denig has been reading to me again from his manuscript, which is extremely interesting. He is very well educated and he has made a thorough study of Indian life—a distinct advantage to him in trade. He is so fond of the life in this part of the country that he is averse to any thought of going back to his Pennsylvania home in the United States. For the reason, as he says, that he may avoid political carryings-on that disgust him" (p. 242).

Another entry in the Kurz Journal reads: "September the 24th. Began a portrait of Mr. Denig—life-size, knee-length. This work

is to be finished before Mr. Culbertson's return from Fort Laramie" (p. 254).

The following citation is from the Kurz Journal at page 577: "February the 26th, Mr. Denig is a Swedenborgian and at the same time he is a Freemason. He mentioned to me that it would be of great advantage on my travels if I were a Freemason."

It seems appropriate to insert here briefly what another intimate friend of Mr. Denig, the Reverend Father De Smet, thought of the knowledge and attainments of our author. Father De Smet in speaking of the source of his information in a particular instance wrote: "I have it from two most reliable sources—that is to say, from a man of tried probity and veracity, Mr. Denig of the Saint Louis Fur Company . . ."[1]

On page 1215 of this same work Father De Smet in a personal letter to Mr. Denig, dated September 30, 1852, wrote: "I do not know how to express my gratitude for your very interesting series of narratives concerning the aborigines of the Far West. . . . Nothing could be more gratifying to me than the beautiful and graphic details which you have given me of the religion, manners, customs, and transactions of an unfortunate race of human beings."

It is hoped that these excerpts from the writings of Frederick Kurz and Father De Smet, both intimately associated with Mr. Denig, will supply some data concerning our author not otherwise accessible.

The Swiss artist, Friedrich Kurz, who painted many pictures of the region around Fort Union, lived with Denig for some time, and in 1851 painted his portrait.

The Indians called Mr. Denig "The Long Knife," which simply meant that they knew him as "an American."

In the manuscript Mr. Denig employs the word "band" to denote "a gens of a tribe," the word "clans" to denote "societies" or "corporations," and the "orders of doctors" he calls "shamans or theurgists." To understand Mr. Denig these meanings must be kept in mind.

THE EDITOR.

[1] Chittenden, H. M., and Richardson, A. T. Life, letters, and travels of Father Pierre-Jean De Smet, S. J., 1801–1873. Vol. IV, p. 1111. New York, 1905.

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LETTER OF TRANSMITTAL

To His Excellency Isaac I. Stevens,
Governor of Washington Territory.

Sir: Being stimulated with a desire to meet your wishes and forward the views of Government, I have in the following pages endeavored to answer the Inquiries published by act of Congress regarding the history, present condition, and future prospects of the Indian tribes with which I am acquainted.

Had I been called upon to illustrate the facts herein recorded by reference to their different individual histories and actions, a more voluminous and perhaps interesting work might have been presented the general reader, but in conformity to the instructions laid down in the document referred to, have only replied to the various queries, limiting the answers to plain statements of facts.

Independent of my own personal observation and knowledge acquired by a constant residence of 21 years among the prairie tribes in every situation, I have on all occasions had the advice of intelligent Indians as to the least important of these queries, so as to avoid, if possible, the introduction of error. Should there be new ideas presented, and the organization, customs, or present condition of the Indians made public in the following manuscript differ either materially or immaterially from any other now extant I would beg leave to say I would much rather have the same rejected than to see it published in a mutilated form or made to coincide with any histories of the same people from others who have not had like opportunities of acquiring information.

Some of their customs and opinions now presented, although very plain and common to us who are in their daily observance, may not have been rendered in comprehensible language to those who are stranger to these things, and the number of queries, the diversity of subjects, etc., have necessarily curtailed each answer to as few words as possible. In the event, therefore, of not being understood or of apparent discrepancies presenting, it would be but justice done the author and patron to have the same explained, which would be cheerfully done.

It is presumed the following pages exhibit a minutiæ of information on those subjects not to be obtained either by transient visitors or a residence of a few years in the country, without being, as is the

case with myself, intimately acquainted with their camp regulations, understanding their language, and in many instances entering into their feelings and actions. The whole has been well digested, the different subjects pursued in company with the Indians for an entire year, until satisfactory answers have been obtained, and their motives of speech or action well understood before placing the same as a guide and instruction to others. The answers refer to the Sioux, Arikara, Mandan, Gros Ventres, Cree, Crow, Assiniboin, and Blackfeet Nations, who are designated as prairie roving or wild tribes, further than whom our knowledge does not extend.

I am aware of your capacity to judge the merits of the work, and will consider myself highly honored if I have had the good fortune to meet your approbation. Moreover, I shall rejoice if I have contributed in any degree toward opening a course of policy on the part of Government that may result in the amelioration of the sad condition of the savages. Should the facts herein recorded ever be published or embodied in other works, it is hoped the errors of language may be corrected, but in no instance is it desired that the meaning should miscarry.

Should any references be required by the department for whom this is written I beg leave to name as my friends and personal acquaintances in addition to your Excellency, Col. D. D. Mitchell, Kenneth Mackruger, Esq., Rev. P. I. De Smet, Messrs. P. Chouteau, Jr., & Co., and Alex. Culbertson, Esq., all of St. Louis, and Dr. John Evans, United States geologist, any of whom will satisfy inquiries on this head.

Permit me, my dear friend, to remain with great respect and high consideration, truly your most obedient servant.

EDWIN T. DENIG.

FORT UNION AS IT APPEARED IN 1833

EDWIN THOMPSON DENIG AND MRS. DENIG

INDIAN TRIBES OF THE UPPER MISSOURI

By Edwin T. Denig

THE ASSINIBOIN[1]

History

Origin.—But little traditionary can be stated by these Indians as authentic of their origin which would be entitled to record in history, though many singular and fabulous tales are told concerning it. As a portion of people, however, once inhabiting another district and being incorporated with another nation, their history presents a connected and credible chain of circumstances. The Assiniboin were once a part of the great Sioux or Dacotah Nation, residing on the tributary streams of the Mississippi; say, the head of the Des Moines, St. Peters, and other rivers. This is evident, as their language with but little variation is the same, and also but a few years back there lived a very old chief, known to all of us as Le Gros François, though his Indian name was Wah-he' Muzza or the "Iron Arrow-point," who recollected perfectly the time of their separation from the Sioux, which, according to his data, must have been about the year 1760.[2] He stated that when Lewis and Clark came up the Missouri in 1805 his band of about 60 lodges (called Les Gens des Roches) had after a severe war made peace with the Sioux, who at that time resided on the Missouri, and that he saw the expedition referred to near White Earth River, these being the first body of whites ever seen by them, although they were accustomed to be dealt with by the fur traders of the Mississippi. After their first separation from the Sioux they moved northward, making a peace with the Cree and Chippewa, took possession of an uninhabited country on or near the Saskatchewan and Assiniboin Rivers, in which district some 250 or 300 lodges still reside. Some time after the expedition of Lewis and Clark, or at least after the year 1777, the rest of the Assiniboin, at that time about 1,200 lodges, migrated toward the Missouri, and as soon as they found superior advantages regarding game and trade, made

[1] Consult Preface for etymologic analysis of this word and for its objective meaning.

[2] This traditional date given by Denig is evidently much too late, for as early as the middle of the seventeenth century they were known to the Jesuit missionaries of Canada.

the latter country their home. One principal incident in their history which they have every reason to remember and by which many of the foregoing data are ascertained is a visitation of the smallpox in 1780 (see Mackenzie's travels), when they occupied the British territory. Even yet there are two or three Indians living who are marked by the disease of that period and which greatly thinned their population, though owing to their being separated through an immense district, some bands entirely escaped. Upon the whole it does not appear to have been as destructive as the same disease on the Missouri in 1838, which I will have occasion to mention in its proper place in these pages and which reduced them from 1,200 lodges to about 400 lodges.

NAME AND GEOGRAPHICAL POSITION.—The name of the Assiniboin among themselves is Da-co-tah, same as the Sioux, which means "our people." By the Sioux they are called Ho'-hai or "Fish-eaters," perhaps from the fact that they lived principally on fish while on the British grounds, as most of those Indians do. By the Cree and Chippewa they are called As-see-nee-poi-tuc or Stone Indians; hence the English name of Assiniboin arises. As has been stated, at the earliest date known they roved about the head of St. Peters, Des Moines, Lac du Diable, and Lac qui Parle; and they were then joined with the Sioux Indians, who inhabited and claimed all the lands between the Mississippi and the Missouri as low down as Big Sioux River and as high up as the head of Rivier à Jacques, thence northward toward Lac du Diable, other bands of Sioux (Teton) residing west of the Missouri. The number of Assiniboin when they separated must have been at least 1,500 lodges, averaging six souls to a lodge [or about 9,000 persons]. Their migration has been referred to and the extent of land they occupied in the British territory on the Saskatchewan, etc., was very large, but at present their habitat is entirely different, and it may be as well to state it here. The northern Assiniboin, 250 or 300 lodges, rove the country from the west banks of the Saskatchewan, Assiniboin, and Red Rivers in a westward direction to the Woody Mountains north and west among small spurs of the Rocky Mountains east of the Missouri, and among chains of small lakes through this immense region. Occasionally making peace with some of the northern bands of Blackfeet enables them to come a little farther west and deal with those Indians, but, these "peaces" being of short duration, they are for the most part limited to the prairies east and north of the Blackfeet range. The rest of the Assiniboin, say 500 to 520 lodges [who may be called the Southern Assiniboin], occupy the following district, viz, commencing at the mouth of the White Earth River on the east, extending up that river to its head, thence northwest along the Couteau

de Prairie, or Divide, as far as the Cyprus Mountains on the North Fork of the Milk River, thence down Milk River to its junction with the Missouri River, thence down the Missouri River to the mouth of White Earth River, or the starting point. Formerly they inhabited a portion of country on the south side of the Missouri River along the Yellowstone River, but of late years, having met with great losses by Blackfeet, Sioux, and Crow war parties, they have been obliged to abandon this region and now they never go there. As before remarked, the Assiniboin still numbered 1,000 to 1,200 lodges, trading on the Missouri until the year 1838, when the smallpox reduced their numbers to less than 400 lodges. Also, being surrounded by large and hostile tribes, war has had its share in their destruction, though now they are increasing slowly.

Ancient and Modern Habitat.—Before proceeding further it would be well to state and bear in mind that of all the Indians now residing on the Missouri River the Assiniboin appear to have made the least progress toward acquiring civilized ideas or knowledge of any kind. Superstitious, lazy, and indisposed to thought, they make no attempt to improve themselves in any way. Neither are they anxious that others should teach them; consequently they are far behind the other tribes even as regards their own savage manner of life. This will receive further explanation. They do not think the Great Spirit created them on or for a particular portion of country, but that he made the whole prairie for the sole use of the Indian, and the Indian to suit the prairie, giving among other reasons the fact that the buffalo is so well adapted to their wants as to meat and clothing, even for their lodges and bowstrings. To the Indian is allotted legs to run, eyes to see far, bravery, instinct, watchfulness, and other capacities not developed in the same degree in the whites. The Indian, therefore, occupies any section of prairie where game is plentiful and he can protect himself from enemies. With regard to any other kind of right than that of possession and ability to defend, besides the general right granted by the Great Spirit, they have not the most distant idea. The Assiniboin conquered nothing to come into possession of their habitat, they had their difficulties with surrounding tribes and still have, as others have, and continue as they commenced, fighting and hunting alternately. Their first interview with Europeans (now spoken of) was when the traders of the Mississippi pushed their traffic as far as their camps, and from whom they obtained firearms, woolen clothing, utensils, etc. Afterwards these supplies were had from the Hudson Bay Co. and, latterly, from the Americans on the Missouri River. There is every reason to believe that the introduction of ardent spirits among them was coeval, if not antecedent, to that of any other article of trade.

Before the trade was opened with them by the whites they say they used knives made of the hump rib of the buffalo, hatchets made of flint stone, mallets of the same, cooking utensils of clay and wood, bones for awls, and sinew for thread, all of which articles can yet be found among them. They made with these rude tools their bows and arrows, pointing the latter with stone, and, as game was abundant, hunted them on foot or threw them into pens built for the purpose, which method they continue to use to this day. In this way they had no difficulty in supporting themselves, and so contend that they have gained nothing by intimacy with the whites but diseases which kill them off in numbers and wants which they are unable at all times to gratify. They have never sold lands by treaty, and the only treaty (with the exception of that at Laramie, 1851) was made by them through an Indian agent of the United States named Wilson, at the Mandan village in 1825. But this was merely an amicable alliance for the protection of American traders and an inducement held out to the Indians to leave off trading at the Hudson Bay Co.'s posts and establish themselves on the Missouri, without, however, any remuneration on the part of the United States.

Vestiges of Early Tradition.—They have no creditable tradition of the Mosaic account of the creation or deluge, neither of their ancestors having lived in other lands nor knowledge of foreign quadrupeds nor any idea of whites or other races occupying the country before the Indians. It is easy to perceive in converse with them that whites have from time to time endeavored to explain the Mosaic account of the creation and deluge, together with other scriptural records, but instead of comprehending the same they have mixed with their own superstitions and childish notions in so many various and nonsensical forms that none is worthy of record.

They have no name for America, neither do they know of its extent, for the most part believing that the lands occupied by themselves and the surrounding tribes compose the greatest part of the world, and certainly contain the greatest reputed number of people. It vexes and grieves them to be told of large tracts of land elsewhere, and they do not or will not believe the whites to be as human as they are.

There is nothing in this subject any Assiniboin could either comprehend or answer, except that there is a mound about 50 miles above the mouth of the Yellowstone on the west side and near the Missouri consisting of an immense pile of elk horns, covering an area of about an acre of ground, and in height about 30 feet. We have frequently inquired of these and the surrounding nations as to its origin, but it was raised previous to the knowledge or even tradition of any tribe now living in these parts. From the state of decay the horns are in it must be very ancient.

NAMES AND EVENTS IN HISTORY.—There is no great event in the history of the Assiniboin that gives them cause to rejoice. True, they have occasionally gained a battle, but at other times have lost greatly by wars. Upon the whole they have had the worst of it; at least they, being a smaller nation than the Blackfeet and Sioux (their enemies) have felt the loss more severely. The principal calamity that first overtook them, and by which they suffered greatly, was the smallpox in 1780. (See Mackenzie's travels and other authors.) On this occasion they lost about 300 lodges of their people, and it is to this day mentioned by them as their greatest first misfortune. In the spring of 1838 this disease was again communicated to them, being brought up the Missouri by a steamboat, and although every precaution had been used, the boat cleansed, and no appearance of disease for a long time aboard, yet it in some way broke out among the Indians, beginning with the Sioux tribes and ending with the Blackfeet. Being an eyewitness to this, we can with certainty give an account of its ravages. When the disease first appeared in Fort Union we did everything in our power to prevent the Indians from coming to it, trading with them a considerable distance out in the prairie and representing to them the danger of going near the infection. All efforts of the kind, however, proved unavailing, for they would not listen, and 250 lodges contracted the disease at one time, who in the course of the summer and fall were reduced to 65 men, young and old, or about 30 lodges in all. Other bands coming from time to time caught the infection and remained at the fort, where the dead were daily thrown into the river by cartloads. The disease was very virulent, most of the Indians dying through delirium and hemorrhage from the mouth and ears before any spots appeared. Some killed themselves.

On one occasion an Indian near the fort after losing his favorite child deliberately killed his wife, his two remaining children, his horses and dogs, and then blew his own brains out. In all this the Indians behaved extremely well toward the whites, although aware they brought the disease among them, yet nothing in the way of revenge took place, either at the time or afterwards. Being obliged to be all the time with them, helping as much as possible to save a few, they had plenty of opportunities should they have wished to do damage. Every kind of treatment appeared to be of no avail, and they continued dying until near the ensuing spring, when the disease, having spent itself, ceased. The result was that out of 1,000 lodges and upward of the Assiniboin then in existence but 400 lodges or less remained, and even these but thinly peopled. Relationship by blood or adoption was nearly annihilated, all property lost or sacrificed, and a few very young and very old left to

mourn the loss. Most of the principal men having died, it took years to recover from the shock. Young men had to grow up, new leaders to be developed, remnants of bands to be gathered together, property to be had—in fact, under all these adverse circumstances, so slow has been the increase that during the interim of 17 years but 100 lodges have accumulated. In times like this no leader can be effective. All counsel was rejected; their chiefs and divining men shared the fate of the others. With the Mandan the disease was even more destructive. Before it they numbered 600 warriors and inhabited two large villages where the Arikara are now stationed, and when the disease ceased about 30 men remained, from which remnant have since sprung about 25 lodges. All this time an Assiniboin chief named The Gauche, or by the Indians "He who holds the knife," was the principal man in the band which bore his name, consisting of 250 lodges.

These died in greater proportion than the others and after the disease had disappeared the old chief found himself at the head of about 60 fighting men. The Gauche was a very old man and had had the smallpox in the north; he was also famed in their annals as a leader and divining man. He had been very successful in his expeditions against the Blackfeet, and by the use of poisons administered occasionally to his people, while predicting their death, he had inspired in all the fear of a sorcerer. His life contains a history which our limits do not admit of describing, although well known, singular, interesting, and authentic. On this occasion he understood that the Mandan were rendered totally helpless by the effects of the smallpox, and conceived the idea of taking their village and in a measure retrieving his losses by the horses and other property of these Indians. Gathering together the remnant of his band, about 50 men, he proceeded thither. The writer saw him pass with the pipe of peace to lull suspicion, in order to enter their village in a friendly way, and then at a given signal each one with knife in hand to rush upon and destroy the unsuspecting friends. The whole was well planned, managed, and kept secret, and it would have succeeded but for an occurrence of which the Assiniboin was not then aware. The Arikara, a tolerably numerous people, having left the Missouri, had been for years residing on the Platte River, and having previously had the smallpox did not contract the disease to any extent. About the same time The Gauche was on his way to the Mandan, they returned suddenly from the Platte and took possession of their village a short distance from the Mandan. Now the Arikara numbered about 500 men, all deadly enemies to the Assiniboin, so that when the latter presented their pipe of peace the ceremonies were interrupted by an attack of the Arikara. The Assiniboin were routed, and about 20 of them killed.

The old chief, as usual, escaped, though his day of power was over. Shortly afterwards he predicted the day and hour of his own death at the fort—days beforehand, without any appearance of disease or approaching dissolution, and the writer with other gentlemen at the fort saw the same fulfilled to the letter. The conclusion was that he took poison, which he was long supposed to have received from the whites in the north and kept a dose for the fullness of time.

This man had more renown than any other leader spoken of, although several have done gallant actions. His success may be attributed to great cunning and the large force he always headed, together with the power his fetishes gave him over his fellows, who blindly followed his instructions and fought desperately under his prophecies, though his life shows the anomaly of a great leader being entirely destitute of every particle of personal intrepidity. Many other events have happened which form data in their history; indeed it is composed of reference to certain remarkable occurrences, such as the year of the smallpox, year of the deep snow, year of massacre of 30 lodges of Blackfeet, year of great rise of waters, and other natural phenomena.

Present Rulers and Condition.—Their present ruling chief is Man-to-was-ko, or the Crazy Bear, made chief by Colonel Mitchell, Commissioner of the United States, at the Laramie treaty in 1851. The choice could not have been better. The Crazy Bear has always been a respectable and brave man, greatly elevated above all the rest in intelligence but not ranking with some in military exploits, having never been a great warrior, though on some small occasions he has shown an utter contempt of death before his enemies. He is a mild, politic man, looking after his people's interest, and viewing with a jealous eye anything inconsistent with them. Even when a very young man his opinions were always honored with a hearing in council, and he now bears his honors with great credit to himself and service to his people, endeavoring to carry out to the letter the stipulations of the treaty to which he is a party.

Among the principal soldiers and war captains may be mentioned To-ka'-ke-a-na, or the "First Who Flies." This man is a son of the old chief, Wah-hé Muzza, or "Iron Arrowpoint," mentioned before. The whole of that old man's numerous family have been, and those living still are, desperate men, proud and overbearing with their people, though good to the whites. From the eldest, named "The Sight," who visited Washington City by General Jackson's orders, to the one now mentioned, five in number have been killed by their own people in personal quarrels.

The one now spoken of has frequently led parties to battle and showed such a recklessness of danger that his name stands high as a

warrior; has also killed two of his own people who were concerned in the murder of his brothers; was at the Laramie treaty and since behaves himself with great moderation; is one of the Crazy Bear's principal soldiers and supports; and should the Bear die would undoubtedly take his place as chief of the tribe.

Wa-ké-un-to, or the Blue Thunder, is another warrior and partisan in a band of 200 lodges, is not over 25 years of age, but has raised himself to distinction by going to war alone on the Sioux and bringing home scalps and horses; he has also headed several war excursions with great success and is generally liked by his own people.

Wo'-a-see'-chah, or Bad Animal, known to traders by the name of Le Serpent, is a war leader and chief of Les Gens des Canots Band, the same 200 lodges of which Blue Thunder is one of the warriors and camp soldiers. I believe he has never killed many enemies but has murdered in quarrels two of his own people, is considered a sensible man, very friendly to the whites, judicious in his government of his band, and also is a person whom it is not desirable to aggravate too much. Me-nah (The Knife), A-wah-min-ne-o-min-ne (The Whirlwind), Ish-ta-o-ghe-nah (Gray Eyes), He-boom-an-doo (La Poudrière), and others are soldiers and warriors whose histories are known to us and would present the usual features of savage life and warfare.

The Assiniboin speak but one dialect, being radically the same as the Sioux; no other is incorporated in it, though some few can in addition speak Cree and others of the northern bands of Blackfeet, but no more than one interpreter is required in transacting any business with each or all of them. A person who can speak the Sioux language well could interpret for the Assiniboin, or vice versa.

There are many elderly persons capable of stating their traditions and willing to impart any information they are in possession of regarding their history; but what is heard from them in this respect is so mingled with fable and superstition as seldom to admit of its serving as a basis for truth or knowledge or for a correct representation of their past condition. They do not exhibit any chain of connected facts; and though these oral tales have been preserved entire, transmitted in their original form through successive generations, and may possibly have been the belief of their ancestors, yet at the present day are regarded more as a source of amusement than a medium of instruction or means of perpetuating their history. Too much error has been the result of depending for knowledge on these traditions by people who only understand them in their literal sense or have been badly interpreted. All facts among the nations with whom we profess an intimate acquaintance and minute knowledge

farther than a century back are involved in obscurity, mingled with fable, or embodied in their superstitions.

The time when the tribe reached its present location was from 1804 to 1825, when the most of them might be considered as established on the waters of the Missouri, the boundaries of which have been pointed out, though in 1839, 60 lodges of Assiniboin came over from the British northern possessions and joined those of the Missouri, since which time they have resided together.

INTERTRIBAL RANK AND RELATIONS.—As to the question, what rank and relationship does the tribe bear to other tribes, we are not aware of any political scale of superiority or inferiority existing among any of the tribes along the Missouri; neither do their traditions point out or assign any such particular position to each other. Being well acquainted with the manners and customs of the Sioux, the Arikara, the Mandan, the Gros Ventres, the Crow, the Assiniboin, the Cree, and the Blackfeet tribes we can safely say that no such distinction exists that would receive the sanction of all parties. There is, however, this: Each nation has vanity enough to think itself superior to its neighbors, but all think the same, and the more ignorant they are the more obstinately they adhere to their own opinions. All tribes are pretty much independent of one another in their thoughts and actions, and, indeed with the exception of the Gros Ventres, the Mandan and the Arikara, who are stationary and live in a manner together, neighboring tribes usually are completely in the dark regarding one another's government, not even knowing the names of the principal chiefs and warriors unless told them or recognizing them when pointed out. In all the above-mentioned tribes there is no such thing as pretensions to original rank. Rank is the growth of the present, as often acquired as lost. The greatest chief any of these tribes ever produced would become a mere toy, a butt, a ridicule, in a few days after he lost his eyes or sense of sight.

Neither has affinity of blood in this sense anything to do with rank as to succession. If the son for want of bravery or other qualifications can not equal or follow the steps of his father chief, he is nothing more than an ordinary Indian. There are consequently no discordant pretensions to original rank, though it may be a matter of dispute which of two or three chiefs ranks at present the highest, and in this case it would be immediately decided in council by the principal men. In fact the rank or standing of each Indian, be he chief or warrior, is so well known, and his character so well judged by the vox populi that he takes his place spontaneously. A higher step than his acts and past conduct confer, imprudently taken, would have the effect of injuring him in their eyes as a leader. Every chief, warrior, or brave carves his own way to fame, and if recognized as

one by the general voice becomes popular and is supported; if not, he mixes with hundreds of others who are in the same situation, waiting an opportunity to rise. There is no relative rank among tribes bearing the name of uncle, grandfather, etc. The names of the different bands among themselves or the surrounding tribes have no such signification. There are, of course, affinities of blood and relationship among the Indians as well as among whites. People have their fathers, uncles, grandfathers, brothers-in-law, etc., but this personal or family relationship has nothing to do with the clanship, nor has it any bearing on other tribes. As to the relations above alluded to we will have occasion to refer to them under the head of tribal organization and government. Among eastern or southern tribes such distinctions may exist, but we can vouch they have no name nor interest in all the tribes mentioned in the beginning of this answer. To prevent misunderstanding, it should be observed that when we speak of a tribe we mean the whole group who speak that language. Different tribes are different groups. Portions of these groups or tribes are called gentes, and portions or societies of these gentes are designated as subgentes, and the next or most minute subdivision of gentes would be into families.

"Peaces" are made between wild tribes by the ceremony of smoking and exchanging presents of horses and other property; sometimes women. The advantages and disadvantages are well calculated on both sides before overtures for peace are made. It is a question of loss and gain and often takes years to accomplish. The Crows, a rich nation, five years ago, through the writer as the medium made peace with the Assiniboin after half a century of bloody warfare. Why? The Crows being a rich nation and the Assiniboin poor, how could the former gain? The points the Crows gained were these: First, liberty to hunt in the Assiniboin country unmolested and secure from the Blackfeet; second, two enemies less to contend with and from whom they need not guard their numerous herds of horses; third, the privilege of passing through the Assiniboin country to the Gros Ventres village in quest of corn. Now for the other party. The Crows having large herds of horses and the Assiniboin but few, the former give them a good many every year to preserve the peace. The Crows winter with the Assiniboin, run buffalo with their own horses, and give the latter plenty of meat and skins without the trouble of killing it. The Crows are superior warriors and the others have enough to contend with the Blackfeet. Again, one enemy less, and jointly the numerical force is so augmented as to make them formidable to all surrounding tribes, while separately they would prey upon each other. It is in this case evident the peace must last, there being sufficient inducements on both sides to keep it, although upon the whole

any of their "peaces" are liable to sudden and violent interruptions and are not to be depended upon.

Magnitude and Resources of Territory a Cause of the Multiplication of Tribes.—There can be no doubt that magnitude and resources of territory are the principal causes of an increase of population. All roving tribes live by hunting, and scarcity of animals produces distress, famine, disease, and danger by forcing them to hunt in countries occupied by their enemies, when game is not found in their own. Such a state of things happened in this district in 1841, when during a total disappearance of buffalo and other game some of the Assiniboin and Cree were under the necessity of eating their own children, of leaving others to perish, and many men and women died from fatigue and exhaustion. Although the above position is evident, yet we do not see how it could multiply tribes, much less dialects. A large territory with much game might induce portions of other tribes not having these advantages to migrate, make peace with the residing nation, and perhaps increase in a greater ratio than they otherwise would have done, but the language would remain the same, neither would it produce a separate tribe, but only a portion of the tribe who migrated.

The Gros Ventres of the Prairie were once Arapaho and lived on the Arkansas. They have for a century past resided with the Blackfeet, yet have preserved their own language. True, by these means they learn to speak each other's language, but they do not commingle and make a separate dialect of the two. The Assiniboin from the Sioux, the Cree from the Chippewa, the Crows from the Gros Ventres are three other cases of separation, and in each the language is so well preserved that they understand without any difficulty the people whence they emanated. The causes of these separations, whether feuds, family discords, or in quest of better hunting grounds, does not now appear. Most probably it was dissatisfaction of some sort. From all appearances we may reasonably expect to see ere long a portion of the Sioux occupying the large disputed territory south of the Missouri and along the Yellowstone, as game is becoming scarce in their district since white emigration through it and Indians are thronging there from St. Peters and elsewhere.

The Sioux regard the Mississippi as once their home, and it is very certain that nation came from thence, also the Cree and Assiniboin, and perhaps others. It does not appear that the track of migration pursued any direct course. From certain facts, similitude of language and customs, it would seem some nations traveled from south to north or northwest, such as the Gros Ventres of the Prairie who were once Arapaho. The Arikara speak the same as the Pawnee and must have migrated westward. The Blackfeet moved from north

to southwest, and the Crows, Cree, and Assiniboin west and north. It is reasonable to believe they spread out over these immense plains from all points and at different times as circumstances favored or forced them. The habits of the prairie Indian differ essentially from the Indian of the forest, and those of stationary and cultivating habits from both. It is impossible for us now to state with any degree of certainty the time of their first location on these plains, or to point out any one general course of emigration pursued by them.

Geography

Figure of the Globe.—It can not be expected that these Indians who are in a complete savage and unenlightened state should have any knowledge of the configuration of the globe or of its natural divisions. They know what a small lake or small island is and have names for the same as they are to be met with through their country. They think the earth to be a great plain bounded by the Rocky Mountains on one side and the sea on the other, but have no idea of its extent nor of any other lands except those they are acquainted with. Although told frequently, they can not realize extent of lands in any great measure, and without troubling themselves to think or inquire are content with believing there are few lands better or larger than their own. It is not in their nature to acknowledge inferiority, which would follow were they convinced of the extent of the territory and power of the whites. Of the sea they have a vague idea from information offered them by the traders, and would not believe there is such a body of water had not the same received a sort of sanction through the Cree and Chippewa, some of whom, having seen Lake Superior, represent it as the ocean.

Local Features of the Habitat.—The chief rivers running through the Assiniboin country are, first, the Missouri, which is so well known as to need no description here. The next is Milk River, on the northwest boundary, a very long and narrow stream; heads in some of the spurs of the Rocky Mountains east of the Missouri and lakes on the plains, runs a southwest course, and empties into the Missouri about 100 miles above the Yellowstone. Its bed is about 200 yards wide at the mouth, though the waters seldom occupy more than one-third of that space, except during the spring thaw, when, for a week or two, it fills the whole bed: is fordable on horseback all the year except at the time above alluded to and when swollen by continuous rains.

Rivière aux Tremble, or Quaking Aspen River, empties into the Missouri about 50 miles below Milk River, is about half the length and breadth of the others, and heads in the range of hills constituting the divide, called "Les Montaignes des Bois." It is fordable at all

times except during spring freshets and when swollen by rain. Neither of these streams is navigable by any craft larger than a wooden canoe except at the high stages of water above referred to, and then navigation would be difficult and dangerous owing to floating ice and driftwood. There are no rapids or falls in either of them.

Several creeks fall into the Missouri below the point on the east side called Big Muddy, Little Muddy, Knife River, etc., all of which contain but little water and are of no consequence.

White Earth River, the last, is about 100 miles in length and at the mouth a little more than 100 yards wide, contains but little water, always fordable, and not navigable by anything, empties into the Missouri near the commencement of the Great Bend. None of these rivers being navigable except the Missouri, goods are only landed at the following points along that river, viz: Fort Pierre (Sioux), mouth of the Teton River; Fort Clarke (Arikara) at their village; Fort Berthold (Gros Ventres village); Fort Union (Assiniboin), mouth of Yellowstone. Steamboats have gone up the Missouri as high as the mouth of Milk River, but heretofore goods for Fort Benton (Blackfeet), near the mouth of Maria River, have been transported by keel boats from Fort Union.

We know of no large navigable lakes in this district, though along the northern boundary there are many small ones, or rather large ponds of water, without any river running through them or visible outlet, being fed by snows, rain, and springs, and diminished by evaporation and saturation. Lakes of this kind are to be met with in many places on the plains and differ in size from 100 yards to 2 or 3 miles or even more in circumference, are not wooded, and contain tolerably good water. Small springs are also common, most of them having a mineral taste, though none are large enough to afford water power.

Surface of the Country.—The whole country occupied by the Assiniboin is one great plain, hills and timber only occurring where rivers run, in the valleys of which good land for cultivation is found, but the general feature appears to be sterile as regards arable land, producing, however, grasses of different kinds, some of which are very nutritious, and particularly adapted to raising horses, cattle, and sheep. The prairies may be said to be interminable and destitute of the least particle of timber except along the banks of the few streams before mentioned, and even these but thinly wooded. Water, however, can always be found in the small lakes and rivers spoken of. The Assiniboin do not cultivate the soil in any way, though the Gros Ventres and Arikara raise corn and pumpkins to some extent on the Missouri bottoms. By experiments made at or near Fort Union,

we find that oats, potatoes, corn, and all garden vegetables grow well if the season be favorable. The soil, being light and sandy, requires frequent rains to produce good crops, which happens about one year in three; the others fail from drought and destruction by grasshoppers, bugs, and other insects. The natural productions of the country are few and such as no one but an Indian could relish. A wild turnip called by them teep-see-na, and by the French pomme blanche, when boiled is eatable, is found in quantity everywhere on the plains, will sustain life alone for a great length of time either cooked or in its raw state, can be dried and preserved for years, or pulverized and made into passable bread.

Wild rhubarb is found and eaten either raw or cooked. It has rather a pleasant sweetish taste. Artichokes grow in quantites near marshes. Chokecherries, bullberries, service berries, buds of the wild rose, red plums, and sour grapes are the principal fruits and are greatly sought after by the Indians, preserved, dried, cooked, and eaten in various ways, and considered by them great luxuries. Wild hops are in abundance which possess all the properties of the cultivated hop. These are all of any note the country produces.

Facilities for Grazing.—These Indians raise no stock of any kind, though judging from that raised at Fort Union it is one of the best grazing countries in the world. The supply of grasses of spontaneous growth is inexhaustible and very nutritious. The only difficulty is the severe cold winter and depth of snow, though if animals were provided for and housed during the severe cold we know that a hardier and better stock can be raised than in the States. As yet, however, no market being open for surplus stock and but few raised for the use of the fort, our attention has not been much directed to that business, but have no hesitation in advancing the opinion that horses, horned cattle, and sheep would thrive and increase well with proper care. We are not able to say whether water could at all times be had by digging on the high prairie and in the absence of springs or creeks, never having tried the experiment, though the country abounds in small lakes, cool springs, and creeks where good localities for grazing purposes could always be chosen. In the winter animals appear to want very little water and generally eat snow in its place.

Effects of Firing the Prairies.—We presume there must be some mistake that any of the tribes residing on the plains set them on fire to facilitate the purposes of hunting. It has the contrary effect, driving the game out of their own country into that of their neighbors. Buffalo may pass through a burnt country covered with snow, but can not remain, and travel until they meet with suitable grazing. Consequently the greatest precautions are used by both Indians and whites to prevent their taking fire in the fall, when the

grass is dry (the only time it will burn), and the most severe penalties short of death are imposed on any person, either white or red, who even by accident sets the prairie on fire. A good thrashing with bows and sometimes tomahawking is in store for the poor traveler who has been so forgetful as not to put out his camp fires and they extend to the plains. These fires are made mostly by returning war parties, either with the view of driving the buffalo out of their enemy's country or as signals to their own people of success in their expedition, though sometimes they originate in accident or petty malice of individuals. With regard to its injuring the soil it has no such effects; on the contrary, the next crop of grass is more beautiful than the other, as the undergrowth and briars are by that means destroyed. The same, unfortunately, is not the case with the timber. There are no forests on the plains to burn, though where the fire passes through the bottoms of the Missouri it consumes and kills great quantities of timber, which dries and decays and is only replaced in time by younger saplings. Fruit bushes are also destroyed, though they recover its effects in three or four years.

Waste Lands.—In this section there are no deserts or barren land of any extent; though there are some marshes, pools, and swamps which, however, are not so close together or extensive as to form any formidable obstruction to roads. Even if they could not be drained or otherwise disposed of, they could be left on either side of the way. Neither do these appear to affect the health of any of the Indians more than being the cause of producing hosts of mosquitoes, which are very annoying to man and beast.

Effects of Volcanic Action.—We are not aware of any remarkable appearances of this kind,[3] neither are there to be found extensive sand plains or other tracts entirely destitute of herbage. The cactus is found everywhere, but not in such quantity as to destroy herbage or be a hindrance to animals traveling. A mile or two may occasionally be found where herbage is comparatively scarce. Still, even in these places there is sufficient for animals for a short time.

Saline Productions.—We do not feel ourselves competent to state the properties of the mineral springs so common throughout all this country. Some of them no doubt contain Glauber salt, as they operate as a violent cathartic; others have the taste of copper, sulphur, etc. What the country would produce in the way of gypsum, saltpeter, etc., we can not say, never having witnessed any geological or mineral researches and being personally completely uninformed regarding this branch of science.

[3] There are portions of pumice stone and other things occasionally picked up that have undergone volcanic action; also burning hills, but no eruptions.

Coal and Mineral Products.—Dr. J. Evans, who lately traveled through this country, can enlighten you on this subject. As for us, we must plead unadulterated ignorance.

Climate

The climate is pure and dry and perhaps the healthiest in the world. In the months of May and June, when east winds prevail, much rain falls, but during the rest of summer and fall the season is generally dry and moderately warm, except a short time in July and August, when intensely hot. There are occasionally severe thunderstorms accompanied by rain or hail; not more, however, than three or four in a summer, and these in a few hours swell the smallest streams so as to overflow their banks, but with the ceasing of the rain they fall as suddenly as they rise, and do no damage, as there are neither crops nor fences to injure. Tornadoes we have never seen here, although they do happen on the Missouri far below this place. Severe gales are occasionally met with, lasting but a few minutes. With regard to temperature and other natural phenomena I refer you to the accompanying tables.

Wild Animals

The most numerous and useful animal in this country is unquestionably the buffalo, both as regards the sustenance of all the Indians and gain of the traders. Any important decrease of this animal would have the effect of leaving the Indians without traders, no returns of smaller skins being sufficient to pay the enormous expense of bringing supplies so far and employing such a number of people. Buffalo are very numerous, and we do not, after 20 years' experience, find that they decrease in this quarter, although upward of 150,000 are killed annually throughout the extent of our trade, without taking into consideration those swamped, drowned, calves frozen to death, destroyed by wolves, or in embryo, etc. It yet would appear that their increase is still greater than their destruction, as during last winter (1852–53) there were more found in this quarter, and indeed in the whole extent of our trade, than had been seen for many years before.

The buffalo is the Indian's whole dependence. It serves him for all his purposes—meat, clothing and lodging, powder horns, bowstrings, thread and hair to make saddles. In the winter season the hides are dressed, made into robes and traded to whites, by which means they are able to buy all their necessaries and even some luxuries. Robes are worth about $3 each, and although the number sent to market is great, yet the high price paid for them to Indians and the danger of transportation is such that fortunes are more

easily and often lost than made at the business. Beaver were formerly numerous and valuable, therefore much hunted by whites and Indians, but of late years the price of that fur being greatly reduced, and the danger of hunting considerable, does not induce either whites or Indians to hunt them. This animal has been trapped and killed to such an extent as to threaten their entire extinction, though for the last 10 or 12 years, since beaver trapping by large bodies of men has been abandoned, they have greatly increased, and are now to be found tolerably plentiful in all the small streams and in the Missouri and Yellowstone. These Indians do not and never did trap them much; though the Crow and the Cree still make good beaver hunts, they do not rely much on this either as a source of profit or food.

Elk, deer, bighorn, and antelope are numerous and afford a means of living and profit to the Indians although they are not hunted to any extent except in a great scarcity of buffalo. From this circumstance they do not diminish and are found now in much the same numbers as 20 years back.

Wolves are very plentiful and of three kinds, the large white wolf, the large grayback wolf, and the small prairie wolf, all a good deal hunted and many killed, though they continue to increase. They follow the buffalo in large bands, waiting an opportunity to pounce upon one that has been wounded or mired. They also destroy a great many small calves in the month of May when they are brought forth. The skins of the larger kind are worth 70 cents to $1 each; the smaller about 50 cents each.

Red and gray foxes, hares, badgers, skunks, wild cats, otters, ermines, and muskrats are found and killed when opportunity offers. Of all these the red fox appears to be the only one that has diminished in numbers. We are not aware that any animals have disappeared altogether, nor of any perceptible decrease of any except the beaver and red fox. The Indians kill only as many buffalo as are wanted for meat and hides. Taking only as many hides as their women can dress, they do not destroy them wantonly to any extent; consequently the destruction is limited, and that not being equivalent to the increase, but little diminution, if any, is perceptible, and the trade as long as this is the case can not have the effect of exterminating them. It is different as regards the beaver and fox. Their skins require no labor except drying, and being slower to increase must of course be the first to disappear if hunted. Grizzly bears are tolerably numerous on the Missouri and Yellowstone and are not hunted often, although killed occasionally. The animal being ferocious is not much sought after by the Indians.

Ancient Bones and Traditions of the Monster Era.—The Indians know from bones found that such animals existed and were of

immense size, but their traditions never make mention of the living animal. To these bones, etc., they assign the general name of Wan-wan-kah, which is a creature of their own imagination, half spirit, half animal. Any whirlwind or great tempest would be attributed to the movements of the Wan-wan-kah, also any other natural phenomenon. Many stories are told of its actions, but all are fabulous, although they profess to believe in the existence of its powers, some even stating they have seen it crossing the Missouri in the form of a large fish covering half the breadth of that river.[4]

Animals Used as Armorial Marks.—These armorial marks or symbols, such as the eagle, owl, bear, serpent, etc., do not represent any tribal organization but kinship occasionally. Neither do they refer to any traditions of any early date, but are insignia adopted by themselves as their medicine or charm. Most Indians have a charm of this kind, either in consequence of some dream or of an idea that the figure has some effect in carrying out his views regarding war, the chase, or the health of his family. These are assumed for his own purposes, whether real or imaginary, to operate on his own actions or to influence those of other Indians. To these tangible objects, after Wakoñda, who is a spirit, they address their prayers and invocations. Neither do these symbols affect them regarding the killing of the same animals on all occasions, though after he has killed it he will smoke and propitiate [the spirit of] the dead carcass, and even offer the head small sacrifices of tobacco and provisions.

The Horse

Era of the Importation of the Horse.—When the horse was first introduced among them does not appear by any of the traditions of these ignorant people. The name of the horse in Assiniboin is shunga (dog) tunga (large), i. e., large dog. Among the Sioux it is named shunka (dog) wakan (divining), i. e., divining dog, which would only prove that the dog was anterior to the horse, inasmuch as they were obliged to make a name for the strange animal resembling some known object with which it could be afterwards compared.

Pictographs

Charts on Bark.—Their drawings of maps and sections of country are in execution miserable to us but explanatory among themselves. Most Indians can carve on a tree, or paint, who they are, where going, whence come, how many men, horses, and guns the party is composed of, whether they have killed enemies, or lost friends, and, if so, how many, etc., and all Indians passing by, either

[4] See page 617 at the end of their oral tales.

friends or foes, will have no difficulty in reading the same, though such representations would be quite unintelligible to whites unless instructed. (Pl. 64.) Some Indians have good ideas of proportion and can immediately arrive at the meaning of a picture, pointing out the objects in the background, though others can not distinguish the figure of a man from that of a horse, and as to their executions of any drawing they are rude in the extreme. Where the natural talent exists, however, there is no doubt they could be instructed.

Antiquities

From the Sioux to the Blackfeet, inclusive, there is not in all that country any mounds, teocalli, or appearances of former works of defense bearing the character of forts or any other antique structure. Not a vestige or relic of anything that would form data, or be an inducement to believe their grounds have ever been occupied by any other than roving tribes of wild Indians; nor in the shape of tools, ornaments, or missiles that would lead to any such inference. We have not been more fortunate in searching their traditions in the hope of finding some clue relative to these things. They do not believe that any persons ever occupied their country except their own people (Indians), and we can not say we have ever seen or heard anything to justify any other conclusion regarding the extent of territory mentioned.

The elk-horn mound, mentioned elsewhere, is evidently of remote date and the work of Indians, but proves nothing sought by these researches. It might be stated that although no antique vessels of clay are found, yet the Arikara now, and as long as the whites have known them, have manufactured tolerably good and well-shaped clay vessels for cooking, wrought by hand without the aid of any machinery, and baked in the fire. They are not glazed, are of a gray color, and will answer for pots, pans, etc., equally as well as those made by the whites, standing well the action of fire and being as strong as ordinary potter's ware. They also have the art of melting beads of different colors and casting them in molds of clay for ear and other ornaments of various shapes, some of which are very ingeniously done. We have seen some in shape and size as drawn in Plate 65, the groundwork blue, the figure white, the whole about one-eighth inch thick, and presenting a uniform glazed surface.

Pipes

No antique pipes are found, but many and various are now made by all Indians.

Vessels and Implements

The Arikara and Gros Ventres, who raise corn, have other vessels as alluded to, but not the roving tribes, except the utensils furnished by whites. None of these things denote anything more than a people in the rudest state of nature, whose only boiling pot was once a hollow stone, or the paunch of a buffalo in which meat can be boiled and still is on occasions, by filling the paunch with water and casting therein red-hot stones until the water attains a boiling point, after which the stones are taken out, and one added occasionally to continue the heat, or the paunch suspended above a blaze at such a distance that the fire, though heating, does not touch it. Their spoons are yet made of the horns of the bighorn and buffalo, wrought into a good shape, some of which will hold half a gallon with ease. These are dippers. Others for eating are made smaller of horn and wood, yet large enough to suit their capacious mouths. (Pl. 65.) In all this and in everything they do, but one idea presents itself—that of crude, untutored children of nature, who have never been anything else.

The only ancient stone implements we have ever seen are the hatchet, stone war club, arrow point, buffalo shoulder-blade ax, hump-rib knife, and elk-horn bow, the shapes of which we have endeavored to draw in Plate 66, and all of which, except the knife, can yet occasionally be seen among them.

There is a total absence of anything antique, any shell, metal, wampum, or other thing formerly possessed by inhabitants supposed to have occupied this country. Neither are there any hieroglyphics or traditions to denote anything of the kind.

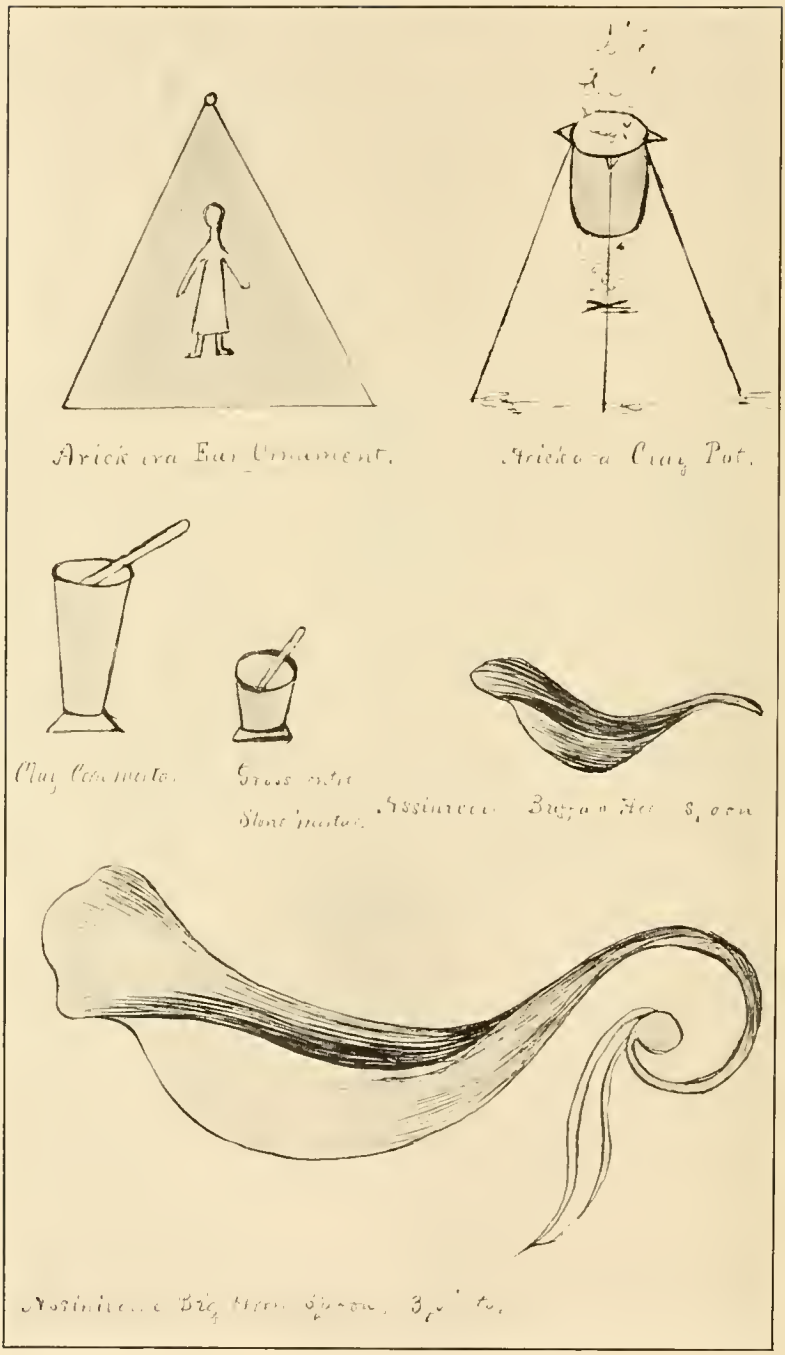
Astronomy and Geology

Earth and Its Motions.—Their knowledge on this subject is very limited. They believe the earth to be a great plain containing perhaps double the extent of country with which they are acquainted, and that it is void of motion. They do not believe the stars are inhabited by other people, but admit they may be abiding places of ghosts or spirits of the departed. They are not fond of talking about these things, neither do their opinions agree, each man's story differing materially from the other and all showing extreme ignorance and superstition.

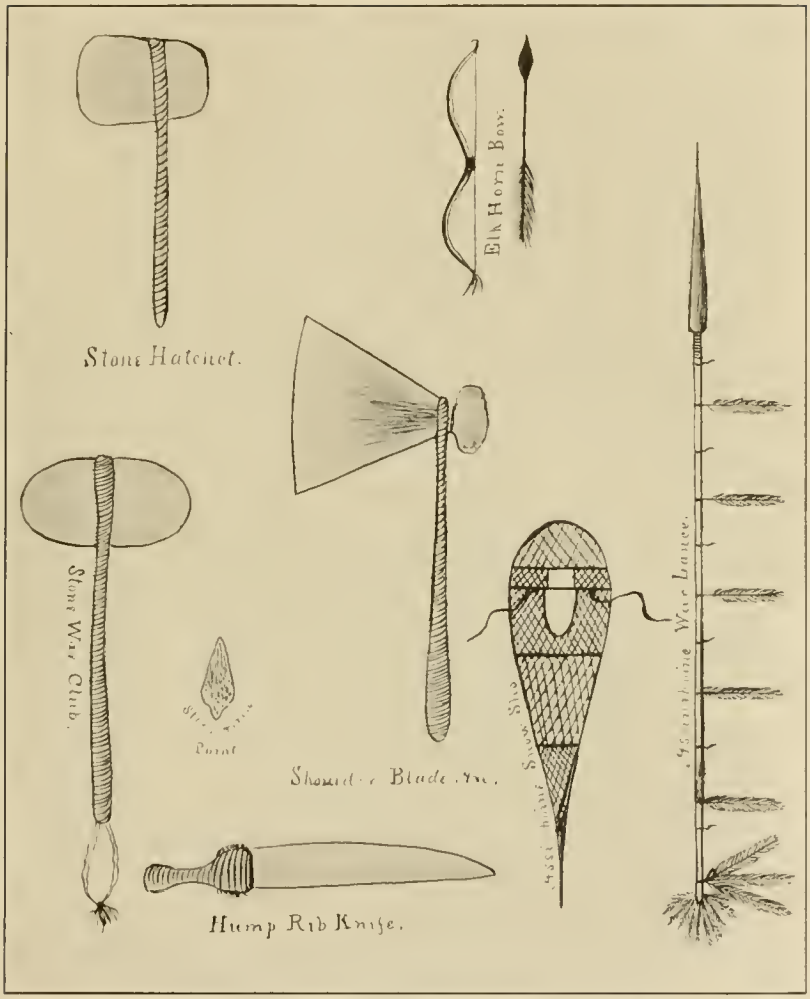
They believe that Wakoñda created all things and this one idea appears original and universal, further than which, however, they are at a loss.

If they can not be made to comprehend the extent of the earth and its laws of motion, etc., there is much less likelihood that they can

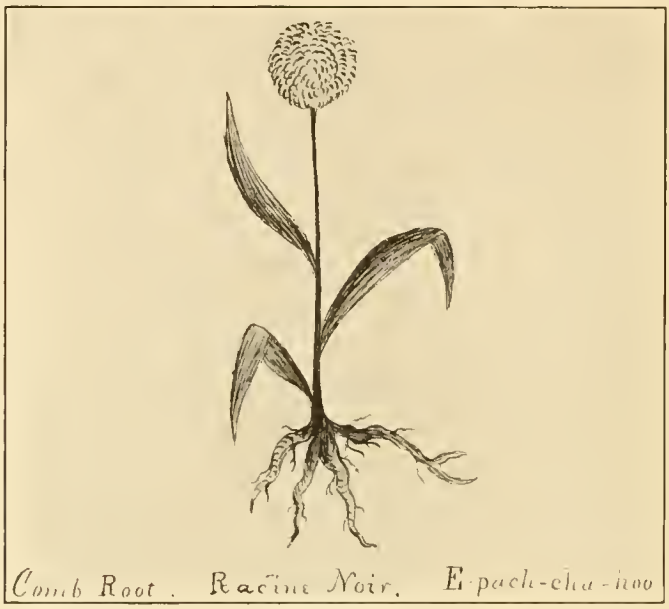
Drawings by an Assiniboine Indian
Fort Union Nov. 10. 1833.



CULINARY UTENSILS



CHARACTERISTIC IMPLEMENTS OF THE ASSINIBOINE



a, Comb root.

b, Cat-tail.

have any reasonable idea of the field of space or other creations therein further than superstitious notions according to the fancy of the individual.

The Sun.—They take the sun to be a large body of fire, making its daily journey across the plains for the purpose of giving light and heat to all, and admit it may be the residence of Wakoñda; consequently it is worshiped, venerated, smoked, and invocated on all solemn occasions. We have often endeavored to explain the diurnal revolution of the earth, representing the sun as stationary, but always failed. They must first be brought to understand the attractions of cohesion and gravitation, for, as a sensible Indian stated on one of these occasions, "If at midnight we are all on the under side, what is to hinder the Missouri from spilling out, and us from falling off the earth? Flies, spiders, birds, etc., have small claws by which they adhere to the ceiling and other places, though man and water have no such support."

The Sky.—Those who take the trouble to explain state the sky to be a material mass of a blue color, the composition of which they do not pretend to say, and think it has an oval or convex form, as apparent to the eye, resting for its basis on the extreme boundaries of the great plain, the earth. Hence their drawing, which is almost the only form in which they could represent it. Stars are small suns set therein, though they think they may be large bodies appearing small by seeing through space. Space is the intervening distance between earthly and heavenly bodies.

The Indians can not rationally account for an eclipse, supposing it to be a cloud, hand, or some other thing shadowing the moon, caused by Wakoñda to intimate some great pending calamity. Many are the prophecies on these occasions of war, pestilence, or famine, and their predictions are often verified. Predicting an eclipse does not appear to excite their wonder as much as would be supposed. The writer predicted the eclipse of the moon on December 25, 1852, months before, but received no further credit than that of having knowledge enough from books to find out it was to take place.

Their year is composed of four man-ko′-cha or seasons, viz, wai-too (spring), min-do-ka′-too (summer), pe-ti-e-too (autumn), wah-nee-e-too (winter). These are only seasons and do not each contain a certain number of days, but times—a growing time, a hot time, a leaf-falling time, and a snow time. These four seasons make a year which again becomes man-ko′-cha or the same as a season. This is difficult to explain. They count by the moon itself and its different phases, not computing so many days to make a moon, nor so many moons to a year.

They give each moon its name, beginning, say, with the March moon whenever it appears either in February or March, when it would be wee-che′-ish-ta-aza, sore eye moon; next would follow Ta-pa′-ghe-na-ho-to, frog moon; next pe-tai-chin-cha′-ton, buffalo calf moon; next wee-mush-tu, hot moon; next wah-pa′-ze-ze, yellow-leaf moon; next wah-pa-ich-pa′-ah, leaf-falling moon; next yo-ka′-wah-how-wee, first snow moon; next we-cho-kun, middle moon; next om-hos-ka-sun-ka-koo, lengthening days moon's brother; and next om-has-ka, lengthening of days moon. Their year has no beginning nor end. They count and name the moons as they come, and these names are also varied. Any annual remarkably known fact respecting the season can be applied to the name of the same moon. Thus the sore-eyed moon can be called the snow-melting moon, and the falling-leaf moon be termed the moon when the buffaloes become fat. These moons suffer no divisions of time except their phases, viz, new moon, increasing moon (first quarter), round moon (full moon), eaten moon (second quarter), half moon, dead moon (invisible). Among themselves they have no division of time equal to a week, although they are aware that we count by weeks, or divining days (Sundays), and will often ask how many divining days (or Sundays) there are to a given period.

An Indian in counting any period less than a year will say 3 moons and a full (3½ moons), 4 moons and an eaten one (4¾ moons), 6 moons and an increasing one (6½ moons), etc. These serve all his purposes and when wishing to be more minute and exact he must notch each day on a stick. For a year or four seasons they say a winter. A man may say "I am 40 winters old and one summer." Yet sometimes the same man will say, "I am 40 seasons old." This is still right. He will also say that he is 80 seasons old, or 160 seasons old. All of these are correct and understood immediately, as in the one case you mentally take the half, and in the other the quarter. This is often done among themselves, but with whites they generally name the winter only to designate the year, yet man-ko-cha (season) is the right name for a year and would be received as such by all the Assiniboin. The day is divided into the following parts: hi-ak-kane (daylight), umpa (morning), wee-he-num-pa (sunrise), wee-wa-kan-too (forenoon), wi-cho-kun (midday), we-coo-cha-nu (afternoon), we-coh-pa-ya (sunset), hhtie-too (twilight), eoch-puz-za (dark), and haw-ha-pip-cho-kun (midnight). Any intermediate space of time would be indicated by pointing the finger to the place the sun is supposed to have been at that time. They know nothing of the division of hours and minutes, yet some of the squaws living a long time in the fort can tell the hour and minute by the clock.

They know that the minute hand makes the revolution of the dial plate before it strikes and know the figures from 1 to 12; also that each figure is five minutes apart, and will say it wants so many fives to strike 9, or it has struck 10 and is 5 fives past. This they pick up nearly of their own accord, which proves that some are susceptible of intelligence and education. They know nothing of the solstices nor have any period such as a cycle or century, neither do they believe the world will come to an end or that their priests or any others have the power to destroy or rebuild it.

They know and name the North Star the same as we do—wa-se-a-ure-chah-pe (north star)—and also know the Ursa Major, sometimes calling it the "seven stars" and "the wagon." They are aware that it makes its revolution around the polar star, pointing toward it, and this is the secret of their traveling by night when there is no moon. They call no other stars by name. The Milky Way is said to be moch-pe-achan-ka-hoo (the backbone of the sky). It is known by them to be composed of clusters of small stars, but they suppose it to bear the same relative position to the arch of the heavens, and to be as necessary to its support as the backbone of any animal to its body. Meteors are falling stars which become extinguished as they fall. They attract but little attention as their effects are never perceived. Aurora borealis is believed to be clouds of fire or something the same as electricity. Being very common and brilliant it creates neither wonder nor inquiry.

The moon is not believed to influence men or vegetables nor to have any other properties than to give light by night.[5] They suppose it to be made of some body wasting away during a given period. Some say it is eaten up by a number of small animals (moles) and Wakoñda makes a new one on the destruction of the old. They know very well that all this is error and that the whites have a better philosophy, but will not take the trouble or can not comprehend our views of the motions of heavenly bodies. Having nothing else better explained to them, they adhere to their own ideas, which are of the simplest and most primitive kind, and do not appear to wish them superseded by others which they can not understand. The same remark would apply to all their astronomical and geographical opinions. They have a correct knowledge of the cardinal points, and honor the east as the first from the fact that the sun rises there. The pipe is first presented to the east, then to the south, supposed to be the power of the spirits of their departed friends, then west, then north, and lastly to the earth as the great grandfather of all. The amount of facts or real information they can give are mentioned and as for further explanations, as observed before, they

[5] It is considered a fetish as a light at night and sacrificed to on this account.

do not delight to talk about these matters but appear to think them sacred or forbidden fields through which their thoughts ought not to roam. The subject affords no scope for research unless a writer is disposed to collect a number of fables, which would serve no purpose unless it be to develop their ignorance and superstition.

Future Life

Indian Paradise.—The Paradise of these Indians is in the south in warm regions (not necessarily in the heavens, yet in some imaginary country not belonging to earth), where perpetual summer, abundance of game, handsome women, and, in short, every comfort awaits them; also the satisfaction of seeing their friends and relatives. No quarrels, wars, disturbances, or bodily pain are allowed to exist, but all live in perfect harmony. Departed spirits have the power to revisit their native lands, manifest themselves to their friends in dreams, and if they have been neglectful in crying for or feasting them can trouble them with whistling sounds and startling apparitions, many of which are said to be seen and heard and are most religiously believed in by all. Consequently, the dead are feasted (a long ceremony), smoked, sacrificed to, and invoked, besides being cried for years after they are gone, perhaps as long as any of the relatives are living. The heavenly bodies they think may also be residences for spirits, but we think this idea is derived from the whites. The other is the most ancient and original tradition, if not the only one, and is universally believed. This subject will meet with further notice in the course of these pages.

Arithmetic

Numeration.—All these prairie tribes count by decimals and in no other way. The names of the digits are:

One—washe'nah.
Two—noom'pah.
Three—yam'ine.
Four—topah.
Five—ta'ptah.
Six—sha'kpah.
Seven—shakkowee.
Eight—sha'kkando'gha.
Nine—noo'mpchewo'onkkah.
Ten—wixchemenah.

After ten the word akkai, dropping the name of the ten, serves until twenty, thus:

Eleven—akka'i washe.
Twelve—akkai noompah.
Thirteen—akkai yammene.
Fourteen—akkai topah.
Fifteen—akkai zaptah.
Sixteen—akkai sha'kpah.
Seventeen—akkai shakko'.
Eighteen—akkai sha'kando'gha.
Nineteen—akkai noompchewoukkah.
Twenty—wixche'mmene noompa; i. e. for twenty, literally two tens.

From twenty to thirty the word "sum" or "more" (plus) is added, thus:

21—wixchemmena noompa sum washena (two tens plus one).
22—wixchemmena noompa sum noompa (two tens plus two).
23—wixchemmena noompa sum yammene (two tens plus three),
and so on up to thirty, which is three tens or wixchemmene yam'mene.
31—wixchemmene yammene sum washena (three tens plus one).
32—wixchemmene yammene sum noompa (three tens plus two);
the same as after twenty, and the same after each succeeding ten as far as one hundred, thus—
40—wixchemmene to'pah (four tens).
41—wixchemmene topah sum washena (four tens plus one).
50—wixchemmene zaptah (five tens).
51—wixchemmene zaptah sum washena.
52—wixchemmene zaptah sum noo'mpa.
60—wixchemmene shakpa (six tens).
61—wixchemmene shakpa sum washena.
62—wixchemmene shakpa sum noompa.
70—wixchemmene shakko (seven tens).
71—wixchemmene shakko sum washena (seven tens plus one).
72—wixchemmene shakko sum noompa.
73—wixchemmene shakko sum yammene.
74—wixchemmene shakko sum topah, etc.
80—wixchemmene shakandogha (eight tens).
90—wixchemmene noomchewouka (nine tens).
100—o-pah-wa-ghe.
101—o-pah-wa-ghe sum washea.
110—opahwaghe sum wixche'mmene.
160—opahwaghe sum wixche'mmene shakpa.
161—opahwaghe sum wixche'mmene shakpa sum washena.
170—opahwaghe sum wixche'mmene shakko.
180—opahwafihe sum wixche'mmene shakandogha.
190—opahwaghe sum wixche'mmene noomchewouka.
200—opahwaghe noompa.
300—opahwaghe yammene.
400—opahwaghe topah.
500—opahwaghe zaptah.
600—opahwaghe shakpah.
700—opahwaghe shakko.
800—opahwaghe shakandogha.
900—opahwaghe noomchewouka.
1,000—koke-to-pah-wa-ghe.
1,853—koketopahwaghe sum opahwaghe shakandoga sum wixche'mmene zaptah sum yammene.
2,000—koketopahwaghe noompah.
3,000—koketopahwaghe yammene.
4,000—koketopahwaghe topah.
10,000—koketopahwaghe wixchemmene.
20,000—koketopahwaghe wixchemmene noompa.
50,000—koketopahwaghe wixchemmene zaptah.
100,000—opahwaghe koketopahwaghe.
500,000—opahwaghe zaptah koketopahwaghe.
600,000—opahwaghe shakpah koketopahwaghe.
10,000,000—opahwaghe wixchemmene koketopahwaghe.

Although the computation could thus be carried on to a million yet the Indian would not appreciate the number. We think that after 5,000, or at the utmost 10,000, their ideas fail them; that is, they can not realize in thought more than that amount, yet are able mechanically to count it. This is evident, as they have no distinct name for a million, but are obliged to call it ten hundred thousand, and were they requested to go further would proceed eleven, twelve, thirteen hundred thousand, etc., but not comprehending the great number as a body. They can not multiply or subtract uneven sums without the aid of small sticks or some other mark. Thus to add 40 to 60 would be done by the fingers, shutting down one for each succeeding ten, naming 70, 80, 90, 100. But to add 37 to 94 would require some time; most Indians would count 37 small sticks and beginning with 94, lay one down for each succeeding number, naming the same until all were counted. Now tell them to add 76 to 47 and substract 28. In addition to the first process, and counting the whole number of sticks, he would withdraw 28 and recount the remainder. They are easily confused when counting and consider the knowledge of figures one of the most astonishing things the whites do.

In counting with the hand, an Indian invariably begins with the little finger of the left, shutting it down forcibly with the thumb of the right; when the five fingers are thus shut he commences on the thumb of the right, shutting it with the left fist. When wishing to telegraph by signs a certain number less than 10 he holds up that number of fingers, beginning with the little finger of the left hand and keeping the others shut. Should the number be 7, then all the fingers of the left and thumb and finger of the right would be extended, holding up his hands, the rest of the fingers closed. Tens are counted by shutting and opening both hands; thus, 100 would be indicated by shutting and opening both hands 10 times in succession. The number 7 has two names, shakkowee and enshand (the odd number). They count fast enough in continuation from 1 to 100 but must not be interrupted.

Coin.—There is not now nor have we any reason to suppose there ever has been among them any coin, shells, wampum, or any other thing constituting a standard of exchange, neither are they acquainted with American money. Were a guinea and a button presented there is no question but the Indian would take the latter. They barter their furs for goods which have fixed prices, and are well acquainted with these prices, as also of the value of their robes and furs as a means of purchasing merchandise.

Keeping Accounts.—The Indians themselves keep no accounts. The manner in which accounts are kept by whites with them is as follows. We are not exactly acquainted with the minor operations

in accounts kept by the Hudson's Bay Co. with the Cree and the Chippewa, but from authentic information the following appears to be their system. A plue is equal to 1 pound beaver skin or 3 shillings sterling (say 67 cents); that is, 1 pound of the fur is worth at their forts 67 cents in merchandise at their fixed prices. Therefore a large beaver skin (2 pounds) is 2 plues; 6 muskrats, which are worth from 10 to 12½ cents each, is a plue; 1 wolf skin is counted a plue, being equal in value to the standard 67 cents; an otter skin is 2 plues, a red-fox 1, and so forth.

All skins and other articles of trade acquired by Indians are reckoned into plues by the trader and the Indians and the prices of merchandise are computed in the same manner. On the Missouri the plan is somewhat different, to explain which we annex the following accounts copied from our books. It will be necessary to observe that everything is brought to the standard of buffalo robes which have an imaginary value of $3 each in the country.

THE CRAZY BEAR, ASSINIBOIN CHIEF

1851		Dr.	1852		Cr.
Dec. 3	To 1-3 pt. white blanket	3 robes.	Jan. 8	By 6 robes	6 robes.
	To 2 yards blue cloth	2 robes.		By 2 dressed cow skins	1 robe.
	To ¾ yard scarlet cloth	1 robe		By 30 pounds dried meat	1 robe.
	To 2½ pounds tobacco	1 robe.		By 2 red fox skins	1 robe.
1852				By 2 raw cowhides	1 robe.
Jan. 16	To 1 horse	10 robes.		By 1 large elk skin, raw	1 robe.
	To 3 knives	1 robe.	Feb. 10	By 4 robes	4 robes.
	To 1 kettle, 2 gallon	2 robes.		By 12 wolf skins	4 robes.
	To 100 loads ammunition	1 robe.		Balance forward	2 robes.
		21 robes.			21 robes.
1853					
Feb. 10	To balance on settlement	2 robes.			

Pictorial or other signs are not used in accounts, either by them or the white people.

ELEMENTS OF FIGURES.—A single stroke answers for 1 and each additional stroke marks the additional number as far as 100. When a stroke is made apart, the score is rubbed out and begun again. There are no written nor marked records kept, either on graves or otherwise, of ages or of events, scalps taken, or war expeditions.[5a] Their transactions, or coups, as they are called in this country, are pictured on their robes, lodges, and shields, but these wearing out are seldom renewed, particularly when the man becomes old. Also these coups are recounted publicly by the performer on occasions appointed for the purpose, which we shall notice hereafter, and moreover, are

[5a] It is not intended by this that they make no use of picture writing, but that these records are not preserved. For further explanation see picture writing, p. 603. The devices on their robes are not renewed after they have arrived at a very advanced age, or in other words after their influence and standing has been destroyed by age and helplessness.

talked of often enough around their firesides. Ages are numbered by particular events that took place at the time they could first recollect, and afterwards by certain remarkable years from time to time. Though no Indian can be sure as to his exact age, yet he will not vary more than a year or two as to the time. The cross (×) is not used in counting or for any other purpose, neither does the dot or full comma signify a moon or anything else.

Medicine

General Practice.—They are careful of their sick relatives and particularly so in regard to their children or men in the prime of life. Very aged persons do not, however, meet with such kindness even from their own children, having become useless as a help in camp. Besides being a burden in traveling and a bore and expense, they are anxious to get rid of them and leave them on the plains to die. It must, by no means, be inferred from this that the Indian has no paternal feelings or affection; from several instances of the kind that have come under my observation I am assured it is their inability to carry about and along with them aged people. These Indians are poor, have but few horses and are constantly on the move, in all weather, sometimes requiring flight; therefore everything that might encumber in the way of baggage is thrown aside, and among other rubbish is classed the aged of both sexes. I am also told that it is often the desire of the aged to be left to die. To keep up appearances with his people, the Indian will generally pay a small doctor's bill for the relief of his aged relatives, but nothing like the amount the same man would pay for his wife or child. To explain their mode of practicing medicine, surgery, etc., we must be somewhat prolix.

In every camp there are several doctors, both men and women, called by them divining men, who have the double reputation of physicians and sorcerers. This is generally some old wretch who is very ugly, of great experience, and who has art enough to induce others to believe in his knowledge, and can drum, sing, and act his part well.

The present great doctor and soothsayer is named "Bull's Dry Bones," a very old man who is now with me. This man was once sick and died while the camp was traveling. His friends packed and tied him up in several envelopes of raw hides, blankets, etc., and, after duly crying over him, placed the body in the fork of a tree as is their custom. By some means, however, the man came to life and after great difficulty worked himself out of his bonds, traveled and overtook the camp some days after they had left him. He stated to them that during his decease he had been in other worlds, seen

much, knew everything, past, present, and future, and from this circumstance he has ever after been considered a great divining man and prophet. We will now state how they proceed in case of sickness. A child falls sick. The father or some other near relative immediately sends a gun or a horse to the divining man to secure his services. Sometimes smaller articles are sent, and the doctor, thinking them beneath his notice, will not pay a visit until enough is offered, which amount varies in proportion as the patient's relatives are rich or poor. He then enters the lodge of the sick person in his medical capacity. His instruments are a drum, a chi-chi-quoin, or gourd rattle, and, perhaps, a horn cupping apparatus. He must have (although not perceptible) some things concealed in his mouth or about his person, as will presently appear, although they go usually through their operations entirely naked (except the breechcloth) and not in a hideous costume as has been represented. The doctor is accompanied by five or six others as old and ugly as himself, bearing drums, bells, rattles, and other noisy instruments.

All sing to the extent of their voices and make a terrible noise with the instruments spoken of. The doctor slowly approaches the patient, applying his mouth to his naked breast or belly, draws or appears to draw therefrom by suction a worm, sometimes a bug, a wolf hair, or even a small snake, making at the same time horrible gestures, grunts, and grimaces. This object he displays to the lookers-on, stating he has extracted the cause of the disease. This operation is repeated several times with like results, and after he and the accompanying band of music partake largely of a dog or other feast provided for them they leave for the time. The whole performance, with the music, incantations, preparations, and feast included, would occupy perhaps from two to three hours and often the whole night, if the performers are paid high. Frequently their diseases are colic from eating unripe fruits and berries or overloading the stomach, which, of course, get well in a short time and the credit is given to the doctor, each recovery aiding to raise his reputation and enlarge his practice. But if the case is serious and the patient gets worse, the doctor is then paid again and another visit takes place. The forms are always somewhat similar, but on this occasion, in addition to the full band of music and cupping with the horn, besides the usual grimaces, noises, etc., the patient is made to drink decoctions of roots or powders made by the doctors of pulverized roots, rattles of the rattlesnake, calcined bones, etc., the properties of which he is entirely ignorant, and probably the smallness of the dose preventing them from doing any harm. This, with the noise of the instruments and feast, concludes the second visit.

Sometimes the doctor performs alone and keeps up the drumming, etc., all night. In this way by a repetition of visits, if the case is

of long duration, the whole of the property of the relatives of the sick person falls to the doctor and his assistants, who are also slightly paid for the music. And this is the cause of great individual distress and poverty, though the property given does not go out of the nation, but only changes hands and is liable in like manner to revert to others should the divining man fall sick. In case, after all, the patient dies, it is then the doctor who is in danger, and runs great risk of losing his life, by the parents or relatives of the deceased. Indeed, being aware of this they generally abscond to other camps when death approaches, and whatever property they leave behind is taken from them. No later than last winter the writer paid an Indian to prevent his killing the "Bull's Dry Bones" (doctor) who the man said had poisoned his two children six years ago. But the old doctor, although a humbug, is an innocent man and would harm no one.

They have various forms of doctoring, in all of which the drum forms a principal figure, and songs and incantations, all of which are most religiously believed in by the Indians. Old women are as often practitioners as old men and of as great celebrity. There is also another reason why these Indians give away so much of their property to the divining man. Independent of these payments securing the doctor's services, they are considered as sacrifices; that is, the man makes himself poor with a view of propitiating the Great Spirit.

Also it is considered and spoken of as a great honor to give away large articles to the divining man, such as horses, guns, etc., and goes to prove the affection with which they regard their sick relatives. For a long time afterwards the giver will boast of his liberality in these respects and is also looked upon as a man with a "large heart." We must, at the risk of not being believed, state that on two particular occasions, and before witnesses, we have examined the divining man's mouth, hands, and all his person, which was entirely naked, with the view of discovering where these worms, snakes, etc., were hidden, and that these examinations were made without any previous intimations to him who, never having been subject to examinations of the kind by Indians, was completely unprepared for the trial, yet he acquiesced cheerfully, afterwards continued his performance, and repeated it in our presence, drawing and spitting out large worms, clots of blood, tufts of hair, skin, etc., too large to be easily secreted, and leaving no visible mark on the patient's body. The trick was well done and not yet known to any of us.

Their knowledge of anatomy consists in being acquainted with the larger bones and joints. They can set a broken arm or simple frac-

ture tolerably well, and even replace a dislocated shoulder, which they do by pulling and outward pressure from the armpit, but this knowledge is not confined to the divining man nor is it his business more than any other who happens to be present. Most men of middle age have witnessed so many accidents of the kind that they can do this.

They are, however, unacquainted with the circulation of the blood and with any judicious treatment of internal diseases, for all of which they resort to incantations and drumming. They do, however, indiscriminately use the vapor bath or sweat house for various complaints. This construction is a small lodge thrown over a basket-work of willows stuck in the ground and bent in an oval or round form, the skins well pinned down and every aperture well closed. The doctor after heating some large stones red hot and putting them into the lodge enters with the patient, both entirely naked and taking along a kettle of water and, as usual, his drum. The lodge is then shut tight by the people on the outside. A brisk singing and drumming is kept up in the lodge by the doctor, who at intervals throws water on the stones and steam is raised. A violent heat and perspiration takes place, which they endure as long as they can; as soon as the patient is taken out he is immersed in cold water, which in nine cases out of ten results in his death. In this way the Crow Indians lost nearly 200 persons three years since during a prevailing influenza. The Mandan and Gros Ventres, however, being accustomed to cold bathing from their youth, are said seldom to suffer any inconvenience but often receive benefit from the vapor bath and immediate cold immersion. They have no names for fevers, consumptions, obstructions of the liver, etc., and can not explain further than by pointing out that part of their body which is in a state of pain.

Indeed, in this climate, except consumption, rheumatism and quinsy, diseases are extremely rare; and no febrile symptoms seen except in cases of wounds and parturition when puerperal fever often occurs, and assuming a typhoid form is generally fatal. They are also exempt from paralysis, toothache, and almost all the thousand nervous complaints to which the whites are subject, among which might be mentioned baldness or failure of eyesight from age. Their materia medica is consequently in a very primitive state. They have no medicine except some roots, some of which are known to be good for the bite of the rattlesnake, frozen parts, and inflammatory wounds. The principal of these is the black root, called by them the comb root (pl. 67, *a*), from the pod on the top being composed of a stiff surface that can be used as a comb. It is called by the French racine noir, and grows everywhere in the prairie throughout the Indian country. It is chewed and applied in a raw state with a

bandage to the part affected. We can bear witness to the efficacy of this root in the cure of the bite of the rattlesnake or in alleviating the pain and reducing the tension and inflammation of frozen parts, gunshot wounds, etc. It has a slightly pungent taste resembling black pepper, and produces a great deal of saliva while chewing it. Its virtues are known to all the tribes with which we are acquainted, and it is often used with success. A decoction of the root of cat-tail (pl. 67, *b*) is also used to reduce inflammation, and given internally to produce perspiration, but mostly as an external application for wounds, sprains, and pains of all kinds, as also the inner bark of the red willow; both of which are said to be beneficial, and are much used by the Indians and French voyageurs in all the Indian country.

At the risk of a smile and perhaps something more from the enlightened civilized medical fraternity we will now state how they absolutely can and do cure hydrophobia, in hopes of furnishing them with a hint that may be improved upon. We have never actually seen this operation, but are as certain of its being done as we can be of anything not seen but in all other respects well authenticated. Although Indians are often bitten by mad wolves, yet they never die from the disease if operated upon. After it is known that the patient has hydrophobia, the symptoms of which they are well acquainted with, and has had a fit or two, he is sewed up in a fresh rawhide of a buffalo. With two cords attached to the head and foot of the bale the man is swung backward and forward through a hot fire until the skin is burnt to cinders and the patient is burned and suffocated [sic]. He is brought to the brink of the grave by the operation; taken out in a state of profuse perspiration and plunged into cold water; and if he survives the treatment the disease disappears. The remedy is terrible. Now, if the poison of the rattlesnake is expelled by perspiration by administering ammonia and other remedies, might not the poison communicated by the rabid animal undergo a like process by the violent treatment mentioned, or intense heat produce the desired constitutional revolution and effect a cure.

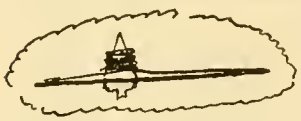


FIGURE 30.—Lancet

DEPLETION BY BLEEDING.—They bleed often, both when the pulse is full from sickness and at any time they think it beneficial.

The instrument is a sharpened arrow point or any other small piece of pointed iron. (Fig. 30.) They wrap the whole of this with sinew except as much as they wish to enter the vein. It is then tied into a split stick and secured firmly with sinew and being laid on the vein is knocked in suddenly with the thumb and middle finger. They also

open the veins of their legs and arms while crying over dead relatives, making large transverse cuts with knives, arrow points, or flints. When they bleed they generally let the blood flow as long as it will without bandage. Cupping is done with a part of the upper end of a buffalo horn, about 2½ inches long, and a vacuum is produced by suction with the mouth which, with their powerful muscles and exertions, is, of course, double force. It is said to be useful in drawing out the poison of snake bites and is also used for pains and cramps in the stomach, besides for extracting worms, bugs, snakes, etc., as mentioned in the general practice. We believe it may have something of the effect of dry cupping with glasses; they do not, however, scarify before cupping except in cases of snake bites.

Stoppage of Blood and Healing Art.—For stopping of blood they use cobwebs, dried pulpy fungus, or very fine inner bark of trees. When these are not to be had finely pulverized rotton wood is used. These answer tolerably well when the divided artery is small. They have no good plasters or healing salves.

Bandages are mostly tied on too tight, with the view of stopping the bleeding and are left too long before being removed, which frequently results in gangrene. They are not skillful nor clean in these things, seldom washing a wound. From actual observation, which has been pretty extensive with regard to cuts and wounds of all kinds, we are disposed to believe that their cure does not depend upon any skill in treatment nor care taken of them, but upon their vigorous constitutions, extremely healthy climate, and strictly temperate mode of life, with perhaps a disposition to heal naturally in the absence of scientific knowledge vouchsafed to the ignorant Indian by an all-wise Creator.

Amputation.—They never amputate a limb, though fingers and toes often undergo that operation.[6] The Assiniboin run a sharp knife around the joint of the finger and snap it off. The Crows do the same, but on other occasions take them off by placing a sharp tomahawk on the finger, it being laid on a block and the tomahawk being struck with a mallet. Whenever a Crow Indian dies his near relatives, male and female, sacrifice each a finger and sometimes two, and the loss of these people by sickness and enemies the last few years having been great, there is scarcely such a thing as a whole hand to be found in the Crow Nation. The men reserve the thumb and middle finger on the left and the thumb and two forefingers of the right hand to use the bow and gun, but all the rest are sacrificed.

They mostly take them off at the first and second joints, though occasionally lower down. These small amputations are seldom at-

[6] In the few cases where the Indians have an arm or leg missing, they have been shot off, or so nearly off as not to come under the head of amputation, as but little skin or nerve were to be cut.

tended with any serious effect, but from their awkward operations the bone frequently projects and requires a long time to heal. They use splints and bark in fractures and lacerated bones, but are not skillful in applying them, nor attentive in removing them, and in a short time the wound smells bad. Their wounded are carried from the field in a blanket, robe, or skin, by four men each holding a corner, who are relieved by others when fatigued, in which way they transport them for days and sometimes weeks together. When very badly wounded in an enemy's country and supposed to be mortally wounded they are left in some point of timber to die. A small stock of provisions and ammunition is left with them. They sometimes recover almost by miracle. Instances of this kind are not uncommon and serve to show the suffering an Indian will undergo and the different means he will use to preserve life.

THEORY OF DISEASES AND THEIR REMEDY.—They understand nothing of the properties of mineral medicines except a few simple ones given them by whites of later years, neither are they acquainted with the theory of diseases, being for the most part unable to describe their complaint so that any person could prescribe. They are as ignorant of any true knowledge of diseases or medicines as they are of astronomy or any other science.

It is hardly conceivable how the smallpox among Indians could be cured by any physician. All remedies fail. The disease kills a greater part of them before any eruption appears. We have personally tried experiments on nearly 200 cases according to Thomas's Domestic Medicine, varying the treatment in every possible form, but have always failed, or in the few instances of success the disease had assumed such a mild form that medicines were unnecessary. It generally takes the confluent turn of the most malignant kind (when the patient does not die before the eruption), which in 95 cases out of 100 is fatal. It appears to be the natural curse of the red men, and here we leave it, perfectly willing others should do more. We have from year to year tried to introduce general vaccination with kinepock among them, and have even paid them to vaccinate their own children, but they will not have it done to any extent, and the few who will do it more to please us than to benefit themselves. Moreover, should any accident happen to the child or even should the Indian miss his hunt, or any casualty befall him or his family, the vaccination would be blamed for it and the good-hearted operator would find himself in a position of danger and expense. There is also great risk in giving them medicines, for should the patient die the whites would be blamed for poisoning him, and should he live the Indian drummer or doctor will get both the credit and the pay. Therefore, as their customs at present stand but little can be done for them, however willing people are to attempt it.

PARTURITION.—Men never interpose their services in cases of parturition.

When there is danger a midwife is called, and the deobstruents administered are castoreum and pulverized rattles of the rattlesnake, either of which have the effect of the ergot. Shampooing is also resorted to with the view of detaching the fetus or expelling the envelope. Nevertheless strangulation and consequently death of both mother and child often happens, not so much in the natural course as when destroyed expressly in utero, as is done by the Crow women and sometimes by the Assiniboin, though not to such an extent by the latter. This is accomplished by violent pressure on the abdomen, by leaning on a stick planted in the ground, and, swinging the whole weight of their body, they run backward and forward, or by violent blows administered by some other person called for the purpose, in all which operations, if the time be not well calculated for expelling the fetus, death is the consequence.

Their vapor baths have been alluded to and might prove efficacious in some cases of chronic rheumatism, catarrh, etc., if proper care was taken, but are very pernicious owing to their negligence afterwards, or cold immersion during perspiration. In conclusion we would remark that with regard to any judicious treatment of any disease whatever (that is, any such treatment as would meet medical approbation) they are entirely in the dark. The most of their dependence is on the drumming, singing, and incantations which perhaps sometimes have some little effect on the mind of youthful patients, though in these cases the probability is they are more frightened than sick.

In a large camp the drum can be heard at all hours of the day and night, as there is always some one who is sick, or thinks he is. What appears singular is that the doctor, knowing his art to be deception, should he fall sick calls for another divining man and pays for the drumming the same as his patients have paid him. This would seem to prove they actually have faith in their own incantations, etc. They can not distinguish between an artery and a vein. They call both by the same name, though they say the arteries are large veins. Arteries are compressed, not taken up when cut, and if a large one is cut, the consequence is either mortification from the ligature or, if loosely tied, death by bleeding, which invariably happens when the large artery of the thigh is separated.

Indians will receive extensive wounds, apparently mortal, and yet recover. Some years ago an Assiniboin was surrounded by three Blackfeet a few miles from this place. He had fired at a prairie hen, and the moment his gun was discharged the three enemies fired on him. The three balls took effect. One broke his thigh, another the shin bone of the other leg, and the third entered his abdomen and

came out near the kidney and backbone. They then ran in upon and endeavored to scalp him, running a knife around the cranium and partially withdrawing the scalp. Finding that he struggled they stabbed him with a long lance downward under the collar bone, the lance running along the inside and against the right ribs about 12 inches. They also gave him several more stabs in the body with their knives.

In the struggle the man got out the lance and plunging it at them alternately they retired a few paces. The camp in the meantime having heard the firing and suspecting the cause, turned out. The enemies seeing this, decamped, and the Assiniboin carried the wounded man to his lodge. In a few days afterwards the camp passed by the fort and the writer saw this man in so helpless a state that, expecting him to die, nothing was done. The weather was very hot, the wounds had a purple color, smelt bad, and had every appearance of gangrene. The camp moved off and the man in time recovered. The scalp was replaced and grew on again. Here was no judicious treatment, not even ordinary care, for in traveling that is impossible, and very unfavorable weather. This man is yet living and is said by the Indians to bear a charmed life, is respected as a warrior and brave, called "He who was many times wounded," and can be seen any time in the Band des Canots of the Assiniboin.

Government

Tribal Organization and Government.—The tribe of Indians called Assiniboin is separated into the following distinct bands, viz, Wah-to'-pah-han-da'-tok, or "Those who propel boats," by the whites Gens du Gauche, from the circumstance of the old Gauche (chief) spoken of before who for a half century governed this band. It now numbers 100 lodges. The second band, Wah-ze-ab-we-chas-ta, or Gens du Nord, thus named because they came from that direction in 1839 as already represented, though their original appellation was Gens du Lac. These count 60 lodges. Third band, Wah-to-pan-ah, or Canoe Indians, Gens des Canots, who may be recorded at 220 lodges that trade on the Missouri, and 30 lodges more who deal with American and British traders near the mouth of Pembina and Red Rivers, occasionally visiting the Missouri. Fourth band, We-che-ap-pe-nah, or Gens des Filles, literally the "Girls Band"; these can be put down at 60 lodges. Fifth, E-an-to-ah or Gens des Roches, literally "Stone Indians," comprising 50 lodges. The original name for the whole nation given them by the Chippewa (As-see-ni-pai-tuck) has the same[7] signification. Within the last 10 years another division has again arisen, called Hoo-tai-sha-pah or "Lower End Red," alias

[7] For correct meaning see footnote 1.

"Red Root." These are a branch from the Gens des Canots and odds and ends of other bands and consist of 30 lodges.

RECAPITULATION

Indian name	French name	Lodges	Chiefs of bands	Head chief
Wah-to-pah-ban-da-toh	Gens du Gauche	100	La Main que tremble	L'ours Fou or Crazy Bear.
Wah-ze-ab-we-chas-tah	Gens du Nord	60	Le Robe de vent	
Wah-to-pan-ah	Gens des Canot	220	Le Serpent	
We-che-ap-pe-nah	Gens des Filles	60	Les Yeux Gris	
E-an-to-ah	Gens des Roches	50	Premier qui volle	
Hoo-tai-sha-pah	Le Bas Rouge	30	Le Garcon bleu	
		520		

Average, four and one half persons per lodge. Total, 2,340 souls.

These 520 lodges form the nation, with the exception of those residing in the north, whom they never visit. The bands named are distinct and usually encamped in different sections of country, though they mingle for a short time when circumstances require it, such as scarcity of buffalo in some part of their lands or on an approach of a numerous enemy. When these causes for combination cease they separate and occupy their customary grounds severally, within three or four days' travel of each other. The chief of the whole nation is Crazy Bear, made so by the commissioner of the United States at the Laramie treaty in 1851, not having as yet, however, that popular rule which will follow in due time if the treaty stipulations on both sides are complied with.

CHIEFS.—In each and all the bands mentioned there are several men bearing the character, rank, and name of chiefs. But he only is considered as chief of the band who heads and leads it. Yet this power does not give him a right to tyrannize over any of the other chiefs, or dictate to them any course they would not willingly follow; neither does it detract from their dignity and standing to acknowledge him as the head. Some one must be the nominal leader, and as this place involves some trouble and action and is not repaid with any extra honors or gifts it is not in general much envied. Moreover, this leader is mostly, if not always, supported by numerous connections who second his views and hence his authority. In fact, these bands are nothing more than large families, the chiefs resembling the old patriarchs, being intermarried and connected in such a way as to preclude the probability of clashing of interests or separation. These are the elements of the bands. The chief is little more than the nominal father of all and addresses them as his children in a body.

Now, although some of these children may be as brave as he, and have accomplished greater feats in war and the chase, yet they do not feel disposed to dispute his acknowledged authority, neither would

such insubordinate conduct be submitted to by the mass of the people, without some great mismanagement on the part of the chief, rendering such a course necessary and inevitable.

The process of arriving at the chieftaincy—an instance of which was exemplified in the formation of the Red Root Band and of which we were an eyewitness—has always been the same and is as follows: Some ambitious brave young man with extensive relations separate from another band with 8 or 10 lodges of his connections and rove and hunt in a portion of the country by themselves, acknowledging this man as their head on account of his known bravery and successful management of large war expeditions. From time to time additions are made to this band from other bands of persons with their families who from different causes of dissatisfaction choose to leave their leaders and submit to the government of the new chief. This chief, wishing to rise, does all in his power to benefit his small band by protecting them, choosing good hunting grounds, giving to them all horses and other property taken by him from his enemies, and, if necessary, fearlessly risking his life to strike or kill one of his own people to preserve order or their sense of justice. In the course of some years around this nucleus is assembled a body which assumes the form and name of a band and the leader, rising in power and support, increases in respect, and the standing and name of chief rewards his perseverance. It will be thus seen that the title and position of chief is neither hereditary nor elective, but being assumed by the right and upon the principles above explained, is voluntarily granted him by his followers.

And this is the correct representation of the origin of Assiniboin chieftainship and different bands being the same in all the roving tribes of which we attempt to treat in these pages. This high officer does not, however, at all times wear his honors securely. It is a known impossibility for any man in high station to please everybody, and although surrounded by numerous and strong friends yet he must have some enemies, and it does happen, though rarely, that he is assassinated. But this is more the consequence of some personal quarrel than ambitious designs, for although by assassination the chief is destroyed yet it does not follow that the assassin would take his place. Generally the reverse is the case and he is obliged to fly or the relatives of the deceased chief would kill him. In the event of the decease of a leader or chief, most likely some one of his relatives would succeed him, but whether brother, cousin, or uncle would not matter. The successor must absolutely possess the requisite governing powers, viz, known and acknowledged bravery and wisdom, moderation, and justice. If the relative be thus constituted, he would become the chief, not because he is a relative, or that he is the only brave man in camp—there are many such—but simply by being such

and having a stronger family connection than any other he would consequently be acknowledged by the greater part of the band. Should there be two candidates for the chieftainship equally capable and related, the question would be decided the first day the camp moved.

Each would follow the leader he liked best, and the smaller portion would soon revert to the larger, or if they were equally divided and both parties intractable, a new band would be formed subject to increase under their new leader or to dissolve and mix up with other bands. Viewing things in this light, it is easily comprehended how some personal defect, such as loss of sight or constitutional debility, would depose a chief, but that these unfortunate circumstances should render him a laughingstock and butt for others who before feared and respected him is a trait in their character not to be admired. We have said enough to give a general idea of the origin, progress, and tenure of chieftainship. It is only elective so far as general consent has accorded his right to rule, and is only hereditary, or appears so, because the relatives of the chief are mostly the most numerous, and from their ranks arises a successor. Though we have witnessed the chieftainship pass into other hands when the claims of two powerful families were equal and the abilities or popularity of one of the candidates defective in some principal part.

Women are never acknowledged as chiefs, or have anything to say in councils. We know of but one anomalous instance of the kind on the whole upper Missouri which, being very remarkable, merits notice. She is a Blackfoot by birth, but having been taken prisoner when young by the Crows, was raised by and has since resided with that nation, being identified with them.

We have known this woman for 10 years, and during that time have seen her head large war parties of men against the Blackfeet, bringing away great numbers of horses, and killing several of the enemy with her own hand. She is likewise a good huntress, both on foot with the gun and on horseback with the bow and arrow, ranks as a warrior and brave and is entitled to a seat in councils of the Crow Nation. She ranked as fifth from the Crow chief in a council held by the writer with the Crows and the Cree at Fort Union on the occasion of making a peace between these two nations. She keeps up all the style of a man and chief, has her guns, bows, lances, war horses, and even two or three young women as wives, but in reality servants. In appearance she is tolerably good-looking, has been handsome, is now about 40 years of age, and still goes to war. Her name is "Woman Chief," and although dressed as a woman the devices on her robe represent some of her brave acts. She is fearless in everything, has often attacked and killed full-grown grizzly bears alone, and on one occasion rode after a war party of Blackfeet,

killed and scalped one alone (within sight of our fort on the Yellowstone), and returned unharmed amid a shower of bullets and arrows. This extraordinary woman is well known to all whites and Indians. She resided at Fort Union last winter, and appears in private disposition to be modest and sensible; but she is an only instance in all the roving tribes of the Missouri. Her success induced an imitation a few years since by an Assiniboin woman, but she was killed by the enemy on her first war excursion, since which no rivals have sprung up.

Having disposed of the chieftainship for the time and separated the nation into bands, we will now proceed to describe other divisions which we shall call clans. These are clubs or societies formed by the young men of different bands or of the same band. There are not many among the Assiniboin, they being a small nation, but are numerous among the Sioux and the Blackfeet, bearing the names of Foxes, Foolish Dogs, Strong Hearts, Bulls, Pheasants, etc. Among the Assiniboin are first the braves, Na-pa'-shee-nee, Ceux qui sauvent, who are a picked body of young men, said to be bound by the most solemn promises and oath never to run from an enemy or leave one of their clan in danger. They are chosen from all the bands on account of some previous brave act, and are only known as a body at feasts of their own and on war expeditions. They wear no badges but dance completely naked in public and have different songs, different from those of other dances. The Bulls, Tah-tun-gah, are another of the same kind of clans in the band, Gens des Canots. Their badge is a bull's head and horns painted on their drums, shields, and robes, also in the Bull Dance they imitate the motions of that animal, his bellowing, and shoot at each other's feet with powder. When dancing they wear the head and horns of a bull, skinned to the neck, the bones taken out, and the skin dried. Into this the head of the man is thrust, giving him the appearance of half man and half animal.

The Sndoo-kah, "Circumcised."—This is a large clan of the band, Gens des Canots, consisting of at least 100 persons, young and old. They have not actually had circumcision performed, but these are called so, and belong to that class who are naturally minus the prepuce. These assemble once or twice a year and their ceremonies are kept somewhat secret. They are, however, obliged to display the part alluded to, to prevent imposition. When wishing to be known in that capacity on private occasions they paint the tip of their nose red. The end of a feather painted red or the pod of the plant sketched as the comb root stuck in their hair is equally significant.

The Fox and Wolf clans are small and only appear to differ in the manner of their dances and songs. There does not seem to be much

importance attached to these clans, neither do they appear to be of much use, and most likely are got up for the purpose of display, dancing, and other ceremonies, but as soon as these are over mix up with the bands they belong to, and are very little talked of. There are no minor subdivisions except into families. These remarks answer nearly all search for origins of bands in badges and names of bands. Now, as far as the roving tribes are concerned, this is error. The names of the Assiniboin bands we have mentioned and those of the Sioux now follow, some of which consist of two, three, and four hundred lodges, and none of them have the least reference to Bear, Wolf, Eagle, Fox, or Father, Grandfather, Uncle, etc., or anything of the kind.

The names of the different bands of the Missouri and the Platte Sioux are Lower Yanctons, Sechong-hoo (Burnt Thighs), Oglala, Sawone,[8] Minneconzshu, Etasepecho (Sans Arcs), Honcpapa, Seahsappah (Blackfeet Band), Wohainoompa (Two Kettle Band), Midewahconto, Esantees, Teezaptah, Zahbaxah (Tête Coupées), Wazecootai (Tireur dans les Pines).

As before remarked, not one of these names bears the most distant resemblance to any living animal, bird, and so forth, neither have any of them any general badge representing these things as symbolical of their band.[9] The clans before referred to are of no importance in their government and with the Sioux and with the Assiniboin are only recognized as separate bodies during their dances and other ceremonies.

Is each band entitled to one or more chiefs? There is, as observed before, but one nominal chief to each band, and it is he who leads it. Yet this position does not destroy nor militate against the will of several others in the same band whose voices are as much entitled to a hearing and sometimes more so than his. No man's rule over them is absolute; their government is pure democracy. Their consent to be governed or led by any man is voluntarily given and likewise withdrawn at the discretion of the person. But their existence as a people depends on forming themselves into bodies capable of defense. These bodies must have leaders and these leaders must be brave, respected, followed, and supported. In case of a treaty either with whites or with Indians of other nations, the leading chief's voice would have no additional weight because he is in that position. He would be allowed to state his opinions with others of the same standing as men in the same band, but nothing more. As a good deal that is to follow will depend upon receiving a correct idea of these chiefs or leaders we do not like to leave any portion of these matters obscure or unanswered. There are no bands more honorable than

[8] This term is the same as Saone or Sanona.

[9] Here Denig seems to refer to what is commonly called clan totems.

others; some are more powerful, more rascally, or more tractable, but no aristocratic or honorable distinctions exist.

SOLDIERS.—Having mentioned and explained the divisions of bands and clans with the chiefs thereof, the next important body in their government is the ah-kitch-e-tah,[10] or soldiers or guard. These soldiers are picked from the band on account of their proved bravery and disposition to see things well conducted. They are men of family from 25 to 45 years old, steady, resolute, and respectable, and in them is vested the whole active power of governing the camp or rather of carrying out the decrees and decisions of councils. In a camp of 200 lodges they would number 50 to 60 men, and in a camp of 60 lodges 10 to 15 men. The soldiers' lodge is pitched in the center of the camp and occupied by some of them all the time, although the whole body are only called when the chief wishes a public meeting or when their hunting regulations are to be decided upon. This is their statehouse; all business relative to the camp and other nations is transacted there, and all strangers or visitors, white or red, are lodged therein.

Neither women, children, nor even young men are allowed to enter in business hours and seldom are seen there at any time. All tongues of animals killed in hunting belong to this lodge if they wish them, and the choicest parts of meat are furnished them by the young hunters all the time. A tax is also laid on the camp for the tobacco smoked here, which is no small quantity, and the women are each obliged to furnish some wood and water daily.

What are the general powers of chiefs in council? To explain this, it will be necessary to describe a council as witnessed by me a few years since. The camp when I was a visitor consisted of about 110 lodges and in the neighborhood, say, 10 or 15 miles off were two other camps, respectively 50 and 60 lodges, all being of the band Gens des Canots. The council was held in the soldiers' lodge, where, being a stranger, I had a right to be, though having nothing to say regarding the question. This question was, Will we make peace with the Crow Nation? A few days previous the leading chief had received an intimation through me that overtures for a peace were made to them by the Crow Nation, and that the Crow tobacco sent for that purpose was in my possession at any time the council assembled; also that a deputation of Crow Indians was at the Fort, who had commissioned me to bear the tobacco with their request and to await a reply prior to their visiting the camp in person.

To decide this runners were sent immediately to the two camps mentioned with a message from the chief requesting the attendance of all chiefs, counsellors, soldiers, and warriors who felt an interest

[10] In form and sense this term *ah-kitch-e-tah* is identical with the Chippewa *kitchitwa*, "sacred, holy, honorable," and with the Cree *okitchitaw*, "a brave, a soldier, un soldat)."

in the affair in question, who in due time arrived and took up their residence in the different lodges around about until the hour for business arrived. When it was ascertained that all or a sufficient number had come the haranguer or public crier of the camp made the circle of the village, speaking at the extent of his voice the object of the meeting and inviting all soldiers, chiefs, and braves or warriors to attend and hear what their chief would bring before them for their

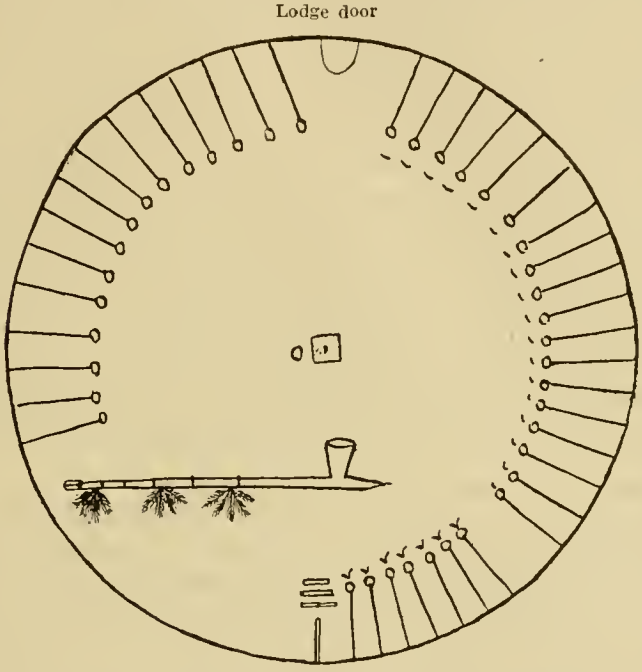


FIGURE 31.—Diagram of a council lodge, representing the interior of a council lodge in which Mr. Denig met the Assiniboin leaders to discuss peace overtures made by the Crow Indians to the Assiniboin at the instigation of Mr. Denig. At a point directly opposite the doorway Mr. Denig is seated with the proffered tobacco of the Crow Indians lying in front of him, denoted by 3 parallel marks; at Mr. Denig's right sits the leading Assiniboin chief; to his right sit 6 other chiefs and councillors; next are seated 18 so-called "soldiers," i. e., official guards of the camp; the next 15 figures are 15 principal young warriors. The small square figure with a central dot is a small fire; and the small circlet beside the fire is a flagstaff running up through the lodge top, flying a United States flag. The calumet pipe lies in front of the leading chief.

consideration. This was repeated over and over again in different parts of the camp, and shortly afterwards they began to assemble in the soldiers' lodge. Three skin lodges had been formed into one, making an area 24 feet in diameter, which could with ease accommodate 60 to 80 persons. On this occasion about 46 people presented themselves and when the whole had entered the interior exhibited the form shown in Figure 31.

It was nearly sunset when they had assembled and no feast had been prepared in this lodge, though after the council was over they were feasted elsewhere. We have here the represented authority of 220 lodges, for the chiefs are largely connected, having from 10 to 20 or more lodges of their immediate relatives each. The soldiers are the most respectable heads of families in camp, and the warriors are the sons and relations of these and others of the camp. If this body decides on carrying a point who are to object? Those about are also related to those present and these being the principal leave only young rabble, very old men, women, and children not represented, all of whom combined could do nothing against the decision of this body. We will now proceed with the ceremony. For nearly a half hour the pipe was passed around in silence, it being filled with their own tobacco and handed from mouth to mouth, making its circuit on the right-hand, after which it was laid down by the leading chief and he opened the meeting by thus stating its object, the words of whom and others were taken down by us at the time and preserved. It will be necessary to state here that the Crow Indians had massacred about 30 lodges of this same band two years previous on the banks of the Yellowstone, yet had succeeded in making a peace with some of the upper bands of Assiniboin who had not suffered by them.

The leading chief spoke thus from where he sat:

"My children, I am a mild man. For upward of 20 years I have herded you together like a band of horses. If it had not been for me, you would long ago have been scattered like wolves over the prairies. Good men and wise men are scarce; and, being so, they should be listened to, loved, and obeyed. My tongue has been worn thin and my teeth loosened in giving you advice and instruction. I am aware I speak to men as wise as myself, many braver, but none older or of more experience. I have called you together to state that our enemies (the Crows) have sent tobacco, through the medium of the whites at the big fort, to me and my children, to see if they could smoke it with pleasure, or if it tasted badly. For my part I am willing to smoke. We are but a handful of men surrounded by large and powerful nations, all our enemies. Let us therefore by making a peace reduce this number of foes and increase our number of friends. I am aware that many here have lost relatives by these people, so have we by the Gros Ventres, and yet we have peace with them. If it be to our interest to make peace all old enmities must be laid aside and forgotten. I am getting old, and have not many more winters to see, and am tired seeing my children gradually decrease by incessant war. We are poor in horses—from the herds the Crows own we will replenish. They

will pay high and give many horses for peace. The Crows are good warriors, and the whites say good people and will keep their word. Whatever is decided upon let it be manly. We are men; others can speak. I listen—I have said."

This speech was received by a slight response by some of Hoo-o-o-o and by the majority in silence. After a few minutes' interval he was replied to by another chief, the third or fourth from where he sat. This was a savage, warlike, one-eyed Indian, and his speech was characteristic. He said: "He differed from all the old chief had said regarding their enemies. Individually as a man and as their leader he liked his father, the chief, but he must be growing old and childish to advise them to take to smoke the tobacco of their enemies, the Crows. Tell the whites to take it back to them. It stinks, and if smoked would taste of the blood of our nearest relations. He thought (he said) his old father (the chief) should make a journey to the banks of the Yellowstone, and speak to the grinning skulls of 30 lodges of his children, and hear their answer. Would they laugh? Would they dance? Would they beg for Crow tobacco or cry for Crow horses? If horses were wanted in camp, let the young men go to war and steal and take them as he had done—as he intended to do as long as a Crow Indian had a horse. What if in the attempt they left their bones to bleach on the prairie? It would be but dying like men! For his part it always pleased him to see a young man's skull; the teeth were sound and beautiful, appearing to smile and say, 'I have died when I should and not waited at home until my teeth were worn to the gums by eating dried meat.' The young men (he said) will make war—must have war—and, as far as his influence went, should have war. I have spoken."

This speech was received with a loud and prolonged grunt of approbation by more than two-thirds of the assembly.

Other speeches followed on both sides of the question, some long, some short, until the council became somewhat heated and turbulent; not, however, interrupting one another, but mixing a good deal of private invective and satire with the question in their speeches. At a point of violent debate and personal abuse, two soldiers advanced to the middle of the lodge and laid two swords crosswise on the ground, which signal immediately restored order and quiet. The debate was carried on with spirit for about two hours but it was easily to be perceived long before it terminated, by their responses and gestures, that the war faction greatly predominated. The chief, after asking if all had spoken and receiving an affirmative answer, remarked they could go and eat the feast that had been prepared for them. The warriors gave a loud yell and when out commenced

singing their war song. We asked the old chief what was the decision. He said, "It is plain enough; listen to that war cry." He then desired me to send the Crow tobacco back without delay and tell them to leave the fort immediately and go home. A few days after a large war party started to the Crow village. The morning after the council's decision was made known by the haranguer or public crier, at the break of day, walking through the village and crying it out at the top of his voice. From the foregoing it will be seen that the chief only expressed his opinion as the others, yet the large majority or rather the feeling evinced for war by the leaders of the war parties, warriors, heads of families, soldiers, and all who could make war, left none to contend with.

Had the same general exhibition for peace prevailed, the same powers could make it, or rather force would be unnecessary when a unanimity of such a body prevailed. Had the parties or feeling been equally manifest the question would have been laid aside for another time, perhaps years, and each went to war or remained at home as he pleased.

Most councils have this feature and termination, that is, if the measure is not at once visibly popular, it is abandoned. This precludes the necessity of vote and none is taken. Besides, except for camp regulations, hunting, etc., they are not obliged to decide. Time is not valuable to them. There is no constituent power in the rest of the band, whose voices are not asked, nor required, to force a decision, nor actual power to operate against any measures, that may be decided upon by their parents, and soldiers of the camp. Wherever force is necessary, however, to carry out these decisions, as in hunting regulations, the soldiers are pledged to act in a body to effect it, even at the risk of their lives. But should the decision be for a peace and afterwards a war party be raised to go against the nation with which peace has been made, the soldiers would not use force to prevent it. They have too much good sense to strike or kill any of their own people to benefit their enemies, and in this case the peace party being the most numerous, and consequently the richer, would pay the partisan, or leader of the party, to remain at home and a collection of horses, guns, and other property made among them for that purpose, which being handed the partisan and by him divided among his warriors, stops the expedition.

This is done often among them, particularly at this time when "peaces" have become tolerably general through the Laramie treaty. There are cases, however, where force is necessary, and the soldiers are brought to act, which we will shortly mention. To present any idea of their government so that it can be understood, we must first proceed to describe the component parts of a large camp, after which it will be easy to perceive their principles of government. The regu-

lations kept up in the following description is only in large camps: Smaller ones, from 10 to 20 lodges, hunt, every man when he pleases, and, as there are but few persons to feed, they can always have meat in this way; but where the camp is composed of from 50 to 100 or 200 lodges this is not the case, as will presently appear.

COMPONENT PARTS OF A LARGE CAMP

1. The leading chief.
2. The other chiefs.
3. Chief of the soldiers.
4. Cook of the soldiers' lodge.
5. The soldiers.
6. The elderly men.
7. The haranguer.
8. The master of the Park.
9. Warriors and hunters.
10. Partisans.[11]
11. Doctors and conjurors.
12. Very old men.
13. Young women.
14. Old women.
15. Middle-aged women.
16. Boys and girls.
17. Very small children.

The ordinary occupations of these several divisions of the camp will now be taken up in order.

1. The leading Chief, Hoon-gah, being the head, is expected to devote his time to studying the welfare of his people. It is for him to determine where the camp shall be placed and when it should move; if war parties are advisable, and with whom, how many, and at what time; where soldiers' camps and the soldiers' lodge should be established; when traders are wanted in camp, or when they shall go to the fort to trade; to call councils on these and all other affairs of general interest.

2. The other Chiefs, Hoo-gap-pe. These are sometimes counselled privately in their lodges by their leader and their advice followed if correct and according to his views. They sit in council when called, and rank equally with the leader as men, warriors, counsellors, etc., except they do not publicly attempt to lead or act without his knowledge and consent.

3. Chief of the soldiers, Ah-kitche-tah Hoon-gah. This is the head man in the soldiers' lodge; sees to their property therein, whether there is wood, water, tobacco, and meat enough; opens councils; sometimes sends invitations for the others to assemble when the Chief requests, and on small occasions of his own accord; makes feasts; lights the pipe in large assemblies, and is the nominal head of this active body; is a highly respected and useful officer in camp. He has much influence with the young warriors and is selected from among the bravest of them.

4. Cook of the soldiers' lodge. First, Wo-ha-nah; second, Wah-yu-tena. This functionary is also a soldier and a highly respectable officer, ranking next to the Chief of the soldiers.

[11] Denig employs the word partisan in the sense of "a leader of a war party."

Eating being one of the Indian's most important occupations, the care of the meat, choice of the parts, and separation of the whole depending upon him, the station becomes at once of consequence and requires a determined man. On feasting, which in that lodge is going on every night, if not every day, he dishes out the meat into wooden bowls and gives to each the parts he chooses. Of a dog, the head, paws, and grease—bouillon—are the most honorable parts. There is great etiquette shown in this respect, and it is too long a story to record when there is so much yet to be written.

5. The soldiers, Ah-kitche-tah. These are the bravest and most orderly men of from 25 to 35 years of age. They have been and are still warriors and leaders of parties to war, are chosen expressly to carry out the decrees of the council, even at the risk of their lives, to punish people for raising the buffalo, setting the prairie on fire, govern the camp, protect whites and strangers of other nations in camp, entertain and feast the same, arrange preliminaries of peace, trade, and generally to aid their chief in carrying out his views and decisions of council.

6. Elderly men, We-chap-pe. These may be called the body of the camp, being men of family, about 40 years old, have been warriors and soldiers when younger, but have abandoned these occupations, devote their time to hunting, are still good hunters, try to amass horses and other property by making robes, endeavor to get their daughters married well, send their sons to hunt or to war.

They are respectable, quiet, peaceable men, among their own people, content to follow their leader and obey the council, rank as councillors when they wish, are always invited though but few attend except on interesting occasions.

7. The Public Crier. First name, Ponkewichakeah; second, Hoonkee-yah. This is some elderly or middle-aged man who has a strong voice and a talent for haranguing. He answers the purpose of the daily newspaper of the whites. A little before daybreak he walks around and through the camp different times every morning, calling upon the young men to get up and look after their horses and arms, to go on the hills and look for buffaloes, watch if there be any signs of enemies about—to the women to get up to bring wood and water, cook, dress hides, etc. If any news has been received in camp the day before or any councils held, he now states the results. Whenever the camp is to be moved or hunts made, or enemies seen, or councils to be held, this man publishes it in this way. He is in fact their publisher and a useful man, doing more to preserve order and induce unanimity of action than any other, is entitled to eat and smoke in any lodge he happens to enter without invitation, receives many small presents, and is a general favorite for the trouble he gives himself.

8. Master of the Park, Wo-wee-nah. A park or pen to catch buffalo is not at all times made, though almost every winter there is one or two among the Assiniboin. We will have occasion to refer to this original method of hunting in another place; at present it suffices to say that the person who superintends that employment is some old conjuror or medicine man who is said to make the buffalo appear and to bring them toward the pen. He makes sacrifices to the Wind, the Sun, and to Wakoñda, etc., of tobacco, scarlet cloth, and other things; he is a necromancer and is supposed to be possessed of supernatural powers and knowledge; he has from four to six runners under his command whose business it is to discover the buffalo within 20 or 30 miles around, and to report to him.

9. Young men, Ko-ash-kah-pe. These are a numerous body, some warriors, some hunters, some neither. Those who have killed or struck enemies or stolen many horses from their foes are entitled to sit in the council and are always invited, principally to hear and give their assent or dissent in responses, gestures, etc. They, no doubt, would be allowed to speak but they never do, because those who are older speak, and they are generally the fathers and relations of these young men. In this modesty of deportment they are much to be admired. They always conform to the decisions of the soldiers and the chiefs. The partisans or leaders of war parties are chosen sometimes from these young men, when by their acts they have proved a capacity to lead, though mostly it is one of the soldiers who raises and leads the war expedition.

The Partisan is in command during the entire expedition, directs their movements, possesses the power of a military captain among the whites, and receives the honors or bears the disgrace of success or failure, his authority in that capacity ceasing on his return to camp from the war.

10. Doctors, alias conjurors, alias priests, alias soothsayers, alias prophets, Wah-con-we-chasta. These have been alluded to under the head of "General Practice" in their medical capacity. They are not numerous, form no distinct body, and unite the above talents in the same person. They do many tricks well, also foretell events, interpret dreams, utter incantations, medicine speeches and prayers, and cry for the dead, etc. They are believed sincerely by all to possess supernatural powers. The males of this class are sometimes in councils but they have little influence there. Councils are matters of fact and do not admit of their noise and flummery, without which they are ciphers. They are tolerated because somewhat feared, are paid for their services, and by no means rank as very respectable and efficient councillors, warriors, or men.

11. Very old men, We-chah-chape. These are few. Indians are not long-lived. These are countenanced in private feasts and or-

dinary conversation, principally on account of their talent in reciting fables and creating mirth for the rest. They also sing for the doctors and cry for the dead when paid, are poor, not respected, and manage to rub through the rest of their days the best way they can. They never sit in council when very old, are neglected, and serve for a butt and ridicule for the young. They stay at home, make pipes, smoke, and eat constantly and are ready at all times to offer their services when something is to be gained.

12. Young women, We-kosh-kap-pi, do little work before they are married and have their first child, after which time they commence a laborious life. Before this they go for wood and water, garnish with beads and porcupine quills, and other light work. They gather berries, assist in dances, paint, and show themselves.

13. Middle-aged Women, Wé-yah-pe. These are the wives of the soldiers or middle-aged men, and their time is employed in dressing skins, cooking, drying meat, taking care of their children, making cloth for their family. They are always busy, but can not be said to lead a too laborious or miserable life.

14. Very Old Women, We-noh-chah (Sioux), Wa-kun-kun-ah (Assiniboin). On these fall all drudging and scullionry, some of their occupations being too disgusting to relate. They also pound meat and berries, make pemmican, carry burdens, and are used pretty much as one of their dogs. They are thrown into the fort or left on the prairie to die by their own relatives.

15. Boys and Girls, Och-she-pe wechin chap-pe. The boys hunt rabbits, set traps for foxes, play, but they seldom quarrel; they are great pests and nuisances, both in camp and in the fort; they are spoiled by their parents—forward, officious, tormenting, and impudent. The girls are modest, timid, and exceedingly well behaved.

Very Small Children, Yaque-ske-pe-nah, are carried about on the backs of their mothers, or packed on dogs; they stand severe cold well, do not cry much, and are suckled for two or three years. The children are as well taken care of as they can be in the roving mode of life of their parents, but being subject to exposure in all weather and accidents. About two out of five are raised.

The ahkitchetah regulate the hunt. The buffalo are not hunted by a large camp as each individual chooses, but surrounded by the whole camp at one time, which we will describe in that part of the report which refers to hunting and to game laws. The dogs for these hunts are determined by the chief and soldiers in the soldiers' lodge, and the people are individually forbidden to hunt or in any manner to raise the buffalo before that time. The reason is that by going in a body and hemming in or surrounding them, some hundreds of the animals are slain in a short time, whereas by one man's individual

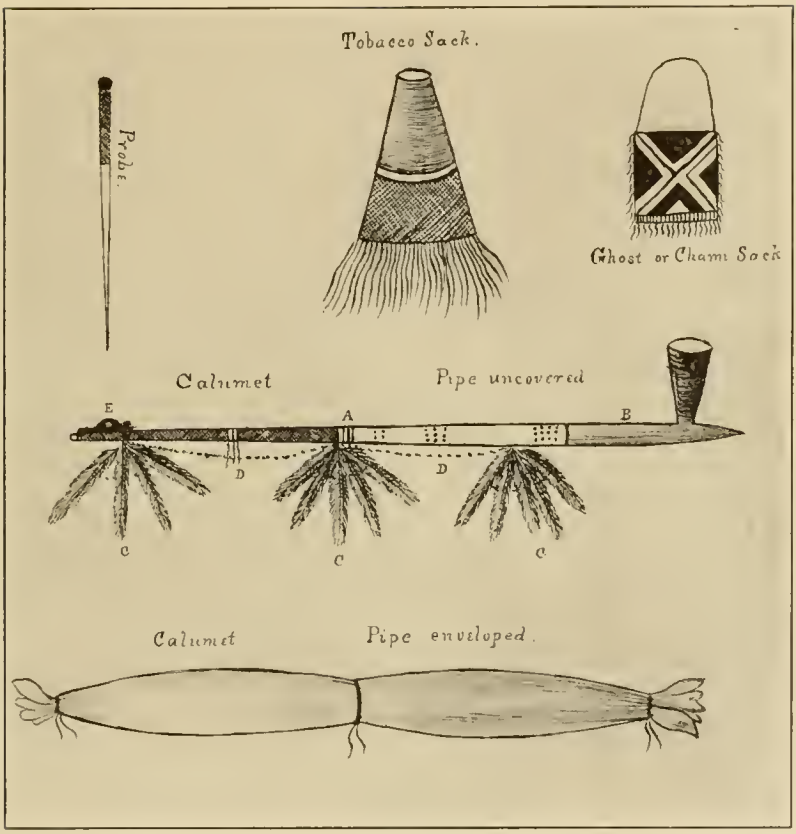
hunting the whole herd would be frightened and run away and the camp thereby be always in a starving condition, instead of having abundance of meat as is the case when the laws respecting the surround are enforced. Should any person or persons violate these laws, after the decree of the soldiers' lodge has been published, they (the soldiers) meet him on his return home, take his meat, kill his dogs, or horses, cut his hides up, cut his lodge to pieces, break his gun and bow, etc. If the individual resists or attempts to revenge any of these things he is shot down on the spot by the soldiers, or struck down by a tomahawk and pounded to death. Occasionally they are also thrashed with bows, in addition to the breaking of the gun, etc. The writer has seen two killed and many severely thrashed for these misdemeanors. The consequences of destroying the hunts are serious to the whole camp, hence the violent penalty and examples are made occasionally which serve to increase the respect and fear of the soldiers as a body, and enables that business to proceed with order.

In all this the soldiers are supported by the whole camp, and it is in them as a body that decisions are invested with a binding force, if force be necessary. We may state that the power is tacitly committed to the chief as a common and general function of the office, to be held as long as he governs with general satisfaction, subject, however, to the advice and consent of the soldiers and other bodies in camp, as has been explained. They are at all times open to popular opinion and are only the exponents of it, and although distinguished deeds were the cause or some of the causes of their exaltation to this high office, and that they have since been and generally are discontinued, when the chief becomes of middle age, yet so long as the capacity and ability of the incumbent exists and coincides with the popular will, he is retained in office. Old age, debility, or other natural defect, and incapacity to act, advise, and command, induces the necessity of change in his position, and though not formally deposed, he voluntarily retires and resigns in favor of some growing and popular soldier and warrior. The disapproval of the mass of the body of soldiers, warriors, etc., as represented in the council of war, would also be an effectual barrier to the existence of his power or functions in every respect and at any and all times. It should be remembered that all the remarks in these pages, although written primarily for the tribe called the Assiniboin, apply equally well to all the roving tribes of the Missouri River from and including the Sioux to the Blackfeet, our limits not admitting separate descriptions for each tribe. Where there is any important difference, however, we will not fail to mention it.

Is the democratic element strongly implanted? Very. The whole is a pure democracy, as has by this been developed. There are also

consultations in private lodges previous to meeting in councils, but these do not appear to influence the opinions of any, further than thereby getting a thorough acquaintance of the subject, and preparing their minds for a speech, and not much idea can be formed in this way of the popularity of the question until it meets public discussion in the council. Neither are these private councils held with that view but are merely conversations regarding the importance of the subject and something to talk about, which is always desirable in an Indian camp. They are obstinate in adhering to a formed opinion and not easily moved by oratory or extraneous remarks, are shrewd and pursue the subject with intensity and perseverance until decided or abandoned. They are liable also to be carried away by the excitement of debate and lose sight of the subject in personal abuse and recrimination until called to order by some more cool. There is no vote taken, though the prevailing feeling is manifest and those who do not exhibit any of this feeling are quietly asked their opinion, which they as quietly give. All this has met with sufficient explanation. The leading chief does nothing in advance of public opinion. His business is rather to think of their welfare and interests, bringing those subjects under discussion which appear to him of sufficient importance and which he sees merit consideration by the excitement they occasion in private lodges, or if smaller matters they are left to the decision of the soldiers. In councils held in the soldiers' lodge for hunting the chief does not always appear. When the camp is placed for the winter he assists in forming the body of soldiers and in giving general instructions which they carry out. Afterwards he seldom goes for these purposes. The business of these soldiers will meet with further notice in these pages and it is worth while considering their powers, as they are the active force of all large camps.

Councils.—Councils are opened in a very sedate and orderly form. The pipe is the principal of all ceremonies, and its motions vary with the occasions. Councils between two nations for a peace, deputations of both being present, are very solemn and take a long time. It is likely these ceremonies are very ancient, being nearly the same among all the roving tribes. The real calumet used on this occasion with its accompaniments presents the form as sketched and explained in Plate 68. This instrument is always kept packed up in many envelopes of cloth, skin, etc., the whole making a roll as thick as a man's thigh, sometimes as large as a piece of common stovepipe, 5 or 6 feet long, is laid in the middle of the soldiers' lodge on a piece of scarlet cloth in that way before the deputation has arrived, or immediately on its arrival, is not opened, however, until a full council has been assembled. The chief (who owns the pipe) then com-



THE CALUMET AND ITS ACCOMPANIMENTS

A, The pipestem of ash wood, garnished about half its length with porcupine quills of various colors; *B*, a large red-stone pipe; *C*, *C*, *C*, three tails of the war eagle, feathers connected with sinew and beads or shells between. The stem or stalk of the feathers is garnished with colored porcupine quills; *D*, *D*, two festoons of beads or shells with a small strip of otter skin on which the beads are tied; *E*, the head of a mallard duck (male) without the under bill. Sometimes this is the head of a red-headed woodpecker.

mences the ceremony of unrolling it, and at the taking off of each envelope says a few words equivalent to "Peace we wish," "Look over us, Wakoñda," "This to the Sun," "This to the Earth," etc., giving, as it were, some distinction or value to each envelope. After a long time and the untying of many knots, the pipe and stem appear, with a tobacco sack, a bunch of sweet-smelling grass, a probe for the pipe, and a small sack containing a charm or amulet. The pipe is on this occasion filled from the tobacco (or mixture) sack by the chief of the soldiers, though not lit, and in this way handed to his own chief. He (the chief) now stands up, the different deputations of nations sitting opposite each other on either side of the lodge. He first presents the pipe to the East, singing a gentle and harmonious song for about a minute, then presents it South, West, North, to the Sky and lastly to the Earth, repeating the song at each presentation.

In conclusion he turns it slowly three times round, and lays it down, all responding hoo-o-oo as the pipe is placed on the ground. The chief now sits down in his place, and the Chief of the soldiers rises. He lights the pipe with a piece of the sweet-smelling grass—if the strangers are of the Crow nation a piece of dried buffalo dung is used to light it—stands up and presents it precisely to the same points as the chief had done without singing, giving three puffs or whiffs of the pipe to every presentation, finishing in the same way the chief had done, and, receiving a loud prolonged universal hoo-o-oo or grunt of approbation, he then resumes his seat. The chief now rises the second time and having had the pipe relighted, holding the stem in his hand advances and presents it, or rather places it in the mouth of the head man of the strange deputation, allowing him to take a few whiffs, passes to the next and the next, they sitting and he moving round from one to another until all the strangers have been smoked, then he hands the pipe to the chief of the soldiers and sits down. This officer now presents the pipe in the same way to his own chief and going round the other side smokes all his people, and hands the pipe to another soldier, who goes the whole round again, and this is repeated over in silence for at least two hours, when the pipe is laid down by the chief, and speeches or signs begin by which they arrange the preliminaries of a peace. After all is settled the pipe undergoes the ceremony of rolling up, which is fully as long, though not in silence, conversation becoming general and ordinary pipes being introduced. The termination on this occasion is a grand feast in the soldiers' lodge to the strangers, and invitations to 50 or more other feasts in camp, to all of which they must go, and when all is finished the strangers are accommodated with temporary wives during their short residence.

There is generally order observed in the breaking up of councils, the chief saying "We are done," when all retire. Occasionally, however, it breaks up turbulently, and they separate in passion, but the subject is reconciled and settled in order the next time. Different councils have different ceremonies. Some open and some close with feasts of dog meat. The pipe is never omitted, though the real calumet is never opened except in dealings with strangers. In all other councils soldiers' pipes are used. The duties of the public crier we have already mentioned. Questions are well debated, and generally decided on the spot or abandoned as already explained on the principle of large majorities, or rather general approbation, though absolute unanimity is not required. The few who oppose say nothing against the affairs when once decided, and although they do not relinquish their opinions, yet can not or will not go contrary to the wishes of the many. But the voice of the leading chief is in no instance taken as the expression of the will of even a single band, much less a whole tribe.

Scope of Civil Jurisdiction.—A decision by the body of the council is carried into effect by the soldiers, by force if necessary, as in the case of hunting by the surround, removing neighboring lodges of their own people who are so placed as to bar the passage of the buffalo toward the camp. Lodges thus situated are invariably forced to come and join the camp or to remove so far as to be no obstruction to the passage and advance of the buffalo, and to move them against their will is often a serious and always a dangerous undertaking. They do it, however; that is, the soldiers turn out in a body, kill their dogs, and keep doing damage until they leave. The power of taking life is not invested in any body of Indians, neither has the council any right to take cognizance of or legislate on the subject. If a soldier is killed in doing his duty the body of soldiers would immediately fall upon the murderer or on any of his relatives, should he have absconded. Crimes of this kind are privately redressed and revenged by the relatives of the deceased, and as the murderer always flies, it is often years before they can get an opportunity to kill him, yet vengeance only slumbers. All these things will be fully explained under the head of "Crime." It might, however, be as well to state here that there is no public body among them whose duty it is to punish crime of any kind, nor any authority equivalent to or resembling a court of justice. Consequently, there are no public or stated executions, neither is there any person who exercises the functions of public executioner. All this will be fully explained, as also the restoration of property, in the place where rights of property are considered.

Chiefship.—How are rank and succession in office regulated? The circumstances of the decease of the leading chief and the suc-

cession has already been referred to. If not yet sufficiently explicit, we may in addition state that it would be a subject of earnest debate in council, not so much with the view of choosing the successor, as this individual had long before been tacitly acknowledged, being the next most popular leader of the right kind, and of the most numerous connections, but to install that person into office, intimating their desire that he should lead and govern the camp. This might be called election, although no vote is taken, yet if a general feeling in his favor prevails he becomes their leader; if not, those who dissent have the privilege of leaving that band and joining another, or if numerous enough for the general purposes of hunting and defense can form a band of their own and choose a leader from among themselves. In all this we hope to have been sufficiently explicit as not to present any idea of a distinct line of hereditary succession.

A chief would be deposed from his office by being guilty of any conduct that would bring upon him general disgust and dissatisfaction. Though crimes in the abstract could not have this tendency, yet if he murdered a man without cause whose relations were numerous, a skirmish between the two families and immediate separation would be the consequence. If the murdered man was friendless nothing would be done and the rest would fear him the more. The offenses that would most likely lead to his overthrow would be remarkable meanness, parsimony, or incest. A chief must give away all to preserve his popularity and is always the poorest in the band, yet he takes good care to distribute his gifts among his own relatives or the rich, upon whom he can draw at any time should he be in need.

We take the custom of wearing medals to be a modern one, at least they say so, introduced by the whites. The ancient mark of distinction was, and still is, the feathers of the eagle's tail, wrought into headdresses of various forms, which to this day is the badge denoting the chief and great warrior, and are not allowed the ordinary class to wear. Tattooing also is a mark of dignity.

We have already named the principal chiefs of bands, though there are others, but by no means a numerous body. But few Indians go through war enough to arrive at that position, more especially as the same individual must be possessed of other natural talents and wisdom. The number is not limited but is from 3 to 6 or 8 in bands respectively of 50, 100, and 200 lodges. It makes no difference in their government whether they be few or many; if many, so much the better, as they are wise, brave, and responsible men.

Power of the War Chief.—No chiefs are war chiefs in contradistinction to their being civil chiefs. If it is desirable to go to war and so decided, any chief, soldier, or brave warrior has a right to

raise and lead a war party, provided he can get followers. He then comes under the head of partisan or captain of the expedition, his powers in this capacity only lasting during the excursion and terminating on his return to camp and resuming his civil place and duties. The powers of war and civil chief are united in the same, also those of warrior and hunter, soldier and hunter, soldier and partisan, chief and partisan. The leading chief could also and often does guide the whole band to war; in fact in the event of any general turnout, he must be the head. Any man, however, in whom the young men have confidence to follow, may raise and lead a war party, if war is going on and the time suits the chiefs and soldiers in council assembled. But as the chiefs and soldiers are the most experienced in this occupation, and are better acquainted with their enemies' country, they are generally chosen as leaders in these expeditions. Yet from among the warrior class, occasionally a young partisan arises who is neither chief nor soldier, but whose character for bravery, caution, and all the necessary talents is established. There is no specified age when a young man may rightfully express his opinion. This depends on his success in war, his general good behavior, activity in hunting, etc. When he becomes remarkable for these things he is noticed by the soldiers, invited to feasts, to councils, where being of sufficient consequence his opinion is asked and is given. We have known men not over 22 to 24 years of age being called upon to speak in council, and others to arrive at extreme old age without ever opening their lips there. An Indian soon sees and feels his standing with the others, and acts accordingly; to do otherwise, or force his presence and opinions prematurely, would only incur ridicule, contempt, and disgrace.

Power of the Priests in Council.—The power of priests is conjoined with that of doctors, sorcerers, and prophets, to which is occasionally added that of councillors, as they are sometimes shrewd old men and somewhat feared on account of their supposed supernatural powers; but they do not influence councils in any great degree, seldom attending at all. Whatever influence they have on public questions must be exercised in council, and not as a separate body. They do not constitute a body and only rank as councillors when their former exploits have been of a nature to entitle them to that position, and their age is not too far advanced. Being generally very old, their opinions in council are not much regarded. Their forte is at the bed of the sick or in other operations where something is to be gained. In making war or peace they would have little to say, in a cession of lands still less, and in conducting war parties nothing at all. The old Gauché mentioned before, although a divining man, was a warrior, not old at that time, and feared because he had the power over their lives by the use of poisons which he made no

scruple to administer; besides he was no doctor nor sorcerer on other occasions, and was one of the greatest chiefs the Assiniboin ever had. He was uniformly successful in his young and middle time of life, although he failed in age and died as recorded. This extraordinary man does not present a correct sample of a priest or sorcerer as now considered, and is an anomalous case.

Matrons in Council.—Neither matrons nor any other women whatever sit in council with the men of any of the Missouri tribes, nor have they privately any influence over men in their public affairs, and take but little interest in them. Their domestic duties occupy most of their time and their social position is inferior to that of men in every respect. We have heard of only one instance where a woman was admitted in council, during a period of 21 years' constant residence with all these tribes.

General Councils.—The roving tribes call no general councils with other nations. Even those with whom they have for a long time been at peace they look upon suspiciously and seldom act together in a large body. We have known, however, a combination of Cree, Chippewa, and Assiniboin, consisting of 1,100 men, who, having met in council, went to war upon the Blackfeet. The council was formed by the Cree and Chippewa sending tobacco to the Assiniboin during the winter, to meet them at a certain place the ensuing spring, where, after deliberating the matter at home, they went and formed the above-named expedition. It is the misfortune of all large bodies of Indians formed of different nations to meet with failure. They can not act in a body. Jealousies arise between the soldiers of the different nations, often quarrels, and always separations and defeat of the object. The evil appears to be the want of a commander in chief whom all are content to follow and obey; also their ignorance and unwillingness to submit to discipline, restraint, or subordination. Opinions clash, rank is interfered with, rebellion, dissatisfaction, and consequent separation follows; or should any considerable body keep on, their march is conducted in such a disorderly manner that their enemies have time and notice to enable them to hide or prepare for them. These tribes are not yet far enough advanced in civil organization to enable them to unite for any great purpose, excepting their mutual and general interest require it. The only way they could and do accomplish anything of importance at war by combination is by each nation being headed and commanded by their own leaders and going to war upon the general enemy at different times and entirely independent of each other. This increases the number of war expeditions and annoys the enemy from different quarters, but does not give them the advantage of bringing large armies into the field.

Private Right to Take Life.—Every Indian believes he has a right to his own life and consequently to defend it. There being no persons or body whose duty it is to punish crime, trespass, or insult, each individual is taught when a boy, and by experience when a man, to rely entirely on himself for redress or protecting his person, family, and property. Every one is thus constituted his own judge, jury, and executioner. Whether the person wronged is right in his means of redress does not matter. He thinks he is right and risks the consequences of retaliation. Every Indian being armed induces the necessity of each using arms; therefore when an Indian strikes, stabs, shoots, or attempts to do these things it is always with an intent to kill, knowing if he misses his aim or only wounds, the other revenges either on the spot or after, as occasion requires or opportunity offers. Therefore he can not act otherwise. This being the state of things, quarrels are not so common as might be supposed. When it is universally known that a blow or a trespass would entail death as its consequence they are avoided, or if unavoidable each endeavors to gain an advantage over the other by acting treacherously or waiting a favorable time when he least expects it to kill or strike him, stating for his reason that if he had not killed him the other only waited the same opportunity against himself. A fair chance to kill or strike does not always present itself. The relations may be too numerous on one side, and the object of contention (be it a horse or a woman) is given up for the time by the weaker party, apparently willingly, yet he only waits until their situations are reversed to seek redress. When a man has killed another, if the relatives of the deceased are more numerous than his own, he flies to a distant part of the country, joins another band and seeks protection there, where he is not sought by the next of kin at the time, but will be killed whenever they meet. In the meantime the relatives of the offender pay much to stop the quarrel.

If the killed and the killer are both of the same band and equally strong in relationship perhaps nothing would be done at the time as the rest of camp would endeavor to stop a skirmish, and a good many guns, horses, and other property would be raised and presented the relatives of the deceased to stop further bloodshed. This generally concludes an amnesty or respite for the time, but the revenge must be accomplished at some time by the next of kin, otherwise it would be a great disgrace to him or them. An opportunity to kill the offender with comparative safety is then sought, perhaps for years, or as long as any of that generation lives. Time and absence may have the effect of giving the murderer a chance to die in some other way or of diminishing the force of the revenge so that he does not find himself in a position to act with any degree of safety when an

occasion offers. Yet, if of standing in camp, and a brother, father, or brother-in-law to the deceased, he is bound to revenge at some time, though they make no scruple to receive presents of horses, etc., to refrain in the meantime. Thus the death of a man is never paid for by that generation, though by that means the revenge may be delayed for some years, which is all they can do except surrendering up their relative to the incensed party, which would not for a moment be thought of. We have known three or four horses to be given on the instant by the friends of the offender to those of the deceased and the same to be repeated yearly for two to six years and more, yet still revenge was consummated. On one occasion I asked the man why he killed the other after so long a time and taking property as payment from his relatives and friends. He answered that the pay was well enough as long as the culprit kept out of his sight; that remuneration only destroyed the disposition to seek him out and kill him, although it did not affect the right to revenge if he was fool enough to thrust himself in his way.

When he saw him his blood boiled, his heart rose up, and he could not help it. Besides (he observed) he was obliged to kill him, as the other, being afraid of him, would do the same to him to save his own life. Thus the killing of one induces the necessity of killing another, and there is no end to the affair. The other party are obliged to retaliate and so on through several generations. In this way a good many of the family of the chief, Wah-he Muzza, have been killed, and the smallpox settled the affair by taking off the offenders on the other side. It will be inferred from this that vengeance is not appeased by payment, absence, or the lapse of time, and in the instances where retaliation has not followed after payment we believe they may be ascribed to a decrease in the relationship of the deceased or other domestic changes or reverses which render vengeance out of their power, or too dangerous to accomplish, in which case the relatives get over it by saying they have been paid or forgotten it, yet at the same time would revenge, could they act with safety, or even a chance of comparative safety. Sometimes, however, large offers of recompense are rejected by the father or brothers of the deceased, and the tender is then made to relatives not so closely connected, who generally accept. Herein the cunning of the Indian is manifest. This is a point gained. A negotiation is opened in the family of the deceased and a difference of feeling established with regard to the offender, slight to be sure, but it is there, and is worked by these distant relatives to his advantage and their own, and opens a way through which presents and overtures of compromise may be offered the brothers, etc. But there is no dependence to be placed on anything a wild Indian does.

Neither do they depend on one another. They are suspicious in everything, and more particularly so when life is at stake. In these compromises no one is deceived—either he who takes or he who receives—the minds of both are perfectly known to each other, the object of the one party being to gain time, and of the other to lull suspicion and make the offender and his relatives poor by accepting their property.

We think we have presented their customs in this respect in their true light, viz, that although the compromise be effected and vengeance for the time suspended, yet the feeling is not changed or the right to punish relinquished; but time may make such a change on either part as to render revenge impracticable. There is no recognized principle or means of escape for the murderer unless it be to flee and join another nation with whom they are at peace, marry and remain there.

It will now be necessary to state that the Crow Indians are better regulated in this respect than any of the prairie tribes. Private murders are nearly unknown among them. Our knowledge of this nation from certain sources extends through a period of 40 years and in all that time but one Indian was killed by his own people. The offender absconded and remained with the Snake Nation for 12 years, when he returned, but was obliged again to leave, and since has not been heard of. Stealing women or otherwise seducing others' wives is revenged by the party offended taking every horse and all private property the offender owns, and in this he meets with no contention. It is considered a point of honor to let everything be taken but keep the woman. Now this nation has from 40 to 80 and sometimes 100 horses to a lodge, and a large haul is made by the husband of the woman, in company with his relatives. If the transgressor has no property that of his nearest relatives is taken, and is suffered to be taken away unmolested. After the excitement is somewhat over, these horses are bought back by the relatives of the offender, each giving two, three, or more as the case happens, which they hand over to him, who in the course of time gets the most of his property returned.

All smaller quarrels or misdemeanors are paid in the same way, though not so high, but they never strike or kill each other, yet are addicted to using personal abuse and invective freely. Our gentleman in charge of that nation states that he has seen the two principal bands of Crow Indians, over 200 lodges, abusing and throwing stones at each other all day, the Yellowstone River being between them. No damage could happen, as the missiles could not be thrown a fourth of the distance, yet not a shot was fired, although balls would reach, and this force was headed by the two principal chiefs of that

nation. In all the regulations of these Indians (the Crows) we can discern great natural goodness of heart, and absence of any useless barbarity and bloodshed except with regard to their enemies, the males of whom they kill and cut to pieces, but never kill women and children, whereas the Assiniboin, Sioux, and Blackfeet kill everything. Very few feuds from polygamy result in death, but should it so happen the other would be punished. If the favorite wife had been killed, the least the other wife expected would be a tomahawking, or an arrow shot into her, perfectly regardless as to whether death would be the consequence or not. Women among Indians are bought, paid for, and are the property of the purchaser the same as his horses. Their lives are of course more valuable than those of animals, and every Indian regrets the loss of his woman. Yet when he has bought them he expects them to do their duty, not quarrel nor render his lodge disagreeable, or if so they must expect to be severely punished.

Their lives are not, however, considered as valuable as men, nor are they ever so much mourned for. When not bought, or unmarried, the killing of a woman never happens and would be a great disgrace to any man, though after marriage they are subject to the penalty of death from different causes in which the man thinks he is justified.

Private debts are never settled by the chief, nor private disputes by council. Advice may be given and taken, frequently is, though the usual mode of settling trivial quarrels is by payment, and an invitation to a feast. Everything except loss of life or personal chastisement can be paid for among these Indians.

Game Laws, or Rights of the Chase.—The roving tribes subsist by hunting buffalo, and these animals being constantly on the move, they are obliged to move after them. Therefore no particular section of country is appointed to each as a hunting district.[12] There are, however, certain regulations with regard to the hunting of these animals which may as well be recorded here. A lodge or a few lodges have no right to establish and hunt within 6, 8, or 10 miles from a large camp, as by this the buffalo would be continually kept out of the range of the latter, and a few people be the cause of distress and starvation to the many. Therefore these obstructions are removed by the soldiers. When hunting by surround has been agreed upon, individual hunting is stopped for the same reason, and has met with explanation. This is also the duty of the soldiers. Hunting deer, elk, beaver, etc., being of little consequence to these Indians, each one exercises his pleasure in regard to these occupations. No right to any section of country is claimed by any person to the ex-

[12] The statement here militates against any claim of private ownership of hunting grounds among these tribes.

clusion of others. Should an Indian wound a deer and not follow, and another pursue and kill it, the former would have no right to either skin or meat, having relinquished that right by abandoning the wounded animal. But should he be following and arrive where the other has killed it, the hide and half the meat would be his share. As a general rule he who draws the first blood of the animal is entitled to the hide. This is often difficult to settle when large buffalo surrounds are made on horseback with the bow and arrow. Several hundreds of animals are slain in the course of an hour or so, and some have the arrows of different Indians in them. Each Indian, by his own mark, knows his arrow, but the matter of dispute is whose arrow struck first? Therefore who is entitled to the hide?

All that prevents this from being often the cause of serious quarrels is that in large hunts a sufficient number or more is generally killed than they can or do skin, and in smaller hunts the same confusion does not occur. A wounded animal is also mostly pursued until killed, and others usually pass by those that are stopped or have arrows sticking into them. With regard to the meat all Indians are liberal. In a large camp at least one-third of the men have no horses that they can catch. There are also a good many old, infirm widows, etc., all of whom must be fed. Every one who can, men and women, turn out and follow the horsemen to the hunt; and, even while the hunt is going on at a distance, commence cutting up the first buffalo they come to. The hide is taken off, and laid aside with the arrow found in it. The tongue and four of the choicest pieces are laid on the hide. This is the portion of him who killed it; and the rest, which is the greater part of the animal, is divided among those who skin it. This operation is going on with numbers of buffalo at the same time, and by this division of labor the hunters and all are ready to pack home their hides and meat nearly as soon as the hunt is finished. In this way the hunters get as many hides and as much meat as they can pack, and those who have not killed, as much meat as they want. Whatever hides are remaining are given away to those who have no horses to hunt with, and other poor people, and all are satisfied and provided for. The soldiers' lodge and others in camp who have remained to guard the property in the absence of the greater body of people are each supplied with meat by those who have been at the hunt. Feasting is then commenced, and kept up day and night until meat has become scarce, when another hunt follows. This method of hunting is continued until they have hides and meat enough.

Indian Trade

There is no doubt that the Indian trade has promoted the general cause of civilization. Even within our recollection, tribes of Indians, from being bloodthirsty robbers, have changed to orderly and civil people. A foundation has been laid, and the road paved toward the civilization of the prairie tribes, but nothing more. Stationary Indians have been still further advanced. The few ideas of justice that are beginning to be developed and the very first dawn of the light of knowledge perceptible are in consequence of their traffic and communication with the white trader. The introduction of firearms, articles of clothing, utensils, and other articles manufactured by the whites must tend to enlarge their ideas, set them to thinking, to show them their uncultivated state, and to implant a desire to improve. Nevertheless their progress is slow, more so with the Assiniboin than with any other nations. They adhere with tenacity to old customs and superstitions, which is vexatious and discouraging; but the Sioux, Mandan, Gros Ventres, Cree, and Chippewa are undoubtedly much improved. The firm of Pierre Chouteau, Jr., & Co., formerly the American Fur Co., has for many years conducted the trade with all the Indians of the Missouri and its tributaries, from Council Bluffs to the headwaters of the Missouri and Yellowstone Rivers. The supplies for the trade are brought up each spring and summer from St. Louis by steamboat and distributed at the different forts along the Missouri River as far as Fort Union, mouth of the Yellowstone; from which point they are transported with keel boats to Fort Benton, near the mouth of Maria River, in the Blackfoot country. From these forts or depots the merchandise is carried into the interior in different ways, to wherever the Indians request trading houses to be established.

The traders generally bear the character of trustworthy men and the nature of the barter for robes and other skins is such that the Indian receives what he considers an equivalent for his labor or he would not hunt. There is no way in the nature of the business by which an Indian can be made to hunt, nor any means of getting his skins without paying a fair price. Should the merchandise be placed too high to be easily purchased by them they would and can dispense with nearly all the articles of trade. On the contrary should the price be too low the business could not be continued; the prospects of gain not being equivalent to the risk of the adventure or capital employed it would be abandoned. Consequently a medium is and must be established whereby are secured the advantage and comfort of the Indian and a tolerably fair prospect of gain for the trader. The trade, when carried on without competition, is in many respects a highly respectable and important occupation. Therefore

the Hudson's Bay Co. have received the title of honorable from the way in which they conduct it; but it is only because they are alone that they are able to conduct it in this orderly manner.[12a] The Indian trade does not admit of competition. The effects of strong rival companies have been more injurious and demoralizing to the Indians than any other circumstance that has come within our knowledge, not even excepting the sale of ardent spirits among them. This we could easily prove, but as no monopoly can be allowed by the nature of our government it is useless. When the American Fur Co. were alone in the country a trader's word or promise to the Indians was sacred, the Indians loved and respected their traders, and still do some of the old stock, but since corruption has been carried on we look in vain for that reliance on and good feeling toward traders which was once the pride of both Indian and white.

The manner in which the trade is conducted in its operations is this:

A party of Indians, many or few, leave their camp for the trading post, packing on dogs and horses all their buffalo robes and other skins. When within a mile or two of the houses, they stop and send a few persons to the trader with an account of how many persons their party is composed of, how many skins, etc., they have, and all general news. These are furnished with tobacco and sent back with an invitation for the party to come to the house or fort. If a leading chief is then with a large party, the American flag is raised in the fort and cannon fired when he arrives. On arrival they are received at the fort gate by the interpreter, who conducts them to a large reception room. The dogs, horses, etc., are unpacked and each Indian takes charge of his own skins in the same room. They are then smoked (with the pipe), feasted on coffee, bread, corn, etc., after which the principal men and chiefs are called into the public office, when they are counciled with by the gentleman in charge. Speeches on both sides are made, and if the Indians have any complaints to make they now state them. The general situation of the camp and trade is adverted to, prospects mentioned, and prices of goods stated, with all other matters relating to their affairs. When this is finished the store is opened and the trade commenced. Several Indians can trade at the same time with different traders, handing their robes and skins over the counter, and receiving immediate payment in such articles as they wish. When all are done, a small present of ammunition and tobacco is given them and in a day or two they leave for their camp.

The place of outfit being in St. Louis, all returns of buffalo robes and other furs are taken there also every spring and summer in

[12a] Perhaps this title has been bought, but at all events they deserve it.

Mackinaw boats made at each fort for the purpose, and manned by the voyageurs who came up on the steamboat the year previous. The risks are numerous, both in bringing up the supplies in steamers and in taking down the returns in Mackinaws. In the spring of 1819 this company lost two steamboats in bringing up the supplies, one burned with the cargo at St. Louis and the other snagged and sunk. Also the Mackinaws down are often snagged and sunk, swamped, or the robes wetted by rain and leakage. The loss of an ordinary boatload of robes would be $10,000, and every year losses more or less are incurred in some way. From experience we know that the chance of loss is equal to that of gain in a given period of 10 years, yet should everything prove fortunate for a length of time money would be made.

All men of family who turn their attention to hunting and collecting skins and robes are shrewd and sensible enough in the trading of them, sometimes too much so for some of the traders. Knowing the value of merchandise and of what kind they stand in need, they make their calculations of purchases before they leave their homes and any additional article they can beg or otherwise get is so much additional gain. They do not purchase useless articles. Goods of all kinds having stated prices enables them to deal to a fraction, nevertheless they will quibble and beat down the price if possible, even in the least thing, and are generally successful in getting something out of the trader in this way.

As for their debts, they will not pay. An Indian does not contract a debt actually with the intention of deceiving; but before he has the means to pay, new wants arise, his family wants clothing, he, ammunition, etc.; in short, he is always in need, consequently never in a situation to pay. Therefore they use every argument to get clear of the debt, many of which are very ingenious, and if none will answer, say they will not pay and that the trader has no business to trust them. This being the case, but few credits are made. Whenever their wants are too great, or means too small to enable them to hunt, the articles are given them, though not credited. In the few instances where credits are made the Indians keep no accounts whatever of them, their object being to forget them as soon as possible; until they have their memory refreshed of the disagreeable fact by a reference of the clerk to his blotter. Our books are full of unpaid debts of 20 years' standing, which would make a handsome fortune if the value could be realized. There is no worse pay in the world, and a credit is considered lost as soon as given, or if afterwards the trader receives half pay he considers himself very fortunate. This being the case, no runners are employed to collect, as in the Mississippi trade. As they (the Indians) are not honest, neither are they sober, nor moral, but have discretion for their own advantage.

The tariff of exchanges is made with the double view of securing the profit of the trader and encouraging the Indians to hunt. Were a gun, an ax, or a kettle, for instance, rated at too high a price, then one of these articles would be made to serve the purposes of several lodges by turns, or should ammunition be sold too dear only as many animals would be killed as would be sufficient to feed their families, and no more skins traded than sufficient to meet their most pressing necessities. Such proceedings would lead to the abandonment of the trade as not profitable. The expenses of this business are enormous, the risk great, the capital invested half a million dollars, and more than 300 people employed; and yet a good northwest gun is sold for six robes or $18, the cost of which is $9.67. As a general rule, all goods are sold at an average profit of 200 per cent on original cost. The cost of buffalo robes in merchandise is about $1.35 in cash and we estimate the expenses in men, forts, animals, and other disbursements at $1.20 more each robe, which would bring them to $2.55. Now the best sale made of a large quantity is $3 each. Therefore, a loss of one or two boats loaded with robes must show a loss on the outfit.

Traders are very much subject to calls on their charity, both by persons who really are in want and almost everyone else. All the roving tribes are great beggars, even if they do not actually stand in need. But viewing the question only in the light of an act of charity they are numerous indeed. Unskillful in the treatment of diseases, the different demands for medicines and attendance are great, which at all times it is not safe nor expedient to comply with. The forts are the depositions of all the old, lame, sick, poor, and feeble; in fact, every one who can not follow the camp, or is of no use there, is thrown on the hands of the traders, and his house has often more the appearance of a hospital than a trading establishment. For all this there is no pay, not even thanks nor kind words, but frequently reproach and revenge if they are told to move off after recovery. It would appear that the feeling of gratitude is unknown to the Indian. We believe this to be the case among these.

It does not appear from our actual observation of 21 years, and pretty correct information of as many more of still an earlier date, that the principal animals have suffered diminution in the district of which we treat, viz, from the Sioux country to the Blackfoot, inclusive. How numerous they were in former years we do not know, but understand from old Indians that more buffalo have been seen in late years than were noticed 50 or 60 years since. It may be that the range of these animals is becoming more limited from the pressure of emigration westward. Yet this range is very extensive, reaching from the Platte to the Saskatchewan and from Red River to the Rocky Mountains, through all which immense district buffalo are

found in great numbers. Out of this question appears to us to arise another, viz. Is not the decrease of the Indians from diseases communicated to them through white immigration and commerce, thereby reducing the number of hunters, equivalent to increasing the number of buffalo? And does not the remnant of the Indians at this time require fewer animals to feed, clothe, and provide all their necessaries, than the multitudes before commerce was established with them? We think this view merits consideration.

If the buffaloes diminish, so do the Indians, and the diminution is not felt. The manner in which they hunted before firearms were introduced (by driving the buffaloes into pens) was infinitely more destructive than at present. Hundreds, perhaps thousands, were necessarily killed when a camp of a few Indians was stationed and when a small number would have sufficed. That commerce stimulates them to hunt is true, and a great many buffaloes are annually destroyed expressly for the hides. Yet even this destruction is limited. An Indian's family can only dress a certain number of hides during the hunting season. The hides in their raw state are of no value, and not traded, and can not be packed and carried when they move, which they are obliged to do in the spring; therefore no more are killed than the Indians can handle. Besides, there are but four or five months when the hair or fur of any animal is seasonable or merchantable and the rest of the year only enough are killed for meat, clothing, and lodges for their families. As far as we can be allowed to express an opinion, would say that the Indians by diseases brought about by commerce, and of late years by white immigration, will diminish and perhaps be destroyed as formidable bodies long before their game. The loss of Indians from smallpox, cholera, measles, scarlet fever, venereal, fluxes, etc., within our own recollection can not be estimated at less than 15,000 to 20,000, without taking into consideration the consequent loss of propagation.

Were the destruction less we think it would have the effect of increasing these animals so that many must die for want of proper grazing or be forced to seek other lands for food. This would reinstate us in our first position, that it is more probable the small number of Indians now in existence will disappear before their game, or at least will be so reduced as not to retard their increase. Immigration in settling the country would banish the buffalo from that part of it where these movements were going on, and force them to the alternative of scattering through the settlements and thus be destroyed; or, being confined and limited in their grazing, they would die for want of sufficient nourishment. They are a shy animal and will not remain where they are much troubled. Indian hunting has not this effect. The Indians do not occupy the proportionate space

of a town of 100 houses to a county, and in some places not more to a State of the United States. Moreover, they herd with order, and in the winter, not being able to remain on the plains where there is no fuel, and very deep snow, are obliged to place their camps on the banks of streams and hunt merely the outskirts of these immense herds.

The increases of buffaloes must be very great. Each cow has a calf yearly and the fourth year these also have calves. Now, supposing a band of 4,000 cows to increase for eight years without accident. The computation would be as follows:

	Say increase one-half cows	One-half bulls
	4×4=16÷2=8	8
	=	=
One-half increase	8	
Old stock	4	
	12×4=48	
Old stock	12	
One-half bulls	8	
Total in 8 years	68,000	

Now supposing the whole number of buffalo cows in existence to be 3,000,000, which is certainly not an overestimate, then—

	One-half cows	One-half bulls
	3×4=12÷2=6	6
	=	=
One-half increase in 4 years	6	
Old stock	3	
	9×4=36	
Stock	9	
Bulls	6	
Total in 8 years	51,000,000	

Making every calculation for their reduction in the many ways they are killed, or die by accident, and the consequent loss by propagation, yet being so numerous their ratio of increase is too great to diminish the whole number much by any of these means.

The conclusion is that, in our opinion, both Indians and buffaloes, with all other game, would disappear in consequence of white immigration and occupation, though the Indians, being the smaller number, would be the first to vanish. Also that commerce, by stimulating the exertions of the hunters, can not increase their labor beyond what they now perform, and that, being limited, is too small to hasten the destruction or even diminution of any game as plentiful as the buffalo. The same argument does not apply to beaver, foxes, or even elk and deer. Should all the Indians be obliged to live on elk and deer only, and have no resources but the furs of the beaver and fox to get their supplies, a diminution of these animals would

soon be perceived and destruction follow, because their increase is not so great, neither were they ever so numerous. They are smaller, and as more would be required they would therefore soon disappear before the united hunts of all the Indians. But as they are not as yet driven to hunt them they do not diminish, except the beaver, which has been, in this district, destroyed by large bodies of white trappers. Red foxes are not, we think, so numerous as formerly, though it may be they are not so much hunted. The trading posts or houses do not have the effect of diminishing or frightening away the buffalo any more than the Indian camps.

Their locations are few and hundreds of miles apart, and their operations confined to within a few miles of their houses. Even while we are writing thousands of buffalo can be seen by looking out of the fort gates, which are quietly grazing on the opposite bluffs of the Missouri, and yet this post (Fort Union) has been established 27 years. The only good hunting grounds for elk and deer are on the Yellowstone from 4 to 30 miles from the fort, beyond which though there are but few Indians they are not nearly so numerous. Beaver and foxes are caught every few days within one-half mile to 6 miles of the fort, not in numbers, certainly, neither are they very plentiful anywhere in this district. A trading post in a new country may have but few buffalo the first and second years and innumerable herds the third, or vice versa. There is no rule for this. The buffalo migrate and return. The other animals are scattered over an immense region of country, are difficult to kill, must be hunted separately, which is dangerous on account of enemies, consequently not followed, therefore they are not diminished. Thus no person can say to a certainty which are the first to disappear.

Perhaps the entire destruction of game would lead to the Indians devoting their time to agricultural pursuits. It would force them to do that or starve, but judging from their present indisposition to work, and tribal organization, great distress would follow the sudden disappearance of their game and starvation thin their ranks before they would apply themselves to hard labor. The Indians who raise corn, etc. (Mandan, Gros Ventres, and Arikara), do not do so from any scarcity of game or apprehensions on that score, but have done so beyond the recollection of any trader, or even of themselves. It appears to be a desire to possess something else to eat besides meat, and a custom handed down to them by their forefathers. Their corn is entirely different from any raised in the States, and is the real original maize discovered with the continent, the seed still kept in its original purity. The labor attendant on planting and raising these crops is performed by the women, while the men hunt like the surrounding tribes, work of this description as their present ideas exist being a disgrace to the males. Several of the other wild

tribes have for years entertained a desire to cultivate, not because they apprehend any failure of game, but having become fond of corn, potatoes, etc., wish to have them, but can not exert themselves enough for the purpose.

Commerce not as yet having reached the tribes of whom we write except in the form of trade for their furs and skins, the question as to its ultimate effects, as a cause of civilization, can not by us be determined, but the effects produced by traffic have had a decided tendency toward their improvement and advancement by stimulating their exertions and increasing their knowledge. It must be obvious to every one who is acquainted with the character and history of Indians that they have an antipathy to work, that as long as they can support themselves by hunting they will do so; for through these means they are enabled to avail themselves of the labor and arts of Europeans in procuring articles necessary for their subsistence, in exchange for their furs and skins. This method being more consonant with their fixed habits, is less toilsome though more dangerous than civilized occupations. Having clothing, utensils, arms, amunition, and all kinds of provisions furnished them by the traders certainly increases their desire to obtain these things, stimulates them to greater exertions in hunting, but does not lead to a sufficient energy of mind to endeavor to produce these things by a slower though more certain employment. In the event of a sudden disappearance of game they would be driven to extreme want and thousands would perhaps perish before they would of their own accord apply themselves to agricultural pursuits.

If no human exertions be made by those in power to instruct them in the superior advantages of such labors over their present precarious life, they must by a sudden pressure of emigration, and a consequent annihilation of game, become the drudges of the whites, destroyed and degraded by their great banes, whiskey and smallpox. It is impossible to conceal the rapid strides made by emigration or its immoral tendency on the Indians, and it would be very unreasonable to conclude that its destroying effects would so revolutionize the habits of an uneducated Indian as to meet the emergency. The change from savage to civilized life and occupations must be gradual, accompanied by instruction, education, and practical experiment illustrative of its utility.

The introduction of woolen goods has been of some advantage to the Indians. It has added to their comfort, cleanliness, and pride, and has had other good effects; but these alone can not be said to have much increased their means of subsistence, though other things have. As long as an Indian is a hunter, his dress must answer that purpose. There is no fabric of European manufacture clothed in which he could crawl after game over the plains covered with cactus in summer

or that would protect his body from freezing in winter. Blankets can not supply the place of buffalo robes, cloth the place of skin, boots that of moccasins, in these high latitudes and terrible snowstorms.

These things are bought for summer and fall wear in their homes or when traveling, are preferred because they are not damaged by wet, are gay, soft, and handsome, will make tolerably good undercoats in winter, will serve for traveling horseback in summer and fall. But the real hunter of the plains must have his buffalo robe coats, moccasins, mittens, and cap, skin leggings, his extra buffalo robe on his back and his snowshoes on his feet, or the cold and wind would prove more destructive to his person than he to the game. The articles introduced by commerce that have increased their means of subsistence are firearms, horses, knives, kettles, awls, fire, steel, and metallic instruments for dressing hides. Besides, the conversation and instruction received from the traders has increased their knowledge, elevated their desires, and stimulated their industry. These are some of the effects of commerce, and this subject will meet with further discussion through these pages.

We are not aware of any great moral evils consequent on the trade with Indians in this section. The variations from truth and deceptions practiced by rival companies are, however, the greatest. The introduction of ardent spirits has been demoralizing and debasing, but has in no great degree tended to the depopulation of the tribes of whom we write. From a long period of actual observation and experience can safely say that the whole number of deaths arising from the consequences of intoxicating drink does not amount to 100 during the past 20 years, from and including the Sioux to the Blackfeet. That it is morally wrong no one will doubt, but this has been much exaggerated, and can not be reckoned among the causes of their depopulation. If that cause is sought for it is very plain in the history of the smallpox, which even while we write is sweeping off the Crow and Snake Indians, upward of 1,200 of whom have died from that disease contracted on the Platte emigrant trail last summer. The destruction of Indians from cholera, measles, and smallpox since that road has been opened has been incredible and there is no probability of its decreasing. These are the causes of their depopulation and will be of their entire extinction. The introduction of firearms has been beneficial to the trade, and in some respects to the Indians. Deer, elk, and smaller game can be killed when buffalo are not found, and in default of horses to run them the Indians can support themselves with the gun.

The gun is a useful though not an indispensable implement. The loss of an Indian horse is easier replaced than that of his gun, as he could at any time steal the former from his enemies, and to get the latter would require means to purchase, which have been destroyed by its loss. Also the accident might happen when skins were of no value or unseasonable. Another advantage in having a gun is that the means of making a fire are thereby possessed, which on the plains is a matter of great consequence, and a gun often saves the lives of several travelers. In short, an Indian with a gun has double the chances of support that one without has. Should his horse be stolen he can use his gun, and if that is broken he can use his horse. By firearms a great many smaller animals are killed, and skins traded which would not otherwise be the case, though in hunting in bodies or large camps the gun is not much used, except when there are but few horses that they can catch. The possession of firearms has unquestionably promoted war. Many arrows may be shot, perhaps all the Indian has, without doing any damage unless at very close quarters, whereas at a distance or in the night guns are effective. It also facilitates waylaying and killing their enemies, a manner of which they are remarkably fond, and could not well be accomplished with arrows, lances, etc., without nearly equal danger to both parties. Guns and ammunition are considered the soul of warfare, more so than of the chase, and a few Indians thus armed are more efficient than a crowd with bows, lances, and war clubs. So much is this the case that the want of a sufficient number of guns often delays, and sometimes entirely stops, a war party.

There is only one way we know of by which the trade could be placed on a better basis, and that being inconsistent with the principles of our Government, is scarcely worth considering. It is that it should be a monopoly. A charter granted to a body of efficient people who could give bond to a large amount for their lawful prosecution of the trade, and their operations subject to the revision and examination of a competent board of directors.

Education

There are no serious or valid objections on the part of any Indians with whom we are acquainted to the introduction of schools, agriculture, the mechanical arts, or Christianity. We have examined the subject in all its bearings for upward of 20 years; counseled with Indians about it; and it appears to us very singular that as yet the Department or some charitable persons have done nothing in this respect for the Indians. It is the only way they can be really benefited, saved, recompensed for territory bought, or ren-

dered useful. It is the only way by which they could eventually be brought to have some certain source or means of subsistence. They have often pressed upon us their desire that we should use our exertions to get some mission or school opened among them to instruct their children in agriculture and the mechanical arts. With this view we have for years corresponded with the Rev. G. I. De Smet of the St. Louis University (Jesuit), who intended and perhaps still intend to commence operations of the kind among them. Not being of the Catholic persuasion, it is not on that account that the Jesuits were thought by us the most competent for such a purpose, but that they have more zeal, knowledge, perseverance, and tact to manage Indians than any others we know of. Their religion is peculiarly adapted to that purpose.

The imposing rites and ceremonies of the Catholic Church would at once attract their attention and excite their interest; afterwards they could be made to comprehend. However, it is not with the grown Indians the commencement must be made. The first step to be taken is to stop, as much as possible, their internal wars, and this is rapidly being accomplished by the treaty made at Laramie in 1851, which has had the effect of making a general peace between all nations except the Blackfeet. This peace may suffer interruptions occasionally, by a few being killed, or horses stolen, but these things will be settled among themselves, and the peace continue, especially if the Indian agents are particular in enforcing the treaty stipulations. With the Blackfeet a peace must be made in some way and that at Laramie having proved successful, why not in the same way? They are very numerous and hostile, and nothing but a large appropriation judiciously distributed in merchandise could gain the point. Afterwards it might be kept up for a series of years by smaller annuities, and when the general end is gained these could be discontinued. The only way to work upon the wild Indian is through his cupidity and necessities; force is not to be thought of.

This point being gained, establishments should be formed among each tribe, at the same time receiving a number of their children and giving them a common English education and as soon as practicable bringing up these children in agricultural and pastoral pursuits.

Habits of industry should be inculcated as they grow up, and the field of their operations enlarged when they are grown, by portioning out lands and providing a market for their surplus stock and produce. Some of the useful mechanical arts could also be introduced, but only those that are useful in their present condition and growing state. A century or two may elapse before watchmakers, glass blowers, or even tailors and shoemakers would be necessary, though a few gunsmiths, blacksmiths, carpenters, and weavers would find immediate

employment. The principles of the Christian religion would of course at the same time be taught, but the principal feature of these establishments, as soon as the boys and girls were able to work, should be industry, principally in agricultural and pastoral pursuits. The great errors into which missionaries have fallen are that they make the observance of religious duties the sole object and neglect the others.[13] Also their zeal in this induces them to interfere with the present government, domestic arrangements, and superstitions of the grown Indians, thereby incurring their enmity, disgust, or revenge. The present grown-up generation should be left entirely alone, not interfered with, no attempt made to convert them, or even induce them to work. It is useless, inexpedient, and subverts the general ends. The first thing a missionary does is to abuse the Indian for having a plurality of wives.

Would the good missionary be so charitable as to clothe, feed, and shelter the supernumerary woman; should all the Indians follow his advice and have but one wife? Will the Indian consent to separate his children from their mothers, or to turn both adrift to please the whim of any man? This advice is uncharitable, unjust, and can only be excused on the plea of ignorance of their customs and feeling. The next difference that arises is that the priests take away all their charms, medicines, and idols, and present them their cross instead. Now as far as any of these old Indian reprobates can conceive the idea of the cross, it is nothing more than a different kind of idol in exchange for theirs. What in the name of common sense could induce old priests, in every other respect sane and well informed, to think that by administering baptism and giving an Indian the symbol of the cross they have thus converted them, we can not imagine. If the Indians believe anything thereby, it is that the image or medal possesses some intrinsic supernatural power to prevent them from personal harm or give them success in war, known to be efficacious by the whites, and is to them in fact nothing more than a different kind of medicine bird or medicine ball. Can they (the priests) suppose that an Indian, only a grade above the level of the brute in intelligence, could without education form a correct idea of the ordinance of Baptism, the Incarnation, the Trinity, the Crucifixion and Atonement and other abstruse points in which even whites, with all their education, can not agree?

These grown Indians are too ignorant and obstinate to think, too lazy to work, too proud to be instructed, and their formed habits too savage and firmly rooted to give way before the meek truths of the gospel. All such attempts must prove abortive; it is anticipat-

[13] Here Denig mildly protests against the unreasonable emphasis placed on the observance of religious rites by the missionaries to the exclusion of other duties.

ing by an age what should be their present course among the children. We would say let all the grown generation die as they have lived, though before that event took place many of them would have the satisfaction of seeing their children in comparatively happy and improved conditions. This is the only right beginning. Bring them up in the proper way, impressing moral truths and industrious habits when young and fostering the same in maturity. The Government can do this, should do it, and would be extending a charity to a part of the human race but few sympathize with, and opening a way for the remnant of aborigines to become a useful and intelligent people. We repeat it, there are no objections to this among the Indians. Proffers of the kind would be readily acceded to by any tribe, even the Blackfeet, and all sensible traders would assist. It would not benefit them, might perhaps hurt their business some, and would in the end lead to its discontinuance. But this is of minor consideration. We are confident that establishments on the principles we have suggested would succeed and answer great ends. But they must begin with the children as their foundation, not merely for the observances of religious duties, without combining active agricultural and pastoral pursuits, with a judicious choice of mechanical arts.

It does not follow that the Indians should abandon their hunting altogether to accomplish these ends. Those who wished to hunt could still do so, as they now do at Red River, and when hunting failed, as it eventually must when white emigration settles the country, the Indians would find themselves in a position to live fully if not more comfortably than before. Some of the money of the United States could not be applied to a better purpose. One-half of the amount Congress expends on the repairs of some old bridge would be sufficient to rear and educate several hundred children. Indeed, after the boys and girls had attained the age of 12 to 15 years they could more than support themselves by their labor. Abstruse studies or extensive mental acquirements should not be striven for except with the view of providing teachers or physicians of their own nation, but generally the rudiments of English education, such as is taught the peasantry of England, would answer better. Too much education would produce an unwillingness if not an inability to work.

Physicians of their own people would tend more to banish their superstitions and encourage these institutions than all the preaching in the world. Correct medical knowledge would be apparent in its effects, and be the greatest acquirement in the eyes of the Indian.

With its introduction would disappear the host of jugglers, conjurers, medicine men, and humbugs that now impoverish and kill most of their patients. A distinct idea of crime and the necessity of

law would follow. The democratic principles of government already implanted would assume an effective form and civilization and Christianity would be the result. To accomplish this present payments of annuities should not be curtailed, as it would hazard the ill feelings of the grown Indians who, seeing no immediate benefit arising, would become dissatisfied with the appropriation of their funds. Separate appropriations or funds could be raised for the purpose.

Warfare

The usual cause of war among the prairie tribes is the stealing of horses. Indians must have horses, can not well live without them, and will risk everything to obtain them. Moreover, horses are looked upon in a measure as public property; that is, those nations who have few think they have a right to take them from those who have many. Whether it is a right or not they do it, and in these expeditions frequently men are killed on both sides. This produces an obligation on the part of the relatives of the deceased to revenge their deaths, and war continues with various successes on both sides. The occupation of war is also the most honorable an Indian can follow. The young men are not noticed, neither can they aspire to the hand of a respectable young woman, without having distinguished themselves in war excursions. They are taught this when young, and as things now stand, it is difficult to change. Nevertheless it can be done. Not immediately, but in the course of a few years. There is always an opening to the heart of the Indian through his love of gain. Most chiefs, soldiers, and heads of families are open to bribes. The object of war in the first place is gain, and the dangers attending it make it honorable.

This object (gain) must be superseded by an equivalent and the idea of honor transferred to other sources. Take, for instance, the Blackfeet, who are the most numerous and bloodthirsty nation on the upper Missouri. Assemble them in treaty and make a distribution of $25,000 or $30,000 in merchandise among them and the deputations of other nations with whom a peace is to be concluded. How would this operate? The soldiers of the camp who would be appointed to distribute this merchandise are the most powerful party, have generally the raising and leading of war parties, and would take a liberal share of the presents for themselves. The chiefs and heads of families would also receive a large amount and the rest be divided among the young men, warriors, women, etc. The peace would be made, all would be satisfied for the present; but unless these payments were continued for a number of years, or until the benefits of peace were realized and acknowledged, nothing would be gained. An Indian does not reflect upon what he has received

but what is yet in store for him. The prospects of an annual repetition of these presents would induce them to keep the treaty stipulations. Why and how? The soldiers, chiefs, and heads of families, whose voices only could make war, are held in check by the prospects of gain, and should any parties be raised would be paid to stop, or if they continued and stole horses, or killed a few of the nation with whom peace had been made, the affair would be paid for and hushed up on both sides, on account of the coming presents.

The reason why persons killed in time of peace between two nations can be paid for, and privately not, is that in the former case the voices of all, except the immediate relations of the slain, are against revenge, inasmuch as it would affect their interests with regard to the presents granted by the treaty. This operation going on in both nations at the same time leaves the relatives too few to effect a revenge, and the dishonor is evaded by the compulsion. In the course of a few years all old causes for revenge would be forgotten. By visiting each other and exchanging property, horses (the usual cause of war) would become more equally divided, by being bought by those who wish them, instead of stolen. Acquaintance with each other's language, intermarriages, and other ties would follow, and the advantage of receiving a large supply of merchandise without the labor of hunting skins for it, together with the honor and increase of power of the soldiers, by having the distribution of this merchandise, must effectually throw the popular voice against war. The voices of the women, though not consulted, would be felt. They are vain, fond of dress, and would, of course, be in favor of the treaty which enables them to gratify this passion in a greater degree by furnishing them with clothing gratis. Therefore war would be discontinued by them, and the hand of a peaceable man preferred to one whose conduct militated against their own interests and those of their parents. For we apprehend that the favor warriors find in the eyes of the women and their parents is the result of their success, not the glory in their bravery.

It is the horses stolen from their enemies that gives them wealth to purchase any woman they please, and the father-in-law is anxious to have a son-in-law who can at any time replace his loss in horses. Indians are poor; that is, they are always in need of articles they can not purchase, and getting a supply gratis is of great advantage to them. The power of these annuities is great, and could be wielded with sufficient force to bring different bands to war upon their own people, and compel them to preserve the treaty stipulations.

We do not think that the display of military force on treaty grounds is either necessary or politic. If to inspire a feeling of fear be the object, it would require the presence of three or four thousand

men to effect it with the Blackfeet, and even then, there would be great danger of collision with the troops who would endeavor to enforce military regulations when they can not be understood and are not required. Neither would Indians be induced to assemble when such a body of armed men are brought without their consent, or if they did, it would be with hostile feelings, and they could give no assistance to the commissioners. A lesser force, or one inadequate to present the idea of coercion, would incur their contempt, as they would necessarily conclude that the Government had sent all the men they could raise, and the few present would be imposed upon.

Indians do not like to be forced into measures, the utility of which has yet to be made apparent. Besides, the spirit of treaty is compromise, not force, as would be implied by these proceedings. It must be a voluntary act on the part of the Indians, for and in consideration of a certain sum, to obtain the stipulations. Again it is entirely on the present state of the Indian and their government to carry out this treaty we depend after the military force be withdrawn. Their organization as pointed out in these pages shows them capable of preserving order among themselves on these occasions, and a few good, patient commissioners and sensible traders and interpreters would secure what is necessary when force or appearance of it would fail. If anything more was added it might be a few military officers in full uniform and a good band of music. After satisfaction the treaty would operate in detail as has been mentioned, and the next best thing would be to take deputations of the principal men of each nation to Washington, where they could council with their Great Father (the President), and at this time the power and disposition of the Government could be exhibited without giving offense, which in their return among their people would be made public and the proper feeling instilled. But Indians should never be treated with at the seat of Government for many reasons.

The principal is that no deputation of prairie tribes could be taken as the general voice, and even then would not think themselves treated with on fair grounds—would agree to any and everything and afterwards say they were forced to do it. Large bodies of whites in the interior and on treaty grounds would necessarily be very expensive, and are inexpedient, as pointed out, though the support of a great many Indians would be very little. They bring their supplies along, hunt their way back, and but a few groceries would be sufficient to feed them during the short stay the business required. Another thing not to be overlooked is that the assembling of different nations in a body at a certain point is a great affair to them. It forms an epoch, a date, an event, to be talked of for years. Each

nation on these occasions feel themselves bound to be polite, liberal, and attentive to strangers. Hostilities for the time are laid aside or forgotten, and the whole active force of the nations on whose ground the treaty is held is put in motion to keep order. If the question of buying their lands is not introduced, all goes on well, but on this subject they are jealous and suspicious to a great degree.

In no instance should the principal of an Indian fund be placed in the hands of any member of these prairie tribes to be distributed by him to his people. They can not appreciate the use and expenditure of money; neither could they with safety be placed in charge of any large amount of goods for distribution.

If handed to the chief, they would be given by him to a few of his immediate relations and friends, and the rest of the camp would get nothing. The present way of distributing annuities is the best, if not the only one that could give general satisfaction, and is thus conducted. The whole amount of merchandise is separated into as many portions as there are bands in the nation, according to the number of lodges in each band. One of the bands is then visited by the Indian agent, who, with the advice and consent of the chief of the nation, chooses therefrom four to six soldiers and dresses them. The whole band, men, women, and children, are formed into a semicircle with these soldiers in front, and that portion of the annuities intended for the band is laid in front of the soldiers, who separate it equally among all, retaining, however, a reasonable share for themselves. This appears to give general satisfaction. We can suggest no change in the existing laws that might benefit the Indians, unless it be that Indian agents should be people who have a correct knowledge of Indian character. If it be really the object of the Government to benefit this race of people their agents should be chosen from experienced traders or others who have and still reside with them and are well acquainted with their manners and customs.

How can a stranger who perhaps never saw an Indian, merely by counseling with a few during his short annual visit, know their wants, study their welfare, or make satisfactory reports to headquarters? Besides, so much being dependent on these agents, their term of office should not be limited to a change in the administration, as at present. It is unlike other offices and requires many years' close application and constant residence among Indians to be of any real benefit to learn in what manner they can be better regulated or to carry out any series of measures the Government may wish to introduce. The pay of these agents is also inadequate, and there are too few to be of much service. The Sioux Nation alone is numerous and widely extended enough to admit of an agency; the Mandan, Gros Ventres, and Arikara another; the As-

siniboin and Crows a third, and the Blackfeet a fourth. As it at present stands, one man is appointed for all this, and the consequence is some of them are neglected, if not the greater number. It can not be otherwise. The nations are situated hundreds of miles apart and each scattered over an immense district. Even one nation can not be collected, consulted with, annuities distributed, and all business settled in a less time than six months and often more. Should the present officer do nothing but travel he could not make the round of the whole in a year.

Property

The personal property of these tribes consists chiefly of horses. A man's wealth is estimated by the number of these animals he owns. Besides which they have their lodges, guns, clothing, and cooking utensils. Possession of an article of small value is a right seldom disputed, if the article has been honestly obtained, as their laws of retaliation are too severe to admit of constant quarrels. But horses being their principal aim, possessing them is nothing without force to defend. To explain this fully it will be necessary to give a few examples of the different kinds of rights and their tenure. Rights to property are of the following description: Articles found, articles made by themselves, stolen from enemies, given them, and bought. Two Indians traveling together, one discovers a lost horse and points it out to the other, who pursues and succeeds in catching it. Now the one who made the discovery claims a portion of the horse on the ground that had he not seen it or not shown it to the other most likely it would not be in his possession. The other, therefore, to extinguish this claim, would be obliged to pay some article equivalent to half the value of the horse, which in case he refused to do would end in the horse being killed on the spot, and the dispute terminated. The same rule would apply to finding a gun, but smaller articles would not attract attention enough to produce a quarrel. An article is considered lost when the owner has abandoned the search.

All clothing, skins, arms, etc., made by themselves are the sole property of those who made them, and this is the only general right among them that admits of no dispute. To take away such things by force would be reckoned a mean action; would be discountenanced individually by all; and the perpetrator would fall into general disgrace, among both men and women. When horses are stolen from enemies the case is different. Suppose seven Indians conjointly steal 45 horses in the night from their enemies. They would drive them off in a body until beyond reach of pursuit and then each would lay claim, catch, and keep as many as he could manage and defend. No equal division or anything like it would take place. Men of desperate character would take the greater part and leave milder

or less strongly supported Indians with one or two and some would get none. To do this sometimes two to four will combine against the others and take the largest share, but one or two men seldom carry this so far as to incur the resentment of the rest of the party. It generally depends upon the number of relatives each has with him, or his force in camp, before either of which those not so strongly supported must give way. Quarrels often occur about these divisions, and horses in dispute are killed or stolen in the night by those who have few from those who have many before their return home.

An Indian never gives away anything without some expectation of a return or some other interested motive. If one observes another in possession of a fine horse he would like to have he will take the occasion of some feast or dance and publicly present him with a gun or something of value, flattering his bravery, praising his liberality, and throwing out general hints as to his object, though not directly mentioning it. He will let the matter rest thus for some days, and if the other does not present him with the horse will demand his gift returned, which is done.

One will sometimes give a horse to another for some purpose or equivalent and allow him to keep it; but should the receiver give the horse to a third person the original owner will often claim him and take him back, giving for his reason that he did not bestow him on that person, and although he had presented him to the first, he should have kept him and not given him away to another. Smaller gifts are regarded in the light of loans and generally paid for in some way. They may be considered as exchanges of necessities which they take this way to effect.

One would think that an article bought by them or of them should be the property of the purchaser, but this is not always the case. If an Indian buys a horse from another and it is stolen the first night or two afterwards, or lamed the first race, part, and sometimes the whole, of the payment must be returned to pacify the loser.

If a gun is bought and it bursts or is broken shortly afterwards, in like manner a refund of a portion of the purchase money would be required. And worse still if the gun in the act of bursting had crippled the man's hands, which is often the case, the accident would also be paid for by him who sold the gun. These things are so well known and anticipated among them that the vendor immediately after the accident or loss invites the loser to a feast and by the payment of something settles the matter. This has the effect of their having but few bargains or dealings with each other, so much so that a horse bought and paid for by us from them can not be resold to one of their own people if they know it, because the original owner will take it if he sees it in the hands of one of his own people and that person is in a situation to be thus imposed upon. Most of

their horses having had several owners, they are always a precarious gift or purchase. Property obtained by gambling is also held by a very slight tenure, so much so that the loser has many chances in his favor and these operations are much fairer among them than among whites.

Robberies of each other on any large scale are seldom attempted. They would attract the notice and induce the interference of the camp soldiers and relations of the robbed, and bloodshed would be the consequence. Infractions of smaller rights are left to individual settlement and are paid for. What prevents impositions in smaller matters is the disgrace and disgust that would fall upon any man guilty of petty infringements of personal rights.

With regard to the Indian of the British dominions applying to an agent of the United States for the payment of a private debt contracted by a north Briton, a resident of Hudson Bay, the probable operation of his mind was as follows: "All whites are very particular in endeavoring to collect their debts from Indians, and the richer are less generous. White traders are interlopers. The country, game, and all else in the territory belong to the Indians. The whites have no claims upon our generosity; are entitled to nothing without paying for it. Now a white man owes me, and from him I can get nothing. Indian agents are sent expressly to see justice done the Indians, are responsible and sensible, besides being rich and powerful. He will perhaps allow me my claim, or interpose his authority with the Hudson Bay people to make them pay. It is at least worthy of a trial, for if I gain nothing I lose nothing."

Most Indians of the British possessions in America, at least the Cree and Chippewa, are a great deal farther advanced in knowledge of every kind than those of whom we write. They have tolerably correct ideas of right and wrong and are famed for the shrewdness they exhibit in all kinds of dealings, to their own advantage. It is not even likely that if this Indian claim was not settled by the agent spoken to, he therefore abandoned it, but it is more probable that he dunned every one of the Hudson Bay traders for years until he got some remuneration. We have known an Indian at Fort Union to claim payment for carrying out three bundles belonging to one of our people when the fort was on fire. This demand was made 12 years after the circumstance happened. They never forget a claim on whites, but never recollect one upon themselves.

Territorial Rights

How right to territory originally accrued can perhaps be learned by the way in which it is here discussed. None of these prairie tribes claim a special right to any circumscribed or limited territory. Their

arguments are these, and have been before mentioned. All the prairie or territory in the West (known to them) and now occupied by all the Indians was created by Wakoñda for their sole use and habitation. To maintain this they state the entire fitness of the Indian for the life of a hunter; his good legs, eyes, and other qualifications which they do not allow to any other persons. The suitableness of the prairie for the support of great numbers of buffalo, and the wooded streams for smaller game, together with the adaptness of the game to their wants in meat, clothing, lodges, etc. All this is to prove their general right to the whole of the hunting grounds, where buffalo are to be found and Indians stationed. Now each nation finds themselves in possession of a portion of these lands, necessary for their preservation. They are therefore determined to keep them from aggression by every means in their power. Should the game fail, they have a right to hunt it in any of their enemies' country, in which they are able to protect themselves.

It is not land or territory they seek in this but the means of subsistence, which every Indian deems himself entitled to, even should he be compelled to destroy his enemies or risk his own life to obtain it. Moreover, they are well aware that the surrounding nations would do the same and sweep them off entirely if they could with impunity, and each claims the same right. Possession is nothing without power to retain, and force to repel, and to defend with success they must limit themselves to a certain extent of territory, for by separating their force too widely they would be cut off in detail. By these different necessary locations the country has been parceled out, each holding what they can with safety occupy, and making any encroachments they are able. They claim the land as theirs because that portion affords the means of subsistence with more security than by moving elsewhere they could procure. To sell their lands, they say, would be the same as to sell their means of living, for by moving elsewhere large bodies of enemies would require to be displaced, which could not be effected without great loss and perhaps failure. Indians who cultivate, such as the Mandan, Gros Ventres, and Arikara, only claim as their own the small patches that they till, and their right even to these (individually) only exists as long as they are occupied by the crops of the cultivator.

Should he fence it in and work it every year no one would dispute his right to do so, but if the land be left idle some other would plant upon it. It is in fact merely loaned from the general district for the purpose of him who wishes to cultivate. There being no scarcity of land, however, no difficulties occur on this point. From this view it would appear that their right to territory is nothing more than defending that portion on which they are located as necessary for

their support. Invasion of a neighboring tribe's country would only be the consequence of famine or scarcity of game in their own and would be looked upon by them in the light of extending their hunting after the buffalo (which is the property of all Indians) into another part of the great plains intended by Wakoñda for their support, being aware at the same time that they risk their lives by so doing. The foregoing are the outlines of the arguments they use. It is because they are at war that their lands appear to be distinct portions assigned to each nation, although between each there are several hundred miles of neutral ground, the nature of their forces not admitting of closer approximation. Were all at peace it would present the feature of one great estate on which each would rove and hunt when and where he pleased, and what is now neutral would become hunting grounds. But as long as hunting was their sole occupation no claims would be set up by any man to a certain portion of land.

They must become stationary, acquire property, real estate, before land becomes of any value in their estimation, further than the space it affords to game of all kinds to live and increase for their benefit.

Primogeniture

There is no general or fixed law of primogeniture. The eldest son is, however, mostly a favorite, and although the custom is not universal we have known instances of legacies left. If the parent be a chief he will, if time permits, present his eldest son with his medal when he anticipates death, if his son is of sufficient age to wear it. They are anxious to be succeeded in their office by some of their children, and the eldest would soonest be of sufficient age to take upon himself the responsibility. But unfortunately for the wishes of the parent the office or station of chief does not depend upon the law of primogeniture, or any other, but upon the will of the greater part to be ruled by him who is thus designated, and the capacities and standing of the applicant. The chief whose speech is recorded on page 598 presented his medal to his eldest son when on his death bed in the presence of 20 or 30 persons of his band, intimating his desire that his son should take his place and "follow in the footsteps of his father." The son not being the popular choice, another was appointed and the medal was left in our possession, where it yet remains, though his son was of age at his father's (la-Chef-qui-parle) death six years ago, and is living yet, and has progressed no further than becoming a camp soldier.

Most of these Indians die violent deaths, either by war, accidents of the chase, or rapid diseases, and thus have no opportunity to dispose of their property, yet even when they have time do not often

do it, owing to the difficulty of having these requests fulfilled after their demise. The dying request of a chief or warrior, if he makes any, is that his favorite horse, or sometimes two or three horses, shall be killed at his grave. Other horses, his gun, etc., are sometimes given to his relatives as bequests, and this gift contains an intimation to go to war after his death. The death of a warrior entails revenge, from whatever cause his death arises—sickness or accident. The horses, therefore, there bequeathed are put in mourning by having their mane, tail, and ears cut off and their body smeared over with white clay. These, with the guns and other weapons bequeathed, are taken on the first war expedition by the persons who received them. We have been appointed executor of the will of an Indian who died at Fort Union some years since from a wound through the bowels. A short time before his death (about three hours) he called us to his bedside and made a distribution of some horses and other property to be kept for his children's use, and desired his best running horse to be shot on the spot where he was to be buried, while he was yet living, which with the other requests were attended to.

There can be no doubt that if they were certain their dying requests would be fulfilled the custom of bequeathing their property when the circumstances of their death admitted it would be more general; but they know that the customs are such that after death all property must pass into the hands of strangers, as will be stated under the head of Death and Its Consequences. Even when dying bequests are made they are not always carried out. The horses and other property thus given to their families are given to others who cut their legs and bodies and cry a great deal at the interment, or rather on the occasion of their placing the body in a tree, as they usually do. When the great chief of the Crows, Long Hair, died no less than four hands were held out by four different Crow Indians, each offering to cut off two fingers to obtain the chief's war horse that he ordered to be killed upon his grave, but their offers were rejected and the horse was killed.

Crime

Crime of any and all kinds among them is considered an offense to the individual and as such liable to punishment by the person offended. But no idea of a moral offense toward the Great Spirit is exhibited or consequent future punishment feared. All our endeavors to extract from them even an acknowledgment of the greatest crimes being morally wrong have been unavailing. They can not see that any act of theirs should meet with punishment after death because they think they have just cause for these acts, and also they

do not believe in future punishments at all. To illustrate the first position, we will present their arguments on the greatest of crimes, murder. An Indian never commits what in his mind would be equal to murder in our estimation. There is no inducement in any case for them to murder a man for his horses, wife, or any other property they possess, for this step, instead of securing these advantages, would operate in quite an opposite direction, making it necessary for the murderer to relinquish his own property and that of his nearest relatives to pay the damage; also forfeiting his own life and becoming an outcast. And this is the reason why their disputes so seldom terminate in bloodshed, as the prospect of loss is far greater than that of gain. When they do kill among themselves it is in consequence of some quarrel about property, or about something, and this they are then in a manner obliged to do, to save their own life. It then becomes self-defense or a necessary action induced by the principle of fear and their constant habit of carrying and raising arms. In no instance does an Indian take life, except that of his enemies, without provocation.

A horse, a woman, a gun, or any other article may be the cause of a quarrel, and threats and menaces pass which place each under the necessity of destroying the other to save himself. They say they can not do otherwise, and often regret the necessity. To kill an enemy, instead of being reckoned an act ungrateful to Wakoñda, is thought by them to be highly pleasing, therefore his aid to accomplish this and even private revenge is sought in prayers, fasts, sacrifices, etc. All mankind have, they think, an equal right to live, and an equal right to preserve that right, and it is the sense of this self-preservation that compels them to remove any danger in their way, such as wild beasts, enemies, or any of their own people whom they are aware are only waiting an opportunity against themselves; and it is also this right to life and fear of being assassinated that compels them to take every advantage to accomplish the destruction of the danger pending. We have questioned several Indians on this subject who have killed their own people and all have led to the same subject, viz, the necessity imposed upon them by quarrels to kill or be killed. To act otherwise when all peaceful means have failed would be considered as the height of foolishness and cowardice. An Indian does not take life from mere thirst for blood, nor, as has been stated, to acquire property, as in either case no advantage would be gained. When they waylay and murder whites they believe they are doing right; that whites have no business in their country, and are therefore looked upon in the light of enemies.

They do not kill the white traders among each nation, or in the few instances they have done so it was from some motive of revenge,

right in their estimation and in conformity to their law of retaliation. When the Blackfeet kill the whites at the Crow Fort it is from no enmity to the whites as a people, for they could if they wished kill plenty in their own country; it is that they do not wish the Crows, their enemies, to have traders who supply them with the means of killing them, by trading guns, ammunition, etc. The same reasoning on their own side is the cause of their friendship toward their own traders. Revenge, the great principle of destroying life, is strongly contended for by the Indians as necessary to their existence, both individually and as a body. The fear of the consequences of dispute prevents it, or generally is settled amicably by payment. There being no competent judiciary to try and punish crime renders it necessary for each one to retaliate, or they would be liable to constant imposition. That revenge among them supplies the want of courts of justice, prisons, and public executions. If the revenge is disproportionate to the offense, it can not be helped; their habits, customs, and organization all have that tendency. In all this they see no offense to Wakoñda nor any idea of moral wrong, even if they did believe in future punishment, which they do not, yet they know it is an offense to the individual and all his relatives, incurring their retaliation, which is the only punishment they expect.

Inasmuch as the warrior believes that by prayers, fasts, personal inflictions of pain and sacrifices they can secure the aid of Wakoñda to effect the death of their enemies or for the gratification of private revenge, by the same train of reasoning it must be manifest that the soul of a warrior must occupy a high degree of happiness in Indian paradise for accomplishing these acts through his instrumentality.

The death of a man who killed another would suffice if it were possible to stop there, but we have said enough on this subject to show they have no power to stop. The taking of the second life produces an obligation on the part of the kindred of the deceased to revenge, and retaliation is continued. The original cause of quarrel is lost in the greater necessity of defending life on either side. Therefore in their yet deplorable state of ignorance the crime of murder as an act of the same nature in our ideas can have no existence among them, neither can anything be morally wrong in which the aid of Wakoñda is invoked and if successful obtained. Robbery or theft is also an individual offense though not by them considered as such to Wakoñda. An Indian gives for his reason for stealing an article that his necessities required it and he could not get it any other way. He will not steal an article he does not want or can not use and run useless risk of detection, but a horse, gun, knife, or other things will sometimes be taken and the act excused on the plea of his necessities.

The risk attending the extraction of large articles or the disgrace incurred by pilfering is, they grant, all the punishment necessary, and these seldom are attended with any serious consequences. All must live some way and the right to property not being well defined—besides each being accustomed to frequent reverses—stealing is looked upon more as a means of subsistence necessitated by the state of their peculiar wants, and does not present the idea of theft to them as an immoral act or one tending to aggravate Wakoñda. Robberies to the extent of depriving another of his means of living are seldom if ever attempted, though retaliation would of course be severe in proportion, and in the progress of this retaliation the property thus acquired, be it horses or women, would be destroyed, besides the risk attending the robber personally.

Fornication and adultery are not considered offenses to Wakoñda. If the consent of the woman has been obtained, punishment is seldom inflicted on the man unless caught in the act. The woman, however, is punished in various ways, sometimes, though not usually, by death. The property of the offender is taken or destroyed for his trespass on the property of the offended. The chastity of any woman not the property of another man may be violated without any moral sense of wrong presenting itself, though the seducer would be liable to be made to pay or in default of doing so his horses would be killed by the relatives of the woman. Moreover, they look upon women as intended for this purpose, and only take into consideration the different claims upon them as an article of property.

Rapes on virgins are nearly unknown. Were such a crime accomplished the law would be death to the perpetrator, not because it is morally wrong, but because it depreciates the price of the woman and lessens her chance of marriage. It is also considered as an insult to her relatives, intimating a contempt of their feelings and power of protection.

The evils arising from falsehood or lying are with them of small importance. Any lies an Indian could invent would not be productive of any great evil, and owing to their associations the falsehood would soon appear. This being the case it is not regarded as a great offense even to the individual, much less Wakoñda. They all lie occasionally, and the custom is so common as scarcely to attract any further notice than their ridicule. Therefore there is no punishment attending on it further than the person famed for lying would be neglected and despised by the others. To call an Indian a liar would be insult certainly, but not in the same degree as the same epithet among whites. It would not be aggravation enough alone to merit a blow or any revenge. There is no such thing as profane swearing among any of these prairie tribes, nor is there a word in

their language equivalent to even the smallest profane oaths in such general use among whites. The name of Wakoñda is never mentioned without manifestations of awe and reverence. In this respect at least they are far superior to their Christian brethren. In conclusion of this answer we come again to the starting point.

What in their estimation is crime, is wrong, is an offense to Wakoñda? Crime and wrong can be nothing more than offenses to persons subject to their law of retaliation, the punishment being greater or less according to the object which entails it. Although they do not believe in future punishments, yet they think that Wakoñda can be offended and does punish in this life; not for crimes, as they have no existence, but for neglect of proper fasts, sacrifices, and personal privations and inflictions necessary to propitiate his anger. They believe that they are under obligations to worship Wakoñda, not from the fact of their creation or even as to the author of all good, but through fear of his power. In almost every emergency an Indian can be placed, the cause of which is not visible or the result doubtful, that is, where his own powers fail, he applies to Wakoñda. These applications are made by presenting to the Sun, Thunder, and other supernatural agencies offerings of considerable value, by fasting, by lacerating their bodies, prayers, and incantations, with the view of avoiding sickness in their families, personal harm of every description, attacks of enemies, to obtain success in war, to collect the buffalo near their camp, to avoid the attacks of bears, strokes of lightning, or even the appearance of ghosts. Where success has not followed these rites and ceremonies they believe it is caused by the offerings not being of sufficient value, or not of long duration, or their having been too seldom performed. Therefore the neglect or incompetency of these sacrifices constitutes the crime and the punishment is visible in the misfortune that occurs. This part of the subject will meet with further consideration under the head of religion.

Prayers

Prayer of a Warrior.[14]—"O Wakoñda, you see me a poor man; have pity upon me. I go to war to revenge the death of my brother; have pity upon me. I smoke this tobacco taken from my medicine sack, where it has been enveloped with the remains of my dead brother.[15] I smoke it to my Tutelary, to you; aid me in revenge. On my path preserve me from mad wolves. Let no enemies surprise me. I have sacrificed, I have smoked, my heart is low, have pity

[14] Almost every sentence is repeated over three or four times in a low running tone, with the pipe presented to the Charm, Amulet, or Sun.

[15] Meaning with a lock of his hair.

upon me. Give me the bows and arrows of my enemies. Give me their guns. Give me their horses. Give me their bodies. Let me have my face blackened on my return. Let good weather come that I can see. Good dreams give that I can judge where they are. I have suffered. I wish to live. I wish to be revenged. I am poor. I want horses. I will sacrifice. I will smoke. I will remember; have pity upon me."

PRAYER TO GHOSTS.—"Spirits of our dead relatives, I make this feast for you to call you all around me. I smoke this tobacco which has been inclosed with your hair; be near us and hear. My friends are around me, and you are called to the feast. Call on all the spirits of our dead friends to aid in giving us what we ask. Make the buffalo come near and the clouds and wind fair to approach them, that we may always have meat in camp to feed us and you. Help us in every way; let our children live. Let us live. Call on all these spirits and ask them to assist you in helping us.

"If we hunt, be with us. If we go to war, be with us. Enable us to revenge some of your deaths upon our enemies. They have killed you; they have brought our hearts low. Bring their hearts low also. Let us blacken our faces. Keep us from harm, rest quiet, we will not cease to cry for and remember you. You are remembered in this feast, eat some of it [here small bits are scattered around]. This to you, my father. This for you, my grandfather, my uncle, my brother, the relations of all present eat, rest in quiet, do not let disease trouble us. We eat for you, we cry for you, we cut ourselves for you."

In conclusion, if the spirit addressed be recently dead they will all cry, and some of the immediate relatives cut their legs and arms, but if it is a feast to the memory of those long since dead some of the concluding words are left out. There is a good deal of repetition and often a long prayer is said, but the above is in amount what they ask. For the previous ceremony before the prayer is said, see the article where feasts to the dead are described.

THE MOON

They say the moon is a hot body and derives its light from its own nature, not as a reflection of the sun's rays; that it is eaten up monthly or during a given period by a great number of moles, which they call we-as-poo-gah (moon nibblers). These moles are numerous all over the prairies, have pointed noses, no teeth, and burrow in the ground. They (the Indians) believe that in eating up the moon their noses are burned off, their teeth worn out, and for their damage have been cast down from above, where they are doomed to burrow in the earth and get nothing to eat. The same operation is going on all

the time by other moles, who in their turn will be thrown down. They think Wakoñda causes a new moon to grow when the old one has been destroyed. The moon is not supposed to be an abiding place for beings, but is worshipped and sacrificed to on account of its affording light by which to travel at night. They take the dark part of the face of the moon to be a large light Man holding a kettle in each hand. Stars are other bodies of fire far off, which they admit may be the residences of spirits or beings, though no great stress is laid on the idea. They are not regarded as parts of a system. Except the Polar Star and the Ursa Major, but few of the planets, if any, are known.

Parental Affection

The Indians show great veneration for their parents and affection among brothers and sisters; more, perhaps, to their parents than the others; but this only continues as long as they are vigorous enough to hunt, travel, and follow the camp. When old age and helplessness come on they are neglected. In proportion as age advances, veneration diminishes, and when parents become a burden they are left in some encampment with a small supply of provisions, which being exhausted, they perish. Age is under no circumstances the object of veneration; the fate of very old brothers and sisters is the same. They excuse themselves from this unnatural act by saying they are unable to transport them and that they are of no more use; also that it is the request of the old persons. This may be true, and it is likely that the life they lead in camp or in traveling, exposed to all weather and hardship, renders death desirable. There are very few very old Indians. They are not a long-lived people, and this is the reason these acts are not of more frequent occurrence. We do not know that the striking of a parent would be deemed a crime; at least no punishment would follow from others, but it is not customary and would be considered disgraceful. Eight years since this period we were present when an Indian shot his father dead for striking his mother, but this is the only instance of the kind we ever saw or heard of, and the person is despised by all, besides being since that afflicted by an incurable disease resembling scrofula. Indian priests, doctors, or conjurors are not more venerated on account of their supposed supernatural powers, but are somewhat feared, and sometimes persecuted or killed for supposed inflictions of diseases by sorcery. This fear is general but secret, and these men are neither venerated nor associated with as much as ordinary persons. If their services be required they are paid, and afterwards let alone, at least not trifled with nor loved. We can not by close inquiry find that any of these Indians ever killed by stoning a person, though enemies are tortured in almost every other way, if taken alive.

Religion

All these Indians believe in a Great Power, the First Cause of Creation, though they do not attempt to embody this idea, and call it by name Wah-con-tun'-ga or Great Medicine.[16] The word "medicine" in this case has no reference to the use of drugs, but the sense of it is all that is incomprehensible, supernatural, all-powerful, etc. Everything that can not be explained, accounted for by ordinary means, or all that is above the comprehension and power of man (Indians) is called Wah-con or medicine. Thus their own priests or jugglers are named Wah-con. A steamboat, clock, machine, or even toys, of the movements of which or the principle of motion they could not account for, would likewise be termed Wah-con. Now, Wacoñda refers to something greater than is within the power of man to accomplish, and its effects are manifested in the elements, natural phenomena, sickness, death, great distress, or loss from enemies, famine, lightning, and any other thing to them unaccountable by any visible means. They think Wakoñda pervades all air, earth, and sky; that it is in fact omnipresent and omnipotent, though subject to be changed and enlisted on their part in any undertaking if the proper ceremonies, sacrifices, and fasts are resorted to. They consider its power to be made applicable to either good or evil according to their observance of these ceremonies. They admit the existence of its good in years of great abundance of game, seasons of general health, triumphs over enemies, etc.; and its evil or danger is felt in every loss, infectious disease, or distress, the cause of which they are ignorant. These are the attributes of Wakoñda, and his residence is supposed by some to be in the sun, but his power everywhere.

They do not acknowledge any separate existing evil spirit or influence, though they have a name for this in their language, but the idea has been implanted by whites in later years, and can not by them be realized. All unaccountable evil is a dispensation of the anger of Wakoñda, which it is in their power to avoid by the proper fasts, sacrifices, etc., and which they all do.

Now this Supernatural Unknown Cause or Mystery created all things in the beginning. After the earth a few men and women of different colors were made, from whom descended all people. Different races were created for different pursuits. They say that to the whites was allotted education, knowledge of the mechanical arts, of machinery, etc., and therefore the whites in many things are

[16] Denig here defines the sense in which he uses the term "medicine" as applied to the objects and things to which the native Indians apply their words, *wakoñ* and *wakoñda*, meaning, "spiritual, sacred, consecrated, wonderful, incomprehensible, divine; a spirit, a diviner, etc."

Wah-con. They were also made rich and clothed, or have the means of getting clothing, and everything they want without hardship or exposure. The Indians, they say, were made naked and with such qualifications as to suit a hunter, knowledge enough to make his arms and use them at war or in the chase, a constitution to stand severe cold, long fasting, excessive fatigue, and watchfulness, and this was their portion. The position and pursuits of people were not defined by any laws, oral or otherwise delivered, but each with the powers granted him was enabled to live. The hunter soon found out that he could make traps and weapons, and felt his superiority over the animal creation.

They believe all animals are made for the use of man and more especially for the Indians, their meat being for food and their skin for clothing, "for" say they, "if not for that use for what other purpose?" Indians must have meat, and they eat all animals and birds, even to the crow and rattlesnake.[17] The prairie (the earth) was made for grazing the buffalo, and rivers to produce fuel, etc. The whites from their superior knowledge soon found out their destiny—to make everything, subdue everything, and make even the Indians work for their benefit. People were left in this state and each pursued their different occupations.

We can not trace in any of their conversations or religion any appearance of a moral code nor any offenses they can be guilty of toward Wakoñda except the omission of worship. If they had an idea of the kind they would undoubtedly do penance and offer sacrifices for these acts, but this is not the case. There is no repentance for past deeds; all ceremonies and worship is to avoid present or future evil. What we term crime can not be an offense to Wakoñda, as its aid is invoked to commit the greatest of them. Their idea of Wakoñda or Great Unknown Power is, we believe, nothing more than the fear of evil befalling them, the averting of which is beyond the power of man. Therefore they make sacrifices, fasts, prayers, etc., to this Unknown Power which they know from actual phenomena has an existence, and think His aid can thus be secured.

But they can go no further. They have no idea of a Being whose attributes are mercy, forgiveness, benevolence, truth, justice, etc., nor will they have until these words have a signification and appreciation among themselves. This view is the correct and general one among all the prairie tribes, though it is often clothed in superstitious narrative of fable not necessary to be inserted here. War and peace would not be recognized as His special acts, as they know these

[17] The Assiniboin never eat the rattlesnake, but it is known that some of the St. Peter's Sioux and Cree do.

things depend upon themselves, but success or defeat would be, as that is beyond their power or knowledge when they start to war. Consequently, a successful warrior or leader is always said to be Wah-con or divine—that is, one who has by some means secured the aid of Wakoñda. Natural phenomena unattended by either good or evil results would pass by unnoticed, but destructive tornadoes, deaths by lightning, by diseases such as apoplexy or unaccountable accidents would be regarded as His special acts. Eclipses, thunder, and lightning are warnings, and to these sacrifices are made with the view of averting the danger intimated, yet unknown. From this dread of unaccountable evil arises their repugnance to talk on the subject. To do so would lay open their secrets of apprehensions, of sacrifices, and might, they think, by levity produce the evil they wish to avoid or a counterpoise of sacrifice on the part of some one else render theirs unavailing.

For the further explanation of this subject it will be proper to state some of their sacrifices and ceremonies so that a minute survey of the operations of their minds can be realized. The greatest public or national ceremony of the Assiniboin is the Sacred Lodge. The time for this is appointed by some divining man of known repute and invitations are sent to the different camps to attend. Lodges are placed in the form of a long tent by posts planted a few yards apart and others transversely, over which are stretched many lodge skins to form one building about 100 yards long and 5 or 6 yards wide. To these transverse poles are tied all offerings to Wakoñda, though principally to the Sun and Thunder. These offerings consist of skins of value, different kinds of cloth, beads, kettles, and any new articles the donator can afford and is willing to sacrifice, in proportionate value as their wishes to effect some object or to avoid some danger they apprehend exists. A mast about 40 feet high is raised in front of the building and the raising of this requires the presence of all the men and women, who all the time sing a kind of hymn or tune, though no words are used in it. This mast is painted and decked out very gaily. All are dressed in their very best raiment and the whole presents a lively and interesting appearance. The divining man who called the meeting on the first day goes through many prayers and ceremonies with the pipe, the tenor of which are invocations for general health and success both in war and the chase, and for the avoiding of any and all unknown evil or accidents.

The second day is devoted to dancing and feasting on the very best they can produce, and this is the only dance among them except the scalp dance where men and women dance together. On the third day is exhibited feats of sleight of hand and tricks, some of which

are very well done and serve to increase their belief in the supernatural powers of the divining men who perform them. On the fourth day these sacrifices are taken down, destroyed in such manner as to be of no use to anyone who finds them, and hung on different trees or bushes in the neighborhood. The divining man who called the meeting receives presents from a good many who attend, of horses and other property, and it generally proves a good speculation on his part. This is done but once a year and is their only form of national worship.

The common way in which sacrifices are made by individuals is thus: The Indian takes some article of value alone into the hills or woods, lights the pipe, and invokes the aid of Wakoñda in whatever he desires to succeed, promising a repetition on a certain time.[18] This article is then damaged or destroyed and left there. After this he returns to his lodge, kills a dog, makes a feast, and invites his neighbors, by whom the flesh is eaten and small portions thrown on the ground as a respect to Wakoñda. It does not appear, however, that the killing and eating of the animal is considered as part of the sacrifice further than to add to the importance of the ceremony.

A feast of corn, flour, or berries is as often used on these occasions as animal flesh. The article sacrificed must be something of value, must have caused the Indian some trouble or expense to procure; otherwise it is of no avail. On one occasion an Indian bought at this place the following three articles at the price of six buffalo robes, viz, two kettle covers, a ball that had been shot out of a gun, and a chew of tobacco that had been thrown away. Now, although he could have procured any of these articles for nothing in his own camp, yet according to his promise to Wakoñda he was obliged to pay a high price and to travel a long distance to procure them.

Every warrior or man of family among them makes these sacrifices whenever he feels disposed, or their promises to Wakoñda become due, and if they do not fulfill these promises or neglect these ceremonies they are punished, or at least any accident, loss, or failure would be attributed to this cause, that could not be accounted for by any other. Another mode resorted to of propitiating the anger of Wakoñda or securing his aid is fasting and cutting their bodies. This is not much practiced by the Assiniboin except for success in war.

Several principal warriors will lie out in the cold, rain, or snow for three or four days and nights, without eating, drinking, smoking, or speaking, making internal prayers to Wakoñda to aid

[18] This fetish or amulet is also exposed and smoked to as a medium for his prayer to reach the Great Medicine.

them in accomplishing their objects and the dreams that present themselves under these circumstances are received as favorable or unfavorable omens according to the nature of the visions presented. This is done by those who are desirous of leading a war party or becoming capable to lead by some great exploit, and the leader chosen is he whose dream appears to present the greatest appearance of success. These fasts are sometimes accompanied by cutting the breast with a knife horizontally or the arms transversely above the elbow, making incisions about 3 or 4 inches long and half an inch deep, which are not bound up. Among the Mandan and Gros Ventres these ceremonies are still more severe. Incisions are made on each side of the shoulder blade on the back and a stout stick is thrust through. A cord is then attached to the stick and they are drawn up off their feet to a post planted for the purpose. By an impetus given with their feet they throw themselves out from the post and swing themselves around violently until the cord winds and unwinds successively, for one or two days, when the hold breaks and they fall to the ground.

If not already too much weakened, new incisions are made and cords 10 or 12 feet long are tied therein. To the ends of these cords are attached three or four buffalo bulls' heads and horns, each weighing from 15 to 20 pounds, and they drag this weight over the ground, the horns plowing it up until the holds break, or fainting from exhaustion they are carried away by their relatives. Nothing is eaten or drunk during all this time.[19]

These and other ceremonies are what they think appeases the anger, averts the evil, or secures the aid of Wakoñda or Great Mystery. They are not made with the view of any atonement whatever for bad deeds, neither with the object of purifying their minds for communion with him or it, but as a payment. The idea is that he who undergoes so much voluntary punishment or pain, or destroys so much property to him valuable, entitles him to the protection of that unknown power and that it can and will favor those who thus remember and worship him.

They have no idea of national and individual atonement, nor that any person was to or has come on earth to answer for them. To make this idea reasonable to them they would first have to be taught that they are guilty of crime and a correct knowledge of the attributes of the Great Mystery, together with a moral sense of justice. To do this the entire regeneration of the grown Indian must be brought about, which it would be little less than a miracle to accomplish.

[19] We perceive by the printed inquiry that this is not credited, yet it is so common among these people as scarcely to attract the attention of the traders.

They would, to please any missionary, give a tacit consent to his creed, whatever it was. Knowing him to be an educated and superior man, not striving after personal gain, they would be induced to give it a trial, but would continue their own ceremonies at the same time in secret, and any failure of their expectations would be blamed on the missionary. They might actually appear to him converted by outward show, but their minds would undergo no change, unless it was to become more confused and skeptical. This is the reason why all attempts at reformation should be made with their children. Abstract truth will not admit of general application, without taking into consideration the existing state of things. The necessity of law must be felt before it would avail: their ignorance made manifest before truth could be introduced; a moral sense of justice and of their depravity implanted before moral rectitude can be expected.

Horses sacrificed on an Indian's grave are an offering to the Great Mystery to conduct the soul of the departed immediately to the south, where the Indian Paradise is said to be situated, and also includes a desire that the Great Mystery should supply the place of the deceased parent, as a father and protector. Dogs and other animals that are killed in sacrifice, are eaten by those invited, and only appear to be part of the ceremony, not of the sacrifice. The entrails of the animal thus killed are neither eaten nor burned, but thrown away as on any other occasion.

In eating these feasts small bits are thrown on the ground with these words: "This to Wakoñda to keep us from harm," "This to the Sun," "This to the Thunder," or to some of their dead relatives, and these ejaculations are uttered in a very low voice, not always audible. They offer no human sacrifices to Wakoñda, neither do their traditions mention their forefathers to have done so. Though enemies are tortured to death in many ways, yet it is only to satisfy their revenge and thirst for savage glory. Within the last year several of these acts have been committed a short distance from this place, which to convey an idea of we may mention here. Five Blackfeet were caught stealing horses from the Crow village in the spring of 1853, then at the mouth of the Yellowstone River, and the enemies were pursued a mile or so, when they took refuge in a cluster of bushes. The Crows surrounded them and by constant firing killed all except one, who was shot through the leg. This man they took out alive, scalped, and cut his hands off, gathered their boys around who fired into his body with powder, striking him in the face with his own scalp, and knocking on his head with stones and tomahawks until he died. Afterwards the five bodies were carried to camp, the heads, hands, feet, and privates cut off, paraded on poles, and thrown around the camp, some of which found their

way to the fort, and were presented by the Crows to the Cree Indians then here.

A few weeks before the period at which we write some Blackfeet stole horses from the Cree camp, were pursued and 11 out of the 12 of which the party consisted were killed. The remaining one was taken alive, scalped, his right hand cut off, and thus started back to his own nation to tell the news. Now as this man was leaving the Cree camp he met a Cree [20] boy whom he managed to kill with his remaining hand, was pursued and taken the second time, and was tortured to death by slow mutilation.

The trunks are generally burned, but all the members and the head are carried about the camp, if near, and insulted by the old women and boys in every possible manner. The Sioux, Assiniboin, and Cree will on occasions tear out the heart of an enemy, place it on a stick and roast it before the fire, dance around, sing, and each bite off and swallow a small piece. There are no religious associations attending these acts, and they are not made with the view of appeasing the anger or of sacrifices to the Great Mystery; neither do their words and actions on these occasions imply any such idea; all is insult to the dead enemy, and savage glory and revenge to themselves.

The moral character of their priests or doctors does not differ in any respect from that of ordinary Indians, which have by this time been seen to possess no such qualities as sobriety, truth, etc. Whether they actually believe in their own powers we can not say, but rather think they do. Perhaps some strokes of fortune or remarkable coincidences have produced this belief, or they may think that the pains and exertions they use may induce the Wakoñda to aid them. We have already noticed this class of priests in their medical capacity, and will now state their other qualifications. They wear no badge of office, are either of the male or female sex, are not hereditary, nor is their number limited. As many as are believed to be Wa-con, or Divine, and are willing to run the risk attending the profession, do so. They are all called by the same general name of Wa-con, independent of their individual or real name. They affect to cure diseases, reveal future events, direct where lost articles are to be found, interpret dreams, etc. The ceremony attending any of these things (except sickness) is conducted by the medicine man, first being paid for his services. Afterwards he enters a small lodge built for the purpose, like the vapor bath and drums, rattles and sings alone the greater part of the night, returning his answer to those concerned in the morning. These answers partake of the nature of those of the ancient oracles, are ambiguous, with the view of evading decided failure. They do not claim the power

[20] Evidently should be Blackfeet.

of witchcraft, as this is a dangerous profession, but this power is ascribed to them by the other Indians.

The majority of these people believe, or say they believe, that some of these old conjurors can "shoot them with bad spells" (as they express it) at the distance of 100 miles off, and it is on the assumption that they are the cause of some of their deaths, that the lives of these professors are sometimes forfeited. We believe their confidence in the powers of these priests and medicine men is pretty general, though some of them (the priests) are more divine or Wa-con than others. When an Indian is sick they endeavor to cure him, as has been stated, and if unsuccessful and death ensues they usually keep out of sight until the first bursts of grief are over. Others of the same profession who have not been called to administer to the patient attend the funeral, their object being to secure whatever property they can by loud crying, cutting their hair and bodies, and other display of profound grief. Nothing resembling a prayer is said over the dead at the burial nor anything spoken. Indeed, on account of their loud lamentations it would be impossible to hear it if it were. Some weeks afterwards, however, other ceremonies take place regarding the dead which will be described in another place. The body is placed in the fork of a tree, on a scaffold, or occasionally interred on the top of a high hill. No device, inscription, or hieroglyphics are made at or near the place of interment by any of these nations.

As far as we have proceeded with their religion, belief is the general one, though it may be clothed in different language by different Indians, sometimes superstitious and fabulous, but our object has been to arrive at the philosophy of their religion by rejecting fables, etc., which do not bear upon the inquiry.

From this point all other religion diverges into different minor beliefs and superstitions according to the fancy of each individual. Many believe in certain evil spells and troubles brought on them by lesser spirits or ghosts and even of the spirits of monsters which have no existence nor ever had except in their dreams and morbid imagination. It appears that these ghosts are the cause of all petty malice, vexations, or bad luck, not being of sufficient consequence to attract the attention or induce the influence of Wakoñda. To relate the different kinds of belief in these powers as each would explain it would require the labor of years, and it is somewhat difficult to generalize, owing to the prevailing differences. Under some of the answers that will follow regarding charms, amulets, ghosts, etc., will be detailed enough in conjunction with what has already been stated to form a tolerably connected idea of this feature of their faith.

Sorcery or witchcraft has already been noticed, but we may in addition state that the witchcraft imputed to some of their doctors

is their power to do evil at a great distance from the object, to produce death or disease, though they do not believe these persons can transform themselves into other shapes; think they can exercise the same power to do good if they choose, and do exercise it in curing the sick. It is in consequence of this belief that the doctor or divining man is punished in case of failure and death, as they think it is his unwillingness, not his inability, to cure which produces the result. They do not burn them, but the writer has seen several shot at different times by the relatives of the deceased, on the supposition they caused their death. This custom is in as great force now as it ever was.

The divining man has a chance to become rich in horses and other property in a short time, as his fees depend on himself; but these advantages are more than counterbalanced by the risk attending the profession. The doctor, priest, conjuror, wizard, prophet, and divining man are all united in the same person; that is, to a divining man (Wa-con), or divining woman (Wa-can), these powers, or some of them, are ascribed, and they are believed to possess them in proportion as their success has been developed. Some are simply doctors of medicine, others in addition are conjurors and do tricks. Some go further, interpret dreams, reveal the future, find lost articles, etc. The whole united forms the entire divining man. The persons who profess and perform some of these things are tolerably numerous; but the effective diviner of established reputation, large practice, and possessing the whole of the foregoing powers are very few, perhaps not more than six or eight in the whole Assiniboin Nation. As has been observed, they form no distinct body and have but little influence in council unless they can add that of warrior to their many distinguished titles and degrees.

The whole of these Indians most sincerely believe in the theory of ghosts, that departed spirits have the power to make themselves visible and heard, that they can assume any shape they wish, of animals or men, and many will affirm that they have actually seen these apparitions and heard their whistlings and moanings. They are much afraid of these appearances, and under no consideration will go alone near a burial place after dark. They believe these apparitions have the power of striking the beholder with some disease, and many complaints are attributed to this cause. They therefore make feasts and prayers to them to remain quiet. Smaller evils and misfortunes are caused by their power, and a great many stories are nightly recounted in their lodges of the different shapes in which they appear.

Dreams are revelations of Great Mystery and have considerable influence over them, either in war expeditions or the chase.

A bad dream on the part of the leader of a war party would be sufficient cause for their return, even if they were within a short distance of their enemies. It would also prevent an Indian from his customary hunting and have other effects of the like nature for a short time. Good dreams are therefore always desired and courted, particularly on the eve of war excursions. Faith in amulets and charms is general among the whole of these tribes. The material of these charms is of every possible variety, as also the different degrees of influence they exercise over different minds. The idea though thoroughly realized by ourselves is difficult to explain, but may be thus stated: Although the Great Spirit is all powerful, yet His will is uncertain; He is invisible and only manifests His power in extraordinary circumstances. The want of a tangible medium is felt, therefore, through which they can offer their prayers to all ghosts, lesser influences of evil, which overrule their ordinary occupations. Each Indian selects some object for this purpose and calls it his medicine, which is invested with a sacred character by the care with which it is guarded and the prayers, invocations, etc., made through it as a medium.

This charm or fetish is chosen in consequence of some dream or incident or idea presented on some important occasion, and consists of the skin of a weasel, otter, or beaver; heads and bodies of different kinds of birds, stuffed; images of wood, stone, and beads wrought upon skin; drawings of bulls, bears, wolves, owls, serpents, monsters, who have never existed; even a bullet worn round the neck; in fact anything resembling animate, inanimate, or imaginative creation, is selected according to the superstitious fancy of the individual. This charm, whatever it is, is inclosed in several envelopes of skin, and placed in a rawhide sack which is painted and fringed in various ways. This sack is never opened in the presence of anyone unless the Indian falls sick, when he has it taken out and placed at his head. Ordinarily this object is taken out in secret, and prayers and invocations made through it as a medium to the spirits he wishes to propitiate. They are aware that the object has no intrinsic power, but its virtue lies in their faith of their ceremonies, as exhibited through this charm as a visible medium to the supernatural. It is in fact the same operation of mind (though differently exhibited) as is displayed in the charms believed in by most of the lower order of whites. Although many ignorant white persons have faith in the charms, spells, etc., of quack doctors and old women, yet this does not destroy their belief in the Supreme Being, neither does it that of the Indian. As long as he has success in his different ordinary undertakings and is not troubled with the evils he fears, he will continue to say his medicine is good, but should he be disappointed

and the case reversed, he will throw the charm away and substitute some other.

Thus the writing, paintings, and pictures done by whites are considered great charms by some Indians, particularly the Crows, and are eagerly sought after as such. In the same light is regarded the medal of the crucifixion given them by Catholic priests.

What is the actual character of their worship when closely analyzed?

It is hoped that the preceding remarks have rendered this character plain. All their prayers, sacrifices, feasts and personal inflictions tend only to advance their temporal welfare and interest.

Several tunes are sung on some of these occasions when presenting the pipe to the Sun, etc., that are of a sacred character, partaking of the nature of thanksgiving for any signal success in war or otherwise. A few words are used, but the chant is solemnly performed without their usual gesticulations or levity.

The custom of holding as sacred the cult of the tobacco plant is general. No ceremony of importance takes place among them in which the pipe is not used. There are, however, several solemn occasions in which the manufactured tobacco will not answer, when they use that grown by themselves. These customs occur among the Mandan, Gros Ventres, Arikara, and Crows, the only nations who cultivate the tobacco plant. Sacrifices of small quantities of tobacco are also made on many occasions, and always a small piece is found wrapped with the medicine pipe or inclosed in the medicine sack.

Why it is considered sacred they can not explain, and the idea appears one of the most ancient and original among them.

These tribes do not worship fire in any form. The Sun is thought to be a body of fire and is worshipped next to the Great Mystery by all of them, not, however, because it is fire (though being luminous no doubt originated the idea) but because it is believed by most of them to be the residence, and by some the eye, of the Great Mystery. It is worshipped as the greatest visible symbol of the Great Mystery. No other ceremonies are in existence among them by which we would judge that fire is regarded with more reverence than water. On some occasions councils are opened with fire struck from flint, such as peace-making between two nations, ceremonies in the medicine lodge, and feasts to the dead, but in all ordinary councils among themselves this distinction is not made. In the cases where it is obtained from the flint it seems to be merely an adherence to ancient custom. No extra benefits are expected on that account, neither when questioned do they attach much importance to the fact. Fire would be nothing without the tobacco. In all these ceremonies with which we are well acquainted, we can safely say that the tobacco is the sacred material

(not the fire). The rest depends on their invocations, etc., to the Great Mystery or his symbols to render the whole of an effective character in their estimation. We can not by inquiry find that there has ever been among them or their ancestors an idea of a holy or eternal fire.

Omens have great influence on them on all occasions and are of every possible variety. Storms, severe thunder, croaking of ravens, and unusual sounds in the night, or even the fall of their medicine sack or medicine pipe, would be sufficient to turn back a war party if any of these omens were considered by their leaders as unfortunate in their predictions, which they generally do. Councils would not proceed during severe thunder, an eclipse, or any unusual phenomena, though smaller omens would not be regarded. The flight of birds is seldom if ever considered ominous unless their passage be accompanied with some unusual appearances. Howlings of wolves and foxes in a peculiar manner, whistling and moanings of ghosts, and bad or bloody dreams would prevent the individual from war or the chase for a short time.

From all that has been written concerning their religion we would rather others would decide whether the Indians are in reality idolaters. That they render a species of worship to idols of almost every description is true, yet this worship only refers through these toys or charms to the great source of all power, or to supernatural interference. They do not believe in the virtue of the material of which they are made, nor do they ascribe to them an immaterial spirit, but the mind by viewing them has a resting point, a something to address in form, not for great protection and aid, but for daily favors, and averting of smaller evils.

Uneducated as they are, obliged mentally to grasp at protection from supernatural evil, in every way, from the great luminary the sun, as the most powerful, to the smallest atom that may possibly be of some aid, they, through these images or objects, endeavor to excite the interest of the Great Mystery, an Unknown Power, to whose approach no one certain way presents itself. If this be idolatry, be it so.

What else could be expected? That the Indians should be in advance of Christians, who have their charms, their chance, their fortune, and other ideas fully as repugnant to the belief in an all-wise disposer of events, as the customs of the Indians present? The very fact of the general practice of this species of idolatry appears to us to be the greatest evidence of their being true worshipers. It is in fact acknowledging a supernatural agency in everything; a belief in a ruling providence over this life in every situation. If their minds pursue wrong directions, and their prayers are for tem-

poral, not spiritual welfare, it is not their fault. Why should they desire what they do not want? If no moral sense of right and wrong is found among them, no sins acknowledged, nor future punishments feared, it must follow that temporal welfare and personal advantage are all that remains worth praying or fasting for. If they pray and sacrifice to the sun and thunder it is nothing more than acknowledging the existence and power of God in these, His works.

If they depend on fetishes and amulets to aid them in ordinary life it is what many Christians do in a different way, yet these are not accused of idolatry. If the right ideas were instilled into the mind of the Indian he would be no more the savage, but the Christian, and would worship the same being in a different sense and form than he now does in any way his distorted imagination thinks may prove effective. Great evil or great good is evaded or invoked from the Great Spirit through great apparent mediums, as the Sun and Thunder.

Smaller evils and smaller benefits are averted or sought through the medium of charms which though not intrinsically of any virtue, yet benefits are the consequences attending on their prayers through them, their character being rendered sacred by constant care, and the importance of their position as mediums of worship. The identity of the Great Spirit as a being appears to be lost in their worship of the portions of creation capable of inspiring them with fear. His existence as a cause is admitted, but we do not observe He is often addressed except through some visible medium, which is as it were a separation of his power among these objects or animals.

The medicine sack contains the fetish or charm referred to, which with a lock of some dead relative's hair and a small piece of tobacco is inclosed in several envelopes of skins of different kinds, on which pictures of imaginary or real animals are rudely drawn.

This sack is made of raw buffalo hide (dried), the hair scraped off and painted and fringed in various ways. It is well tied up, not pried into by anyone, and mostly suspended to a pole outside the lodge in camp or carried on the back of some woman when traveling. When the owner dies it is buried with him. This is the arcanum of the medicine sack, and it possesses none of the features of an ark, either inside or out.

Immortality

That the soul lives after death is the general assent, and that this is a final state, but by pursuing the inquiry we do not arrive at any certain idea of their occupation there, as they will always say they do not know. This much, however, some acknowledged, that when they die their soul is taken to the south to a warm country, though

this place does not appear to be either on the earth or in the heavens. Here is a state of pleasure and happiness, free from all disease, trouble, want, war, or accident. Some are more comfortably situated than others, particularly those who have been great warriors and those who have been attentive to their sacrifices and other ceremonies. No punishment for offenses is apprehended, though rewards are granted. If still questioned they will describe a counterpart or nearly so of the Mohammedan paradise, or a shadowy image of this life, abstracting the evil. There is no resurrection of the body, though they are presumed to have other bodies furnished them in the future state, that present the same features as in this life, yet are not subject to its vicissitudes.

Animals of all kinds are found there, though it does not appear that they are the souls of those which lived in this world. Reasoning powers and immortality are not ascribed to the brute creation. Everything referring to a future state is not made the subject of their conversations, and each man's opinions differ. Some deny any such a state and think death final to soul and body. Others that the soul never leaves the neighborhood of its burial place. All information regarding their belief in futurity is with difficulty extracted, and not much importance is placed on the fact of their being immortal beings; at their death also the greatest anxiety appears to be about their family and relations left behind. They admit its uncertainty, and fear nothing on the score of future punishment. Upon the whole there is nothing in their belief of a future state which affects much their general conduct through life and as little on the approach of death. From this fact we may conclude very reasonably that the foregoing system of their religion is the correct one, as they do not feel guilty of moral offenses toward the Great Spirit entailing future punishment, but expect to be rewarded for their devotedness in their manner of worship. These Indians will also smoke, invoke, and give small pieces of tobacco to the head of a bear after they have killed it. But this does not imply they are to meet the animal in a future state. It is a kind of thanksgiving, through the bear's head, to the powers that have enabled them to accomplish the feat of killing it without accident.

The killing of a grizzly bear by a single man is no trifling matter and deservedly ranks next to killing an enemy. A coup is counted for that action in their ceremonies where they publicly recount their brave exploits. Moreover, every year persons are torn to pieces by these animals when wounded or surprised in thickets where the person can not escape. Therefore all ceremonies to the dead animal would have the nature of invocations for aid and protection from

the supernatural powers whose business it is to interfere, and indeed such their words imply on these occasions. It may have been some such ceremony the Indian on the shores of Lake Superior made which was mistaken for begging the animal's pardon.

Mythology

This subject would not present any useful information and only tire the reader with endless fable without arriving at any important conclusions. We could fill volumes with their stories of giants, demons, transformations of men into animals and other shapes, but do not think any fact thus elicited would avail any useful purpose. There are a great many traditions that would seem to prove that the doctrine of metempsychosis has formerly been the general belief, but they do not appear to put much confidence in their reality at the present day, and these stories are told more for amusement every evening than anything else. Neither does it please absolutely to contradict or deny that such things have been. In this way beaver are said to have been once white men from the sagacity they show in building their lodges, evading traps, etc. Thunder is said to be the flapping of the wings of the large medicine bird. Piles of rocks are supposed to have been heaped up by large white giants. The rainbow is called the sun's wheel; though they are aware that the colors are formed by the sun shining through rain. All these and hundreds of others have legends of their formation which are very long and one or two generally occupy an evening to relate. Most of them, however, contain a kind of moral or double meaning and are occasionally interesting and imaginative, sometimes obscure.

To present an example we will record one recited by the "Thunder Stomach," an Assiniboin warrior at the time we write and interpreted by myself, preserving as nearly as possible all the words and actually all the ideas of the Indian.

LEGEND OF THE ORIGIN OF THE URSA MAJOR AND POLAR STAR, BY THE THUNDER STOMACH, AN ASSINIBOIN WARRIOR

In the beginning a few Indians were made far in the northern regions. No sun nor moon had yet been formed, and all was utter darkness except the light of the snow. A lodge of Indians was situated on the bleak plains inhabited by eight persons who were seven brothers and one sister. The brothers all went out hunting and left the woman at home working at raiment. In their absence a stranger came outside the lodge and called to the woman to come out, using flattering words with a sweet mouth, but she moved not, nor looked upon his face. When her brothers returned she related the circum-

stance, and the eldest said, "You did right, my sister—had you listened to this man's sweet words and looked upon his face, you would have been obliged to follow him wherever he went, without the power to stop or turn back." She said nothing but continued her labors and they again left to hunt.

Being anxious to ascertain the truth concerning the stranger and expecting his visit, she put on four complete suits of raiment and four pairs of moccasins, one on top of the other; also tied on a pair of snowshoes. He came and used the same flattering words, when she stepped outside and looked upon his face. He immediately departed at a swift pace and she was obliged to follow in his tracks. Onward they traveled far over the plains in a northerly direction and over immense piles of snow. A long time passed without diminishing their speed, until at length they came to a lodge full of men (beings). Her conductor entered and disappeared, she followed and not seeing him took her seat near the door. "Move to the next," said the man at her side, "I am not he whom you seek," and she moved where he directed. "Farther on," said her neighbor, and she again changed her place. "Next," said the other, and she moved in this way from one to the other, until by making the circuit of the lodge she at last found herself at the entrance without seeing the one whom she had followed hither. She was about to leave the lodge when the eldest Indian, apparently the master, said, "Remain, I will tell you a story." She stopped. "There was once a woman," he continued, "who ran off with a young man, and came to a lodge full of strangers to seek her lover. She had on four entire dresses, and not finding the man, would have left, but one of her dresses fell off."[21]

On saying this, an entire dress and pair of moccasins disappeared. He repeated the words four times and at the end of each repetition a dress was missing, which left her naked. They then took her up and cast her out into the cold snow to freeze to death.

The brothers on their return from hunting missed their sister and suspecting the cause of her departure followed the tracks and arrived outside the lodge where they found their sister nearly frozen to death. After wrapping her in a robe, and she had somewhat recovered, the eldest brother said, "Go back into the lodge and tell them a story in return." She entered and said, "I come to tell a tale. There was once a woman coaxed off and forced to follow a strange man. She came to a lodge of strangers, who instead of protecting her, robbed her of all her clothing and threw her out in the snow to die. Such men have no hearts." On concluding, the hearts of all the Indians inside flew out of their mouths and stuck to the lodge poles

[21] This remark recalls the story of the Babylonian Ishtar, who was represented as losing one by one her seven garments and then as receiving them back again one by one.

outside, where they were cut to pieces by the brothers. She left with her brothers for their home, but got separated from them in a snow storm and wandered every way, she know not whither. In the end, after a long time she came to a large house of iron with flames of fire coming out of the chimney. She feared to enter. "Come in," said the master of the house. "If I enter, how shall I be treated? What relation shall I bear to you?" "I will be your brother," he said. "No," was the answer. "I will be your father." "No," was again the answer. "Your uncle," "your friend," still "no" was her answer. "I will be your husband." This time she replied "Yes," the large iron doors flew open and she entered, they closing violently behind her.

The inhabitant was a large, ugly man, and the interior of the building was strewn with human carcasses half devoured in their raw state. He was the first cannibal! The woman would have fled but could not, and was compelled to become his wife according to her promise. He treated her badly and although not forcing her to eat human flesh was continually devouring it himself. They lived as man and wife for a length of time, during which she had a male child by him. The brothers had never given up the search for their lost sister, and in the course of their travels for that purpose came to the house of the cannibal during his absence. The woman let them in and recognized them. The child was beginning to speak a few words, and among the first he pronounced were: "Mother, what fine, fat men; kill one of them that I may eat some good meat." The brothers stared—the child was a cannibal! "You little fool," said the mother, "would you eat your own uncle?" The brothers held a council with their sister as to the way the cannibal being could be killed and she undertook his destruction. It appears this being had the power of coming into his house any way he chose, through the floor, through the walls, or any other manner, and the only vulnerable part of him was a cavity in the top of his head, not protected by the bone of the skull. She heated a stone red hot, and when the cannibal as usual was coming up through the floor, head foremost, she threw the stone into the hole in his head and burned up his brains, causing instant death.

She then fled to a place of rendezvous appointed by her brothers, taking her child along. They returned to their home with their sister, and when they arrived held a council and condemned the child to death, to prevent the propagation of the race of cannibals. It was killed by the mother, and on killing it she was changed into a body of fire, caught up into the heavens and placed as the first star in the north, which was the polar star. The seven brothers were also changed into stars and form the constellation known as

the Great Bear and are appointed to walk around and keep guard over their sister forever.

After the narrator had concluded I inquired if it had any other meaning than a story told to excite interest. He said it had, and that it showed the woman was revenged on all her persecutors, and for her resolution and good in cutting off the first cannibal and her own son, thereby destroying the species, was rewarded by being placed as a star; likewise her brothers who had protected her through life were stars also and guard her from harm. That if she had not acted thus a great part of the Indians would be cannibals. This he said was the commencement of stars, and their traditions named many other instances of like manner in which stars were created.

Manners and Customs

Constitution of the Assiniboin Family; Kinship.—There are terms for each degree of relationship and the collateral branches. These affinities are traced as far back as the great-grandfather, and the line of descent is distinguished by their referring to the names of the grandfather, father, or parents through some of their descendants living. The names for collateral relatives are the same by the father's as by the mother's side. All stepchildren become the children of all the wives the Indian has. The terms aunt and uncle are the same on both sides. The elder brother is called Ma-chin′-ah and the rest of the brothers Mis-soon-kah; the youngest is named the last. The eldest sister is called Me-tun′k-ah and the rest of the sisters Me-choon-ah. Their names are the same on either part. The name of a dead person is seldom mentioned, or if so, in a very low voice. Usually they name some living relative, and add his or her dead father. Where confusion exists as to a distant collateral relative they are all classed under the general head of cousins, though they are generally correct. They always address one of their nation as kindred if there is reason to believe the least possible degree of relationship is acknowledged, and never use their proper names if they are of kin. The name of the mother-in-law or father-in-law is never pronounced by the son-in-law. She never speaks to him nor he to her, neither do they ever look at the face nor go into the same lodge.

Should the father-in-law happen to go into a lodge where his son-in-law is seated, the latter would cover his face with his robe and not speak while the former remained. Usually they stop the one entering by crying out, "He of whom you are ashamed is here," when the other goes away and postpones his visit. All communications on business to these people by their son-in-law is transacted through his wife or strangers. To speak to or name the father or mother of an Indian's wife would excite the ridicule and laughter

of the whole camp. They refer to them in speaking by mentioning my father- or mother-in-law, as the case may be, or sometimes say "my wife's father," or "her mother." A woman does not mention the individual name of her husband nor he hers, but always say "my husband" or "my wife." Most of the bands being made up of relatives, the terms denoting kindred are in constant use in conversation.

The hunter state with all these prairie tribes is precarious and uncertain. They are often weeks and months without enough meat and not infrequently reduced to absolute famine. Whenever the buffalo are plenty they have no difficulty in procuring more meat than they can use and then do dry some, but they are very improvident and their small supplies are soon exhausted.

Indians who have numbers of horses, like the Crows and Sioux, follow the buffalo at all seasons, with their camp, but those who have but few horses, like the Assiniboin, can not follow them through the deep snow. When they are far from their lodges the men go over the snow on snowshoes and pack the hides to camp on dogs. From observation and experience they know that the buffalo approach the timber when the snow is deep on the plains to eat twigs and wild rosebuds. They therefore place their camps along some stream in the commencement of the winter and await their approach. None of these nations except the Cree are good elk and deer hunters, consequently their whole dependence is on the buffalo, which, as we have stated, is precarious. Their raiment made of skins is durable, one suit being sufficient for a year, and game is always found in sufficient number to furnish them with garments before they actually need them. There is no distress on this score. Their habits and pursuits, as will be seen through these pages, do not admit of their wearing any other material than that made of skins; except in warm weather and for show on occasions, none other is worn.

Inasmuch as women are of great advantage to the Indians by their labor, a plurality of wives is required by a good hunter. The domestic peace of a family does not suffer much on that account. There are, to be sure, quarrels among the women occasionally, but these generally end in personal abuse and recrimination, or are quelled by the master, if present.

Upon the whole the domestic arrangement is benefited by having the labor divided, which would be too much for one woman. The Indians, mostly, treat their wives well, but these women require a hard ruler and sometimes they are obliged to strike severely. Jealousies among the women of the same lodge are nothing and do not affect the actions of the man further than to stop the disturbance. But jealousy on the part of the man toward some one of his women supposed to be unfaithful are accompanied by terrible punishments,

not infrequently by death. Among the Blackfeet the noses of the women are cut off for this offense; others stab, strike, or kill as it happens. Women are not interfered with by the men in their management of household affairs. Such interference would excite too much ridicule for their pride.

Are the labors of husband and wife equally divided? The occupations of the man are as follows: Setting aside that of war which he occasionally follows after having a family, though not often, he is obliged to keep the family in meat and skins, and this occupies about one-third of his time. He makes his own bows and arrows, snowshoes, powder horns, and all implements of war and the chase, not purchased. He furnishes horses, either by war, bargains, or other means; collects, waters, and guards his horses; makes traps for wolves and foxes and kills and skins them; attends councils, feasts, and ceremonies; protects his family from insult and injury, and risks his life for them in hunting in different ways; all of which should be taken into consideration as forming a portion of his time and labor.

Sometimes his women will accompany him to the hunt and aid in skinning and butchering the animal, but this is only when the buffalo are near the camp. She never participates in his labors on other occasions. The usual occupations of the women are, to prepare the skins and dress them, which is a tedious and laborious operation; to cut up the meat in thin slices and dry it; to make all the clothing for the family, make lodges, cook, take care of their children and dogs, bring wood and water, pack and unpack animals, erect the tents, strike them, arrange the interior, carry burdens in traveling, render grease, pound meat, work at garnishing with beads and porcupine quills, make dogs travailles, saddle and unsaddle the master's horse, etc. In nations where canoes are used, the men make the frame and the women sew and stitch over it the bark or skin. Men make the paddles, pans, bowls, cradles, and pipes. This is among the Cree and Chippewa. With those who plant, the labor of hoeing, planting, gathering, drying, and shelling the corn is all done by the women and children; but with these less hunting is done.

Owing to the length of time required to scrape, stretch, dry, dress, and smoke even one skin it will be seen that the labor of the woman is much greater than that of the man, and she must have help or she could not attend to the domestic affairs of a large family.

A surplus of dressed skins is also necessary to buy the supplies they can not and do not make and to replace stolen or crippled horses. Thus an Indian with but one wife can not amass property, as the whole of her time would be employed in the absolute requisite domestic labors without being able to collect any skins for trade.

The first woman an Indian marries and the last are generally his favorites, the first because he has become accustomed to her ways, has children by her, and who manages the lodge in all its domestic arrangements, and the last because she is youngest and often handsomest. The actual labor performed by either of these is not near as great as by the other women. Indeed, all the others are looked upon in the light of laborers. To support several women, of course, requires greater exertions on the part of the man in hunting, but this is more than compensated for by their labor in dressing skins, which enable him to purchase horses, guns, and other means to hunt with greater facility. When buffalo are plenty, anyone can kill. The raw hide of the animal has no value. It is the labor of putting it in the form of a robe or skin fit for sale or use that makes its worth. Women therefore are the greatest wealth an Indian possesses next to his horses. Often they are of primary consideration, as after war by their labor is the only way he could acquire horses, the only standard of their wealth.

There is never any difficulty regarding raiment. Skins are durable and during the summer (when they make it) every Indian will kill enough animals for that purpose. He must do so or die, as but a small portion of the skins of the animals requisite for food will furnish the clothing. As it stands in the winter season, the women are never idle, the men also have pretty constant employment, but from spring till fall they both have a comparatively easy life. Domestic discords are not very common in their lodges.

They do, however, happen, and jealousy on the part of the master is the principal cause. All Indians have great forbearance with their families. When not excited or disappointed in some other way they will put up with almost everything their women say or do, and endeavor to laugh it off. The women study their humor, choose their time for this, and never press it so far as to enrage their husbands. If an Indian has returned from an unsuccessful hunt, lost his horses, or any other circumstance has taken place, to sour his temper, all his family immediately perceive it, and the greatest attentions are paid to him or his wants as long as this humor lasts. Some men will on these occasions tease and find fault with everything in the lodges, but they are not contradicted nor quarreled with. It is now their time to forbear, and well they know that punishment of no trifling kind hangs on a slender thread.

Discords of a nature to bring on contention and blows are uncommon except those arising from the jealousy of the man toward some one of his women. Even a look or a word in secret to a strange man is often sufficient to produce a blow or a stab. Upon the whole, however, they live in tolerable harmony, much more so than would be

supposed to exist among savages. The loss of youth and youthful attractions is not a cause of neglect, particularly if the woman has children by her husband. An Indian seldom exhibits any ill feeling toward his first wife, but on the contrary depends upon her to employ and manage the others. In this and all the domestic labors she is the principal and is addressed as such and possesses more influence over the man at middle age than ever or than any of the others. No doubt the youngest is a more attractive but not so useful an inmate, and gain is the principal object of the master. Wives are even more valuable in extreme age than parents, though but few live a great length of time. Their labors are too severe. Men of family are not very amorous; they study their interest. Children give the wife great additional power over the husband, so much so that even if afterwards they prove unfaithful or very obstinate they are punished but retained, whereas without offspring they would be cast off for the same offenses. The first wife, though not necessarily, nor always, the eldest, retains the preference, as has been stated; she is the domestic councillor.

The jealousies arising among the women are only occasional bickerings in the absence of the master, who if he perceives anything of the kind going on or anything else to mar his peace soon settles it by the argument of the tomahawk. Men of family are dignified, use great forbearance toward those under their charge, and consider it as disgraceful to be engaged in quarrels and squabbles with women, seldom interfere or abuse them, never strike their children, but evince a determination to see their home rendered pleasant and agreeable. Young women are vain, fond of dress, yet this is no source of discord. Fine dress is not sought eagerly by women of middle age. More frequently they take a pride in dressing the youngest wife, or their children, if any, even at their own expense, which greatly pleases the master and induces him to flatter them otherwise for this mark of respect.

There is order enough preserved in every Indian lodge to suit their mode of life and with a delicacy toward guests that would merit imitation elsewhere. If a child cries during conversation it is taken out. Boys and young men keep their mouths shut when the masters speak. They do not contradict, abuse, or interrupt. All have their places for sitting and sleeping, at the head of which, if men, are placed their arms and accouterments; if women, their sewing, garnishing, etc. These places are arranged by the eldest wife or by the grandmother as soon as the lodge is erected by spreading skins on the ground, and are uniformly the same in the same family. They can be and are changed whenever the necessities of the men require it, though the individual's local privileges are not thereby disturbed.

Places are reserved for strangers or visitors, and baggage, water, cooking utensils, and provisions have each their space allotted. This is not perceived immediately by casual observers, but would be realized by a short residence. To present a more lucid idea of these locations in the interior, we submit the drawings (pls. 74 and 75), with the additional remark that the skin door is locked on the inside on going to bed by the mistress of the lodge to prevent the entrance of dogs and other intruders. The fastening is made by a paddle of wood twisted in a cord attached to each end of the transverse stick that forms the support of the skin door; the ends of the paddle are then thrust through the poles of the lodge and secured by loops of cord for the purpose. The whole is so constructed that any person acquainted with it would have some trouble to shut or open the door, even in the daytime. The form as represented in general, though, of course, differs when the family circle is great or small, but the same correct appointments of places are visible in all, be the inhabitants few or many. Sometimes different families, yet some way related, in default of lodging are compelled to occupy the same lodge; in this case, although they may be somewhat crowded, yet there is always a delicacy of arrangement made to prevent the promiscuous location of the different sexes.

Camp Life

In an Indian camp after one has become acquainted the very opposite of taciturnity presents itself. The evenings are devoted to jests and amusing stories, and the days to gambling. When not able to raise amusement among themselves they will invite some old man to relate fables and stories of the olden time. The soldiers' lodge when not in session is the very theater of amusement and gaming by the chiefs and soldiers, all sorts of jokes are passed, and obscene stories told. Scarcely a woman in camp escapes their ribaldry, and they, consequently, never go near there. Yet, when business is to be attended to the reverse is the case, and one would not think it was then occupied by the same set of people. Ordinarily during the day in private families there is an evenness of temper, and great cordiality exhibited, with much affection shown to their children. These traits and amusements are not more observable when situated in remote parts of the plains alone, than in a large camp, perhaps not so much so for want of sufficient sources of amusement. The Indian of the plains or real savage is not the stoic ordinarily represented. Dancing, feasting, gaming, singing, stories, jests, and merriment occupy their leisure hours, and then all is fun and humor; but when in pursuit of game, sitting in council, traveling, trading, or war they are cautious, serious, quiet, and suspicious.

The number of meals they have in each 24 hours depends altogether on the supply of meat on hand. If plenty, each lodge cooks regularly three times per day—at daybreak, midday, and dark. But in addition to this pieces are kept roasting by the fire by the women and children nearly all the time.

Feasting is also common. In all those ways in times of plenty most of the men eat six, eight, ten, and as high as twenty times during a day and night. In times of comparative scarcity but two meals are had, morning and night. When meat is very nearly exhausted one meal must suffice, and for the rest the women and children are sent to dig roots or gather berries as the season and place afford. Feasts would then be desirable, but there is no one to make them, all being in want. Some who have nothing at all to eat in their lodge will send their children to watch when cooking is going on in another lodge, who report to their parents, and the man happens to drop in at the right time. No Indian eats before guests without offering them a share, even if it is the last portion they possess.

When no meat can be found they eat up their reserve of dried berries, pomme blanche and other roots, then boil the scrapings of rawhide with the buds of the wild rose, collect old bones on the prairie, pound them and extract the grease by boiling. A still greater want produces the necessity of killing their dogs and horses for food, but this is the last resort and approach of actual famine, for by this they are destroying their means of traveling and hunting. One thing is remarkable, be they ever so much in want of food, the grown persons never murmur nor complain, though the children sometimes cry.

Their appetites are capricious. It would seem that they are always hungry. The quantity of meat an Indian can eat is incredible, and after eating at six or eight feasts in succession his appetite appears fully as good for the tenth or even the twentieth as at the first. Their power in this respect as actually witnessed by us on many occasions would not be credited if related. It is useless to endeavor to impress upon the minds of persons not accustomed to this even an approach to the truth. It can not be realized. A lean, lank Indian will eat from 3 to 10 hours nearly all the time and grow gradually larger from his breast downward until in the end he presents somewhat the appearance of the letter "S," and all this without any apparent inconvenience. At other times they are from eight to fifteen days without eating anything, and often one or two months with barely enough to support life. After being deprived of food for a great length of time, and arriving suddenly on an abundance of game, they will feast again as observed and no evil effects follow.

They make no address nor grace to Wakoñda or any other supernatural power at ordinary meals, or common feasts. This is done on stated occasions which will be mentioned hereafter.

Courtship and Marriage

The way courtships are conducted is that the suitor in the first place always endeavors to induce the girl to run away with him. He has two objects in this. First, it shows her great regard for him and flatters his vanity that she leaves her parents and departs to another band, with and under his protection. Next, having the girl in his possession obviates the possibility of a refusal, and also he can afterwards pay his own price for her instead of that demanded by her relatives. To accomplish this they paint, dress, and adorn themselves extravagantly, and are always on the watch to catch the woman outside or away from the view of her parents. He dogs her steps so closely that opportunities must present themselves when he can recite to her his tale of love. Of course this consists of the usual promises and flatteries used by all men for like purposes which often prove successful. Should he obtain her consent to depart with him they will agree upon a place of rendezvous and signal, which he repeats to her in the night with his flute from outside the lodge at the appointed time to meet him, and they leave, traveling night and day until they arrive at another camp. Here they stay with some distant relative or friend three or four weeks and return as man and wife, when he looks around for some means to satisfy the parents. Or it sometimes happens that having become tired of her in the meantime he throws her on their hands and proceeds to seduce another. The young Indians are great profligates and boast of their success in this way.

If, however, by all their efforts they can not succeed in this they then marry. When this is decided upon no courtship is necessary. The suitor sends a horse by the hands of some respectable old man who ties the animal to the door of the lodge where her parents reside and, entering, presents a pan of cooked meat to the girl who is desired as a wife. Consent is asked and obtained or refused through the medium of this man. The nearest of kin are always asked (the girl's father and mother); if she have neither then the eldest brother, or uncle, etc. If the parents refuse, both the victuals and horse are sent back and negotiation ends. But if the suitor be determined to have her he will try again, sending two or three horses, guns, kettles, and all he can raise, until objection on that score is overruled and she becomes his property by going to his lodge at dark and remaining there. When the right price is paid the offer

is seldom rejected, though refusals are given on other grounds, such as old family feuds, or inability on the part of the applicant as a hunter or warrior. There is no tradition of the institution of marriage. It is a bargain and looked upon in this light by both parties, not merely a contract of sale, but one of amity, friendship, and mutual support of all related and concerned. Courtships and presents are only resorted to when the possession of the girl is aimed at without the consent of the parents. Otherwise the consent of the girl is not necessary, she being obliged to obey the wishes of her parents.

Neither the priests nor doctors nor any one else is consulted on these occasions, except the nearest relatives, and the negotiator is some man of standing or relation of the applicant. There is no parade or ceremony on the occasion nor are any gifts made by the mother-in-law to her daughter. On the contrary the son-in-law is regarded as their property. All he has and does is for years to the advantage of his wife's parents. The most of the meat and skins killed by him are carried to her parents by her until she has a child and her husband commences working for himself. The foregoing is the marriage of a young man with a young woman. The son-in-law, as has been stated, never enters the lodge of his wife's parents. Even in a casual passing when they meet elsewhere he is obliged to hide his face by drawing his robe over it, being as they say " abashed by them " or abashed to name or speak to them.

The men usually marry between the ages of 20 and 25 years and the women are given away from the age of 12 years upward. We are acquainted with but two instances of men of middle age among them who have never been married. The young of both sexes are extravagantly addicted to dress, particularly the beaus, who dress, paint, feather, and adorn themselves in every way imaginable, especially about the head, and are the most consummately vain fops in existence.

Widowers and widows remarry, the former in about one year after the loss of their wife and the latter from one to two and three years after the death of their husbands, in proportion as they are grieved for their loss. After a woman has had children her chances for a young husband are few, but middle-aged men do not consider this any objection if she in other respects is able to work and has a reputation for industry. The most advantageous time for a man to purchase a wife is on his return from a successful war excursion with the horses of his enemies in his possession. The manner in which his means to purchase have been procured gives him additional favor both with the girl as a brave man and with the girl's parents as one who can at any time repair their losses in horses if it be neces-

sary. After marriage the brothers-in-law on both sides become friendly, associate, make feasts, and exchange gifts, aiding each other on all occasions. No quarrels take place among them, nor indeed among any near relations. The whole forms a posse, a body, a support in times of trial, need and danger.

The right of divorce lies altogether with the husband. If a man has children by his wife he seldom puts her away even for adultery, the greatest offense. He will punish, but retain her on that account. Should they separate, all the larger children—that is, those who required no nurse and were able to take care of themselves—would remain with the man and the smaller ones depart with the woman. When the women have no children they are turned off without any scruple for much less offenses, or from jealousy by young husbands. Elder Indians require the labor of their women; therefore seldom willingly discharge them. Should he choose to do so, however, no one has a right to object, nor is any other consent asked; they are his property and he can do as he pleases with them. Occasionally they part from them a year or so and take them back afterwards. No property is given to the woman in the event of a separation.

Music

Their music on the flute referred to herein merits some notice. The instrument is made of wood, about the length and size of an octave flute, and the mouth on the principle of a whistle. There are four finger holes above and one underneath for the thumb. No tune or anything approaching it can be produced from this instrument, yet they can sound different calls in a shrill tone. It is played in several of their dances as an accompaniment to singing, not, however, producing any sound accordant with the voice. The principal purpose for which it is made and used is love making. By the various notes the following intelligence can be conveyed by the man outside to the woman inside the lodge, without any of the inmates except her knowing for whom they are intended, as the whistle can be distinctly heard at the distance of 100 yards or more: "I am here waiting for you," "I am watched," "Remain," "I will come again," "Meet me to-morrow," and several other communications of a like nature. The meanings of these different sounds are agreed upon and understood by the parties beforehand. As the instrument admits of considerable variation in its tone and note all their calls are different, and no other person would understand them rightly. They might suspect some assignation to be going forward, but would not know with or between whom. Songs and this whistle are used in their serenades and dances.

Longevity

The changes, exposures, and deprivations attending on the life of the roving tribes are without doubt great causes of the slow increase of Indian population. We think from actual observation that not more than two out of five children live until youth is passed. Even a few days after their birth, and sometimes but a few hours after, they are packed on the backs of their mothers in all weather, exposed to cold, snow, and wet. They must be iron to stand this. Should they be so fortunate as to reach the age of 4 to 6 years they follow the camp on foot through spring thaws, exposed to rain and cold, for weeks together, and a great many thus die from cold, pleurisy, and rheumatism. No question but the uncertainty of their food also contributes to their mortality, not that they often absolutely starve to death, but are rendered weak and unable to stand the hardship the life requires. In maturity war takes off another portion of the remainder, and diseases contracted by the exposures of their youth, together with their continued exertions as required by their precarious life, places it beyond probability of many arriving at extreme age. It is evident that the hard labor the women perform after marriage ruins their constitutions. A woman is old on the plains at the age of 35 years, and seldom healthy. They have from 2 to 5 children, more are occasionally seen, but 7 or 8 is a rare occurrence. There are but few very old women. The usual diseases by which they are carried off are pains in the head, heart, and side, consumption, hemorrhages from the nose and other ducts, puerperal fever, peritoneal inflammations, deliveries, and rheumatism.

Some of these complaints are certainly produced by their continued stooping when in the act of scraping skins, others from exposure, and all aggravated by their injudicious medical treatment.

A woman ceases to bear at 40 years, often earlier. Children have been produced by women at the age of 15, though this is uncommon; from 18 to 35 is the usual period. Twins are often seen; that is as frequently as this happens among the same number of white women. It is remarkable that women who bear twins are liable to a repetition of twin bearing, and two or three pairs follow. Two instances have happened under our observation where women had three children at a delivery. Barrenness is met with, but is by no means common.

Hospitality

Entertaining visitors forms one of the Indian's chief employments. Some of these meetings partake of the nature of dinner and supper parties. They are then called feasts. But as these will meet with consideration elsewhere we will allude in this place only to the custom of private entertainment, generally ascribed to hospitality. In-

dependent of feasts, visiting and invitations to visit, as stated, occupy a great part of their time. Most of their private business, bargains, settling disputes, hearing news, asking advice, required loans, and indeed all their transactions with individuals are carried on when visiting, or invitations are sent with that view. They also invite to preserve good feeling and friendly relationship, but usually there is some point to be gained, or advantage to result from these pains. After cooking and preparing ready whatever is to be offered and having the lodge swept and put in order, a boy is sent to the lodge or lodges of their guests, or he hunts them up through the camp, saying to each "You are invited" or "called," directs him to the lodge of his parents, and proceeds to pick up the others. Being acquainted with the situation of all the lodges, they are at no loss to find the way, or if they are, inquire of any one in the neighborhood. If strangers are invited, or whites, the boy precedes as guide and they follow. When the guests arrive they enter one after the other, saying on entering, "I have come." They are shown to a seat in the back part of the lodge, nearly opposite the entrance, where clean skins have been spread on the ground for their reception.

If several are expected, the first who come talk and smoke with the master until all have arrived or been heard from. The pipe being laid aside, the woman of the lodge dishes out the meal in wooden bowls, handing one to each. When all are served the master says "Eat ye." They fall to, but neither he nor any of his family partake of it while their visitors remain. The guests, however, are expected to do justice to the repast, and the more heartily they partake the better pleased the host appears. When the meal is over and the dishes laid aside the pipe is again introduced, and during the conversation of an hour or so that follows the object of the invitation is disclosed, and whatever business it is most likely settled or whatever favor desired granted. Such a thing as disinterested hospitality may possibly be met with, at least we have been present on some of these occasions where the object of the call was not visible, but it is entirely incompatible with a correct view of the Indian character to infer thereby that he had no object. On stated feasts, a feather, the lower end painted red, is sent as an invitation card, but on all ordinary occasions the message is by some one of the inmates of the lodge.

Casual visits without invitations are also common, sometimes only with the view of getting a meal, but mostly to accomplish some end or acquire some information. Guests, whether invited or not, are always awarded precedence. Any insult or imposition on a guest, once in an Indian lodge and under his protection, would be resented with greater severity than the same toward themselves.

We can not perceive in all this seeming friendliness toward guests any feeling of pure hospitality. An Indian never willingly, or without a motive, makes an enemy. The uncertainty of their lives and of everything they possess is such that mutual reliance on each other is required. It is more than probable that these attentions have for their object the forming of a name for liberality and securing the good will of as many neighbors as possible with the view of obtaining their assistance in times of need, or which is more evident, for present favors in small matters which are nearly always made known at the close of the visit. In the instances where the real object does not appear we are obliged to conclude that it lies deeper, requires a course of entertainments to accomplish, but nevertheless exists. When whites are invited and are merely travelers through their country, nothing at the time can perhaps be gained, but the rule holds good, for the Indians will always claim the same attentions when they are in turn the visitors, besides additional demands as a compensation for their hospitality. A casual observer would believe them to be the most hospitable people in the world, but a more minute acquaintance shows an undercurrent of pure selfishness in all they do. The sharing of the meat with each other in times of scarcity is no mark of liberality, or done from any other principle than the foregoing remarks present. It is a loan, or obligation, laid upon the person, to be repaid when their situations become reversed, or whenever the claimant thinks proper to remind him of it, which sooner or later he is sure to do in some way.

Indians of different nations are not only feasted by all the principal men in camp but loaded with presents to carry home. A short time after the donators pay a visit to the homes of their guests and receive as much or more in return.

Protecting a guest from insult and injury is done partly through the fear of the ridicule that would follow were he suffered to be badly treated in his lodge; it is a contempt of their power to support, and resented as such. Very often also it lays the stranger under obligations which are expected to be paid for, and usually are. Were we not limited in our remarks we could cite hundreds of instances that would prove true hospitality to have no existence among the savages of the plains. Everything they do and all their study is for the interest of self, visible or invisible to others, according to the nature of their views. We are not aware, however, that this course of hospitality is pursued with the view of covering stratagems, evil intentions, or to lull suspicion for the purpose of committing bad acts; it appears only to operate as a furtherance to all their ordinary wishes and bring about a favorable opportunity to make requests and transact other business.

Midwifery, Childbirth, Naming

Nearly all the old women and most of those of middle age exercise the office of midwives. When a woman perceives the pains of labor approaching, the lodge is cleared of all the men and children except the small ones, and the mother of the woman with some other experienced female acquaintances are invited. The doctor is also notified to have his medicine in readiness in case of it being wanted. The woman is placed on her knees and sticks set up in this form ⊓ placed before her. She presses the abdomen on the cross stick, rubbing gently along it. The pains of labor are said to be very severe. If danger is apprehended, the doctor is sent for and administers a draft of pulverized rattles of the rattlesnake or decoction of roots. If the doctor be a man, he then retires; but if a female she remains. Cases of solitary confinement happen occasionally from lonely situations. No nurse is provided; the mother takes care of her children from their birth. The rite of circumcision is not performed, but they evince a great desire that their children should be naturally thus formed and attach an unaccountable importance to that incident.

On the birth of a child a horse is given with other property to those in attendance. After three weeks or a month has elapsed the ceremony of giving it a name takes place. There is no regular period of time for this, and sometimes five or six months pass before it is done. The probability is in this case that it is the want of means to pay for the ceremonial, as in these instances they give for a reason, "the parents are too poor."

Usually, however, it is done about the time first mentioned and this ceremony is the same whether the child be male or female. Some medicine man generally makes the name, and sends word to the parents that on a certain day he will bestow it on the child. When the time has come a dog is killed and cooked or some other good dish is provided, and invitations are sent to some 20 or 30 of their friends and relatives to attend. When they are assembled the priest makes known to them the object of the meeting in a suitable speech to the supernatural powers, but principally to the tutelaries of departed grandfathers and grandmothers, invoking them to take the child under their protection, concluding with the name of the child distinctly spoken in a loud voice so that all can hear it. The feast is then divided, small portions thrown away for the dead and the rest eaten. A horse in the meantime is tied outside as a present to the medicine man for his services. He leads the horse around the camp, singing in a loud voice the child's name and those of its parents. If the child be a male this name is borne until he kills or strikes

his first enemy on their own (the enemy's) land. On his return after accomplishing this, he blackens his face and that of his relatives as a token of his triumph. Some one of the medicine men who are always on the lookout for advantage blackens himself and gives a new name to the warrior by crying it out loudly through the camp, stating the change of name has been given in consequence of his great bravery in killing his enemies.

A horse is again given the priest and the second name is attached. This name lasts until by repeated successes at war he becomes entitled to the name of his father, if the parent be dead; if living, that of his grandfather is bestowed, during a ceremony of the same kind as has been related. But this name is never given without sufficient merit on the part of the warrior. It is the highest honor that could be bestowed, is never afterwards changed, and he ranks immediately as a councillor and brave. The foregoing will account for both the plurality of names among them and the manner in which the original family name and line of descent is preserved.

The names of females are not often changed, though some have two, one affixed at the first ceremony and the other originating in some marked feature, or personal appearance unusual among them, such as fair hair, gray eyes, etc., and sometimes from any deformity, as lameness, loss of an eye, teeth, etc. Generally, however, they have but one. The names given to children are not taken from the incidents of dreams or deemed sacred, but are the manufacture of the priest according to his fancy. He endeavors to make one to please the parents in order to secure the gift of the horse. This name is told them secretly by him and if acceptable is adopted; if not, they suggest another in its place to him.

The children and boys call each other familiarly by these names as in civilized life, and when grown continue to do so, unless of kin, when the degree of relationship is mentioned instead of the name.

Herewith is a list of names, male and female. Of the warriors several have two, but only one, the leader of the party here at the time, had three. Their names were taken down for insertion in this place. Those of the women I had of a warrior present, and those of the chiefs and soldiers I have known for years, some of whom having two or three names.

ASSINIBOIN NAMES

Partisan, "The Back of Thunder," Ya-pa-ta Wak-keum

NAMES OF 27 ASSINIBOIN WARRIORS AT FORT UNION, DECEMBER, 1853

Interpreted name.	Indian name.
The Black Horn	Hai-sap Sap-pah.
He Who Comes Laden	Kee-hee-nah.
The War Club of Thunder	Ya-chunk-pe Wah-ke-un.
Boiling	Pe-gah.
The Backbone of Wolf	Shunk-chan-ca-hoo.
The Four War Eagles	Wah-min-de To-pah.
The Winner	O-he-an-ah.
The Standing Bear	Wah-bo-san-dah.
The Crow	Conghai.
The Little Rocky Mountains	Ean-hhai-nah.
The White Crow	Conghai-ska.
He Who Sounds the Ground	Muk-kah-na-boo-boo.
The Bear's Child	Wah-ghan-seecha Oeh-she.
The Iron Boy	Muzza Och-she.
The Sound of Thunder	Ilhom-bo-oah Wah-ke-un.
The Grey Bull	Ya-tunga-hho-tah.
He Who Deceives Calves	Chin-chah-nah Ke-ni-ah.
The Dry Sinews	Kun-sha-chah.
The Calf with Handsome Hair	Chin-chah-nah He-wash-tai.
The Bull's Face	Etai-tah Tun-gah.
The Wolverine	Me-nazh-zhah.
The Two-horned Antelope	Yah-to-kah-hhai noom-pah.
The Large Owl	He-hun Tungah.
The Large War Eagle	Wam-min-de Tun-gah.
The Child of Two Bears	Wah-ghan-see-cha noompa och-she.
Le Pene Rouge	Chai-shah.

NAMES OF 12 CAMP SOLDIERS

He Who Wishes to Bring Them	Ekando He chin-ah.
The Red Bull	Tah-tungah Du-tah.
The Bad Bull	Tah-tungah Shee-chah.
The Red Snow	Wah Du-tah.
The Blue Thunder	Wah-ke Un-to.
The Emptying Horn	O-canah-hhai.
The Standing Water	Minne Naz-zhe.
The Rose Bud Eater	We-ze-zeet-ka Utah.
The Boy of Smoke	Sho-to-zshu Och-she.
The Spotted Horn	Hai-kan-dai Kan-dai-ghah.
Shot in the Face	Etai-o-ke Nun-ei-a.
Bear's Face	Etai Wah-ghan.

NAMES OF SOME CHIEFS, OCCASIONAL LEADERS OF BANDS

The White Head	Pah ska-nah.
The Grey Eyes	Esh-tai-o Ghe-nah.
The Pouderie	Hee-boom An-doo.
The Tourbillon	Ah-wah minne o minne.

Interpreted name.	Indian name.
The Little Thunder	Wah-kee-e-nah.
The Knife	Menah.
Hair Tied Up in Front	Pai-pach Kich-tah.
He Who Wounds Dogs	Shunga Ou-nah.
The Claws	Shak-kai-nah.
The Great Traveler	Ca-wai-ghai Man-ne.
He Who is Above the Others	Wa-caun-too.
The Marksman	Coo-tai-nah.

NAMES OF 20 YOUNG ASSINIBOIN WOMEN

The Spotted Woman	Kan-dai-ghah We-yah.
The One Leg	Hoo wash e nah.
The Big Horn Woman	Hai-kees-kah We-yah.
The Glittering Lodge	Te Owah Ho-wat-tah.
The Four Thunders	Wah-ke-un Topa.
The Four Women	Topa Weyah.
The Season Maker	Man-ka-cha Ca-ghah.
The Lodge on Fire Woman	Te-ien da weyah.
She Who Makes the Clouds	Moh pe ah caghah.
The Door Scratcher	Te opah u-cai-ghah.
The Wing Bone	Hoo pah hoo.
The Crow's Cawing	Coughai a-hho-ton.
The Head Made White	Pah-kah shah-nah.
The Curled Hair	Pah-hah e-u-me-ne.
The Hawk Woman	Chai-tun We-yah.
The Red Chief	Hoon yuh shah.
The Mane of the Flying Eagle	Ap-pai Wam-min-de E-i-ah.
The Yellow Bear	Wah-ghan She-chah-ze.
The Iron Body	Chu-we Muz-zah.
The Fair-skinned Woman	We-yah Skah.

CHILDREN

Cradles are not much used by the tribes of whom we write. A few are seen among them which they procure from the Cree and Chippewa. The back is a flat board with a bow bent across the front where the head of the child is placed. (Fig. 32.) A rim runs along the inside the size of the child, cloths are attached inside this rim to the boards or back, and the whole ornamented in various ways. The child is then bundled up, inclosed in the rim, and the cloth covers strapped over it. This is carried on their back, and at any time should the cradle fall the child is protected by the bow across from touching the ground. These Indians make a kind of sack with eyed holes in front of scarlet or blue cloth ornamented with beads, and the child being well wrapped, all except the head, it is placed in the sack and strapped up. There is no doubt but this is the cause of their feet being straight, although they are not intoed, as one would judge

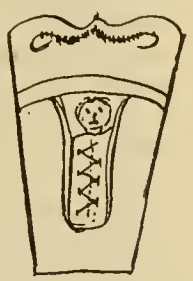


FIG. 32.—Cradle board

by their manner of walking. We can offer no objection to this mode of caring for children. Their natural growth is not affected thereby. At least it is the only method they could adopt to answer in extremes of cold, heat, and rain, with infants on their backs; besides their lodging affords little room for the conveniences used by civilized persons for rearing children.

They are as careful of their offspring as their manner of life will allow. Children are never weaned under 2 or 3 years old, giving for their reason that it retards their growth, but most likely having nothing but meat that a child can eat, they are obliged to do so. They call their mother enaw (mother) and their father at-tai (father). They address their children ma-chunk-she (my daughter) and ma-chink-she (my son). No abbreviations are used. They call them also by their given or proper names when there are several. There are no terms of endearment further than humming songs and meaningless words, such as white nurses use to very small children.

The domestic government is exercised by both father and mother. As long as the child is small the mother has the sole charge of it, but when it begins to speak the father aids in forming its manners. If a girl, he makes toy tools for scraping skins and the mother directs her how to use them. She also shows her how to make small moccasins, etc. Their first attempts in this way are preserved as memorials of their infancy. When a little larger, the scale of operations is increased and sewing, cooking, dressing small skins, and garnishing with beads and quills are taught, together with everything suitable for a woman's employment. If the child be a boy the father will make it a toy bow and arrow, wooden gun, etc.

When a little larger he will give him still stronger bows and bring unfledged birds into the lodge for his son to kill. Larger still and he runs about with a suitable bow after birds and rabbits, killing and skinning them. Another stage brings him to learn the use of the gun, to ride, approach game, skin it, etc., all of which is taught him by his parent. The rest he acquires from the time and facility their manner of life affords for practicing these pursuits, and at the age of 17 or 18 makes his first excursion in quest of his enemies' horses.

The father never strikes nor corrects his children from their birth to their grave, though the mother will sometimes give them a slap, yet it must be done in his absence or she would meet with immediate punishment. Notwithstanding this they are not nearly as vicious as white children, cry but little, quarrel less, and seldom if ever fight.

The boys are somewhat annoying when about 12 years old, but seldom do any serious mischief. The behavior of the girls is shy and modest.

The traditions related to the young in their lodges are usually extravagant fables and exploits of former warriors, exaggerated, of course, to make them interesting. Many local data and memoirs of events are thus preserved but so mingled with superstition by the different narrators as not to present any reliable truth. Most of the old men and many of middle age tell these stories in the lodges when they are invited for the purpose.

The grandmothers are also well versed in this and night after night the children learn a great deal, as soon as they are able to understand. The lives and actions of former warriors and other events of real life form a portion of the instruction thus conveyed.

These Indians living remote from civilization have no opportunity to steal white children, and we have never heard of one among them possessed by these means.

There are several half-breed children in all these nations, who, being raised with the Indians, are the same in all respects.

Cases of infanticide are very common among the Sioux, Crows, and Assiniboin, perhaps most so among the Crow women. It is not far from the correct number if we state that one-eighth of the children are destroyed in utero or after birth by the Crow women. The same also often is done by the Assiniboin, particularly if the father of the child has abandoned the woman before its birth. A quarrel with the husband or even unwillingness to be at the trouble of raising them are the causes for these actions. We think and have strong reason to believe that in some instances, they are destroyed at the instigation of their husbands, although they will not acknowledge this to be the case.

At all events no punishment is inflicted on the woman for the crime but frequently the means and time they use to produce abortions are the cause of the death of the mother. To produce its death in the womb they use violent pressure and blows upon the abdomen. Frequently they retire to the woods, bring forth the child alone, strangle it and throw it into the water, snow, or bushes. The whole of these measures are publicly talked of among them, and no great degree of repugnance is attached either to the act or to the woman, but the circumstance is laughed at as something ludicrous.

Male children are always desired by the husband. When small we see no difference made in their treatment or any preference shown, but when grown or nearly so the young man always takes precedence and is considered of far greater value than the girl. The feeling increases in his favor as he becomes of use at war or in the chase. Daughters, when matured, are married and sold, and here the greater interest in them ends; but sons are a source of profit and support for a good portion of their lives.

Suicide

Widows do not burn themselves on the funeral pile on the decease of their husbands, but frequently hang themselves for that loss, revenge, or for the loss of their children. Three suicides of this kind have been committed within the last few months in this neighborhood among the Assiniboin, one for revenge, the other two for the loss of their children. The first was the favorite wife of a camp soldier, who being scolded and accused of crime by the eldest wife, after telling her purpose, left the lodge, in the absence of her husband, and disappeared. Although search was made, yet a week elapsed before she was discovered hanging to the limb of a tree. She had climbed the tree, tied the cord to the limb, and descending, hooked on the noose standing on the ground, suspending her body by drawing up her legs. She hung so low that her knees nearly touched the ground and she could have risen to her feet at any time during the operation.

Another woman had her son (a young man) killed by the Blackfeet, and immediately afterwards another of her children died from disease. Several persons were appointed to watch the mother, suspecting her intentions; but they all fell asleep and she hung herself at the door of the lodge, between two dog travailles set on end. She was a tall woman and could only produce strangulation by swinging herself off the ground from her feet. She did it, however, and the body was brought to the fort for interment.

The third was a still more unfortunate case. The child of this woman had been sick some time and was expected to die. On the night in question it fell into a swoon and was to all appearance dead. No person being present the mother in the derangement of the moment went out and hung herself. The child recovered, but the mother was dead.

Every year in this way the women hang themselves, sometimes for the loss of their husbands, but more frequently on account of the death of their children, or for revenge. Suicides are also common among the men. They generally use the gun to produce death.

The Mandan and Gros Ventres, as has been stated, suspend themselves on sticks or skewers passed through incisions made in the back, and the motive for so doing has already been adverted to.

Spots are worn on the forehead and the under lip by some of either sex. Those on the women are for ornament. The bodies of some of the men are covered with tattooing to denote the warrior and brave. It is an operation requiring high payment, and is a mark also of the liberality and riches of the person who undergoes it, but no religious sects or opinions are thereby intimated. No rivers are deemed sacred or coveted in death by any of them.

Personal Behavior

These tribes are not degraded in the scale of being in their ordinary intercourse, connection or apparent actions. They frequently exhibit a delicacy in all these, but some of them, particularly the Crows, are addicted to customs, revolting to humanity, too much so for a lengthened description, among which may be mentioned sodomy, bestiality, etc. They all on occasions eat small portions of human flesh, not as a relish but to evince a savage fierceness toward the dead enemy. The Arikara are said to have devoured several entire bodies of their enemies in late years. We have witnessed a few cases of cannibalism among the Assiniboin, but they happened in time of actual famine, one of which we will describe. About eight or ten years since a great famine prevailed among the Cree and Assiniboin. They separated and scattered everywhere over the plains in quest of game. It happened early in the spring when the ground was yet covered with snow and no roots could be found. A Cree Indian with his wife and three children were stationed near the head of Milk River alone and had been without food for a great length of time. The father took the occasion of his wife being out to kill and cook one of his children, a portion of which he forced her to eat on her return. When this was eaten, after an interval of some days he killed a second and this was likewise devoured. Still no indication of game presented itself. He desired her to go out that he might kill the remaining child, which she absolutely refused to do, offering herself in its stead.

It happened that some Assiniboin in traveling came upon his lodge, and seeing them coming he had barely time to smear himself and his wife over with white clay, the symbol of mourning, before they entered. To account for the disappearance of his children he appeared very much grieved and said they had died from want. The strangers, however, suspected all was not right, and when he had stepped out they inquired of the woman, who told them the truth. The visitors left after directing him to their camp, where some game had lately been found, and he proceeded thither with his lodge. When in the vicinity of the camp, he killed and scalped his wife, throwing her body in the bushes, proceeded to camp, displayed the scalp, stating he had killed a Blackfoot; that they had attacked him and killed his wife. The camp turned out to search for enemies and discovered the body of the woman and no trace of Blackfeet. The Indian in the meantime suspecting he would be discovered absconded, leaving the small child and baggage in camp. Being of another nation with whom they were at peace, he was not pursued and yet lives, but is despised by all.

At the period of the catamenia they sleep alone and are deemed taboo for ten days. The word in their language expressing that flux literally interpreted would mean "she who lives in a lodge alone," and their traditions state that it was formerly the custom to pitch a tent outside for the woman to remain in during this period. After childbirth a woman is deemed taboo for 45 days.

Scalping

During a battle or whenever an enemy is slain they use no ceremony in taking the scalp except despatch. They are in great haste to get off or out of danger, and have no time for useless delay. A knife is run round the cranium, the foot placed on the dead man's neck and a sudden jerk takes it off. The cultivation of the scalp-lock among the Sioux is a very ancient custom but we know of no mode of tracing its antiquity. The rest of these tribes wear their hair in any form that suits their fancy.

Oaths

The Indians have several kinds of oaths. They will say "Wakoñda hears me," or they will swear by the skin of a rattlesnake, or the claws of a bear, wishing the snake to bite or the bear to tear them if they fail to fulfill their oath. They generally keep their oaths. The name Wakoñda in this is uttered in an audible voice with great solemnity and presenting the pipe to the Sun.

When Indians meet on the plains they halt within a few paces of each other, and if recognized as kin will name the relationship existing in a smiling tone. If strangers, one will inquire, "Where did you come from?" "Where going?" etc., during which they sit down and proceed to light the pipe. While smoking they will exchange news of their different places, make inquiries respecting their friends, about game, and anything of general interest, and when the pipe is finished they separate. No shaking of hands or touching of persons takes place, but if meeting with whites they will extend the hand to be shaken.

Smoking

This is so ancient a custom that even their traditions do not mention a time when their forefathers or ancestors did not smoke. There are tales among them whence came the tobacco seed and plant, particularly among the Mandan, Crows and Arikara, and perhaps among the Assiniboin, though we are not prepared at this time to relate them.

Fame

The principal avenue of fame is the pursuit of war. Other things tend to aid the individual and to render him respectable, as expertness in hunting, powers of prophecy, necromancy, and a name for wisdom, that is, the knowledge of governing, advising, making wise speeches, etc., but all these rather follow than precede the elevation of the man. Success in war is the first step; the others increase the importance of this. Acquiring a good many horses and women, by and means whatever, brings an individual into notice and makes him of importance, as thereby he can distribute many favors that a poorer yet braver man can not. Wealth in this finds him friends as it does on other occasions everywhere. But when rank is boasted, or chieftainship aimed at, bravery and success in war with capacity to lead are the principal requisites, without which all the other qualifications would be of no avail. We are acquainted with no Indian who has arisen to distinction without success in war being the principal cause of his advancement.

Stoicism

The stoicism exhibited by all these nations appears to be partly a natural disposition and partly a bias of their minds produced by their peculiar mode of life. This display of feeling is only seen when the circumstance requires it. It is considered a mark of manliness to treat important subjects, transactions, and conversations with deliberation and decorum. Lighter matters are discoursed upon with appropriate levity. Their constant wants, shifts, and precarious positions induce a thoughtful manner. The knowledge of each other's duplicity and the many ways used to circumvent and deceive to gain each his own ends produces caution. The uncertainty of their lives, liability to be revenged upon, and treacherous conduct generates suspicion. Being subject to severe reverses, extremes of want and danger, etc., a recklessness of life follows. Besides being the victims of superstitious dread, a morbidness of mind is acquired. But even all these would not without some natural peculiar disposition of mind account for their want of excitement and taciturnity and cover a hidden deep and dark design. Even when most expected, no trace of passion would be perceived by a stranger, but among themselves, or those who are well acquainted with their ways, their eye, countenance, smile, and every movement are as true an index to the workings of their mind as are observable among civilized persons in the most violent bursts of passion.

Taciturnity

Silence is not considered a mark of wisdom. A very silent man is not generally liked and somewhat feared, more so than a talkative one. Their wisdom consists in making apparent their good sense in speeches, advice, and in all their actions. Taciturnity may in some degree arise from their want of sufficient topics of conversation, as when obscene subjects are introduced this faculty is laid aside. All their ceremonies partake of the nature of solemnities, but when these are over and subjects or actions of a lighter nature employ their time they are as jovial and noisy as can be. In general, however, in common conversation Indians are not loquacious. Each sentence appears to be studied and no useless or superfluous words are introduced. They seldom speak twice or argue the point, even in debate in council. Each one states his opinion freely without interruption, and obstinately adheres to it. They never speak earnestly on a subject they do not thoroughly understand. They have a singular faculty of determination in everything they say or do. Even when surprised in extremes of danger their decision to act is made on the instant as if by instinct. No nervousness nor hesitation is evinced. When escape from death becomes impossible they are stolid, stubborn, and die like men.

Public Speaking

Their public speaking is only remarkable for applying their whole mind and soul to the business in hand. They state their opinions in a few words to the purpose, using only such metaphor as has a visible bearing on its elucidation. A great deal of the effects of their oratory is due to posture, gesture, and accent. The importance of the subject to them and their undivided attention bestowed upon it at the time is the cause of their forcible remarks. Some of these speeches are excellent in their way, but only so as they illustrate in a condensed form the opinions they wish to express. They are in fact the real children of nature. The prevailing circumstance governs the mind for the time and produces corresponding words and actions. The young and rising no doubt imitate the elders in some of the forms of set speeches but no pains are taken to learn them.

Travel

When they travel at night and have no moon to afford light they take their direction by the north star with which they are all acquainted, but when stars also are invisible they observe at dark the point from which the wind blows, and shape their course accordingly. By these means they will be able to pursue a right direction until they come to some hill or river with which they are acquainted,

and regulate their travel from that point until the sun makes its appearance, and then they are at no loss. Traveling on the plains is much more difficult than in forests. In the terrible snowstorms that sweep over these prairies, darkening the atmosphere and rendering the sun, moon, and stars invisible, or indeed any object a short distance ahead, they are as much at fault to proceed as any other person, and at these times lie down, let the snow drift over and cover them, and remain thus until the storm passes, which is frequently two or three days and nights.

There are many ways of determining within a few hours of the time when an encampment has been deserted and the number of persons composing the party. The camp fires will show how many persons have slept there, the dung of the horses or dogs denotes the time, if the fires have become cool. The tracks of the men and animals and the remains of the meal are also means of judging. If scraps of meat or bone seen around are untouched by wolves or ravens they must conclude that the party has recently left.

In the summer the bending of the grass under their feet, tracks in crossing a stream or any marshy place, and in winter, tracks in the snow, will show to a tolerable certainty how many persons and what time they have passed. A slight rain would determine whether the tracks were before or since it fell. Snow would prove the same; the dew of the morning in summer or fall would reveal the time to within 24 hours. The grass nibbled by the horses by its appearance would denote whether the party had passed within a few days and the hardness of the dung of the animals brings the time to a still greater degree of certainty. A correct judgment is not, however, formed by any one of the above criterions, but by a comparison of the whole, and by following the trail, and observing also the carcasses of the animals killed by the party, their number, state of decay, etc. These with other smaller indications, particularly if an arrow or moccasin be lost or thrown away, will determine the number and nation that have passed and the time. The passage of war parties is distinguished from hunting parties of their own people by the absence of boys' tracks or traces of dog travailles in the former, and by the precautions they take in their encampment.

Senses

There is an extreme acuteness in their sense of sight—that is, to see at a glance, over a wide extent of country, sometimes dotted by bushes, ravines, or hills, and distinguish the living objects when at rest from others. There is a great difference in the faculty of seeing far and what is called "picking up an object"—that is, distinguishing it from the inanimate bodies intervening. The Indians possess

this power in so remarkable a degree as to appear a kind of instinct. At a distance of 12 or 15 miles they will distinguish animals from timber, even supposing they are not in motion. If moving they will discern between horses and buffalo, elk and horses, antelope and men, a bear and a bull, or a wolf and a deer, etc. But the greatest mystery is how they make out anything living to be there at such a distance, on the instant, when they themselves are in motion and the animal at rest. This they do when it is surrounded by a hundred other objects as like to living creatures as it is. Once pointed out, the movements are watched and its character thus determined. Their powers in this respect are truly astonishing and must be acquired. They also judge very correctly of the relative distances of objects, either by the eye or to each other. Smoke can be seen rising on the plains at a distance of 60 miles, and they will tell from that or any lesser distance within a few miles of the place where it rises. Their ideas of location are fully as remarkable.

An Indian will shoot 20 or 30 arrows in different directions, and to a distance of 100 yards or more among the tall grass, or in the snow, where no trace of them remains, yet he will pick up the whole without any difficulty; whereas a white man would have some trouble to find any one of the arrows. If they lose a whip, knife, or anything in traveling they can by returning generally find it, though no road marks their steps. Even the boys do all these things admirably. Finding lost horses or a camp from a given direction are also every-day occurrences, even if they have never been in the neighborhood of the place, yet they will find their way.

Jugglery and Sorcery

These people are prone to be deceived in every way. Tricks by jugglers, stories, natural phenomena, or anything, to them unaccountable or uncommon is looked upon with fear. All are so, the priests as well as the others. The former have the address to turn to account their supposed knowledge of these causes—not that they are really any wiser than the others, but impress them with the belief that they are, which is enough for their purposes. The minds of most Indians are disturbed by many useless alarms, such as dreams, omens, and predictions of the priests. Writing or calculations in figures made by whites are among the wonders to which great superstition is attached, and they can be made to believe almost any story, however absurd, if read in appearance from a book. Paintings also, even the nondescript monsters drawn by themselves, inspire them with fear when looked upon. All this has met with sufficient explanation elsewhere.

Strength and Endurance

Their powers in lifting weights, handling an ox or rowing a boat can not compare to Europeans, yet they equal them in carrying burdens and surpass them in running. It would seem that they have but little strength in their arms, but considerable in the back and limbs. This may be owing to the manner in which they have exercised in their youth. An ordinary Indian can not lift more than 125 to 150 pounds at most, though there are a few very strong men who might be able to raise double that weight, yet most of them will carry a large deer on their backs, traveling at a swift pace for miles without stopping, and this is equal to 170 to 185 pounds weight. The manner in which they put it on their back is by tying the legs together, lying down with their back on the deer, slipping the legs across the forehead, and rising up with the load. The Assiniboin have frequently in this neighborhood and once in our company tired down in a day or two running on foot the best horses we could produce.[22] In running they never "lose their breath" as it is called, do not pant or respire very quickly.

They can not understand why "whites lose their wind in running" and have no name for the idea in their language. They say their legs sometimes fail them in several days running, but their wind never. They are not fast, but constant runners, keeping always at the same pace over hills or on a level, in a kind of short trot about 12 or 15 miles without stopping. They will then rest a few minutes, smoke a pipe, and make as much more at the same rate, and so on, for three or four days and nights in succession if necessary, their speed on these occasions being about 5½ miles an hour. In an emergency, sending an Indian express to the fort to carry a letter for myself, he went 95 miles and returned, being 190 miles, in two nights and one day.

They can not walk as well as strong white men, and never do walk when in haste to get forward. The muscles of their arms do not appear to be formed for very hard work, but it may be that the nature of their labors does not develop them. Upon the whole the European would stand much more hard work in every way, but the Indian would be his superior in active exercise, abstemiousness, and loss of sleep. The greatest burden we have known an Indian to carry any distance, say 3 or 4 miles, was two entire antelope, about 225 pounds.

Spirituous Liquors

No spirituous liquors have been distributed among these nations for many years past, but should it be given them in quantity it would

[22] W J McGee noted similar racing ability among the Seri Indians. See Seventeenth Ann. Rept. Bur. Amer. Ethn.

be productive of great poverty and distress. They all drink whenever they can get it—men, women, and children—except the Crow Indians, who will not taste it. The usual consequence of drinking spirits is poverty, as they will sell or give away everything they possess and prostitute their women and children to obtain liquor when once intoxicated. These Indians have never had a constant supply of spirits—that is, enough to produce diseases or nervous debility. Their frolics were made at intervals of months apart and never lasted more than 24 hours at a time. They are not quarrelsome in their families when inebriated, generally sing or cry for their dead relations; but among those who are not of kin quarrels often occur which occasionally result in the death of one of them. It is morally wrong and productive of great evil, in our opinion, to sell or give ardent spirits to any Indian.

Hunting

Buffalo are the principal dependence of all the prairie tribes, both for food and clothing, and are hunted at all seasons; in the summer when the hair is light and short for clothing, lodges, etc., and in the winter, when it is long and heavy, for robes. There are three ways of hunting this animal: by surrounding, by approaching, and by the parks, each of which we will describe. It may as well be stated that the buffalo migrate, or take different ranges, and travel all in the same direction in a given season. Thus in the spring they mostly move north and northwest, in the fall east and south, in the winter east, returning west and north toward spring. They keep together in herds of from 100 or 200 to 5,000 or 6,000, and sometimes the whole country for five or six days travel is covered with one moving mass of these animals. News of the buffalo approaching an Indian camp is received several days before the animals appear, as they only move forward when the grazing is not sufficient. Where a large camp is stationed they usually hunt by "surround," which is as follows:

The soldiers hold a council with the chief in the soldiers' lodge and prohibit any individual hunting ahead of the buffalo, also send runners daily on discovery, to observe what progress they are making toward the camp, their numbers, etc., and when they report them to be near enough a meeting is held in the soldiers' lodge, the time for the hunt appointed, and notice given to the camp by the haranguing of the public crier. At daybreak all the horses are caught and saddled, and each of the horsemen is provided with a bow and a quiver of arrows. A number who have no horses arm themselves with guns, and at a signal from one of the soldiers the party moves off in single file or line. Those who have the fastest horses go in

front, after them the other horsemen. Then the foot hunters, and lastly the women with their dogs and travailles. The soldiers ride along each side the line (which is sometimes a mile and more in length) and observe whether the line of march is preserved, and that no one leaves singly. Were a dog to run out of the line it would be shot with an arrow immediately.

Their march is conducted in silence, with the wind in their faces, consequently blowing the scent away from the buffalo while they are coming near them. The animal is not quick sighted but very keen scented, and a man can, in passing across the wind blowing toward them, raise a herd at the distance of 2 or 3 miles, without their seeing him.

The party proceeds in this order, taking every advantage of concealment the country affords in hills, coulees, bushes, long grass, etc., endeavoring to get around them. As soon, however, as they are close and see a movement among the buffalo intimating flight, they push their horses at full speed, and riding entirely round commence shooting the buffalo, which run in the direction of the footmen, these in their turn shoot, and the animals are driven back toward the horses. In this way they are kept running nearly in a circle until very tired, and the greater part are killed. Those on horseback shoot arrows into all they can at the distance of from 2 to 6 paces, and the footmen load and fire as often as the animals come near them.

A "surround" party of 80 to 100 persons will in this way kill from 100 to 500 buffalo in the course of an hour. As soon as possible the women get to work skinning and cutting up the animals. The tongue, hide, and four best pieces are the property of the one who killed it, and the rest belongs to those who skin it. When the men have stopped killing and turned their horses loose to graze they commence with their women, and the work being divided among so many is soon gotten through with. If any disputes occur as to the right to the hides or meat, they are settled on the spot by the soldiers; but these disputes do not often occur, as they generally all have as many hides and as much meat as they can pack home. The meat is cut in long, thick slices, merely detaching it from the bones, and leaving the carcass on the plains. It is packed home on their horses and dogs. Before leaving, however, they all make a hearty meal of raw liver, raw kidneys, raw stomach, and cow's nose, with other parts in the same state, and the blood being thus smeared over all their faces presents a savage appearance.

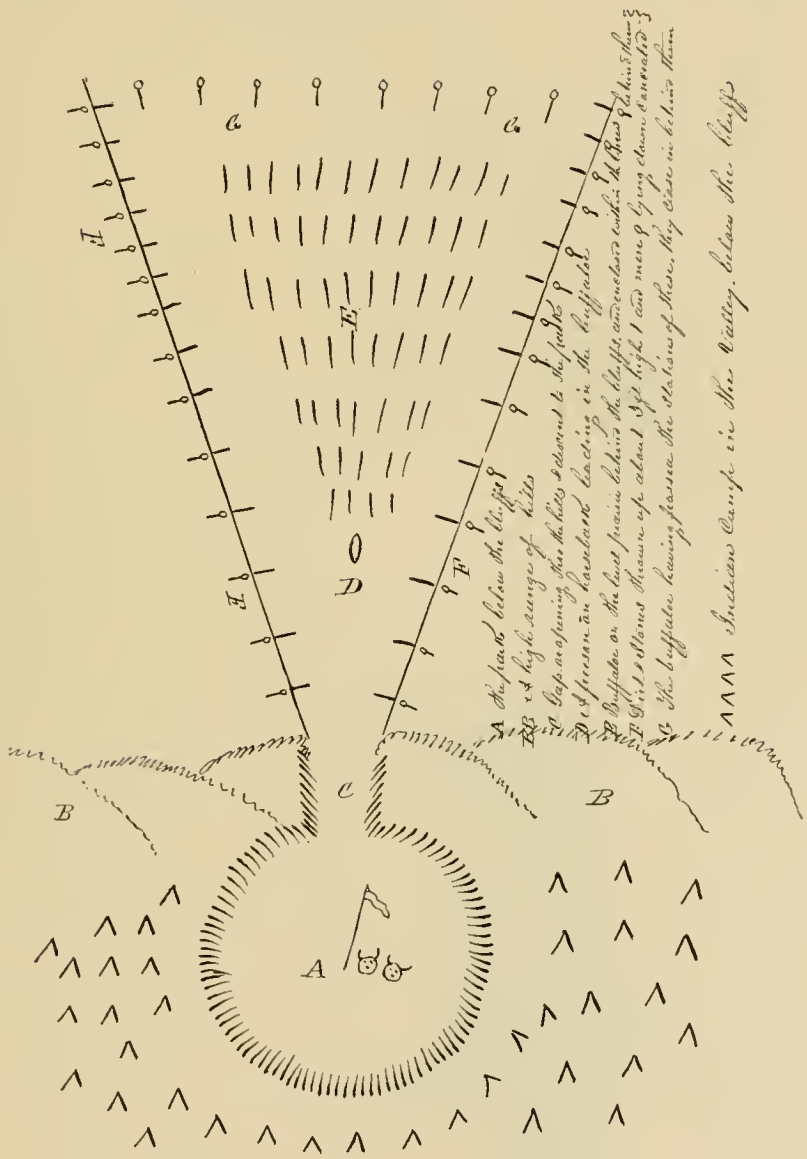
On arrival in camp if the soldiers wish the tongues, each one throws his down at the soldiers' lodge in passing, or sends it to them. Each also furnishes a piece of meat for that lodge, and all the old

and feeble are supplied by their relatives who have been to the hunt. The chief has no interference in all these matters. He sometimes hunts and works the same as the others, but generally sends some of his sons or other relations with his horses for meat. They never use the gun on horseback or the bow on foot after game. The former they can not load while running and the latter is not calculated to shoot with certainty any distance over 10 paces.

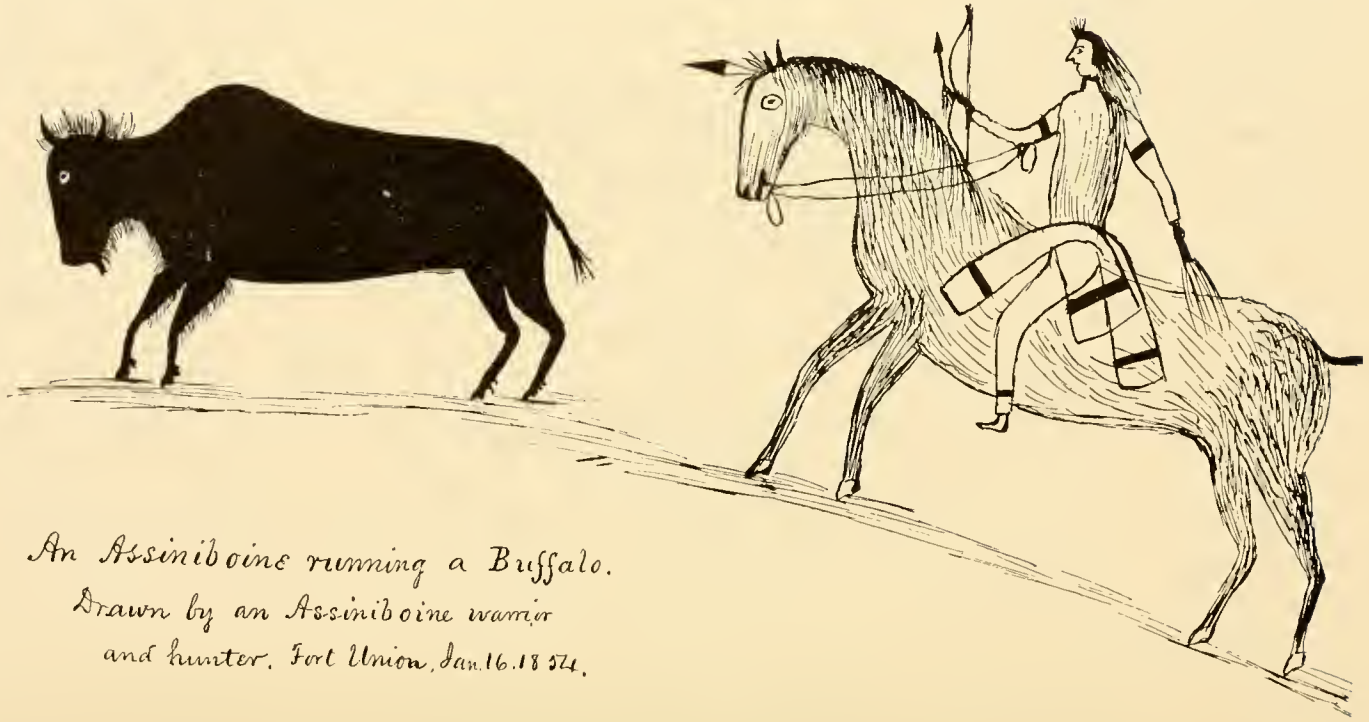
Throwing Buffalo in a Park.—This is the most ancient mode of hunting, and probably the only successful one prior to the introduction of firearms and horses, as their bows and arrows are insufficient for killing buffalo on foot. We know of no nation now except the Assiniboin and Cree who practice it, because all the rest are well supplied with horses that can catch the buffalo, therefore they are not compelled to resort to these means to entrap them.

Every year thousands of them are caught in this section by the Assiniboin, and at the time we are writing there are three parks in operation a short distance from this, all doing a good business. When a camp of 30 to 60 lodges find themselves deficient in guns and horses they move to a suitable place to build a park (pl. 69), and there wait the approach of buffalo toward it. Most streams have high bluffs on each side and a valley between. They therefore pitch their camp in the valley opposite and near a gap of perpendicular descent through the hills; a high level plain being beyond the bluffs. They cut timber and plant strong posts in the ground nearly in a circular form and fill up the openings between with large logs, rocks, bushes, and everything that will in any way add to its strength, inclosing an area of nearly an acre of ground. This enclosure is run up the sides of the hill to the gap or entrance *C*, though neither it nor the camp is visible from the place beyond. The whole is planned and managed by the master of the park, some divining man of known repute, who is believed to have the power of making the buffalo come into it by his enchantments.

On the plains beyond, and commencing where the wood mark leaves off, are thrown up piles of earth, about 3 feet high and large enough to conceal a man lying behind them, which are about 18 paces apart and extend in angles to the distance of a quarter to half a mile in proportion as there are people to man them. When these arrangements are completed, four fast running young men are selected by the manager whose duty it is to scour the country every day or two, making a circuit of about 20 miles in discovery of buffalo, and report to headquarters. The master in the meantime commences his magic arts as follows: A flagstaff or pole is planted in the center of the park, to the top of which is attached a yard or two of scarlet cloth, some tobacco, and a cow's horn. This is a sacrifice to the Wind.



A BUFFALO PARK OR "SURROUND"



An Assiniboine running a Buffalo.
Drawn by an Assiniboine warrior
and hunter. Fort Union, Jan. 16. 1854.

At the foot of the same are placed two or three buffalo Heads which are painted red, decked out in feathers, and new kettles with scarlet cloth and other things placed before them. These are given to the Buffalo Spirits.

Another Head painted and decked very gaudily is placed in the lodge of the master, who smokes and invokes it, at times singing the Bull Song, which he accompanies with a rattle nearly all night, and prophesies as to their appearance of success in the morning. A man is now chosen who is to lead the buffalo within the lines, and there are but few among them who can do it. When the discoverers have reported buffalo to be within 8 or 10 miles of the camp, and the wind is favorable, the master, after great ceremonies to the Heads, and making them other sacrifices, gives notice that a throw must be made, sending all the camp to take their stations behind the piles of earth, lying down; he remains in camp, keeping up a singing, rattling, and smoking—with invocations all the time. The person who brings the buffalo mounts a horse and meets them a great distance from camp. When within about 150 yards of the herd he covers his body with his robe, lies along the horse's back, and imitates the bleating of a buffalo calf.

The whole mass immediately moves toward him. He retreats toward the pen, always keeping to the windward of them, and about the same distance ahead, renewing the noise of the calf whenever they appear to stop. They generally follow him as fast as his horse can gallop, and in this way alone he conducts them within the lines of the angle. Of course as soon as they are a short distance in, the scent of one of the angles reaches them but it is now too late, they have closed in behind. The animals now take fright and rush from one line to another, but seeing people on both sides (who rise as the buffalo attempt to get through) they keep straight forward. The leader on horseback now makes his escape to one side, and the whole herd plunges madly down the precipice, one on top of the other, breaking their legs and necks in the fall. Into the pen they tumble, those in front having no power to stop. They are forced on by the pressure from behind and frightened by the yelling and firing of the savages. When all have passed into the pen the work of slaughter commences, with guns and bows firing as long as any appearance of life remains. From 300 to 600 are thus thrown in at one time by a small camp, and two or three days are required to skin and cut them up.

Men, women, and children now commence skinning. Each secures as many hides as he can skin. The master of the park claims a portion for his share, indeed all are said to belong to him, but he does not take more than the rest. All the tongues, however, are

his, and he also receives other payment for his services in presents, besides the standing of a divining man. Plate 70 will perhaps exhibit the hunt more clearly if we have not been sufficiently plain in the description.

When there is a deficiency of people to man the angles they are made by placing the lodges of the camp in that form, but this can only be done when they have a dozen or two of fast horses to extend the angle of the lodges and force the buffalo within the lines. This is also done, but it does not succeed as well as the way described. Great is the joy and feasting in camp after a large throw.

Approaching Buffalo.—This is done on foot with the gun by a single man. It is indispensable he should have on a skin dress in summer and a white blanket coat over it in winter, or a buffalo robe coat with all the hair turned inside.

Any dark-colored dress is easily seen by them at a considerable distance, but white or light-colored clothing does not attract their notice. The hunter has his gun covered with skin to prevent the dirt or snow from entering the barrel while in the act of crawling. His accoutrements are also firmly attached to his person by a belt. He proceeds toward the buffalo, keeping the wind as nearly in his face as possible, sometimes being obliged to make a circuit of miles to get the wind in the right direction. When near the animals he observes from the top of some hill how they are stationed, which way they travel, and the nature of the ground as regards coulees, gullies, bushes, grass, and any objects that may hide his person from their view and shapes his course according to the means of concealment presented. If he finds the country too level to get them within range of the gun he then commences crawling on his belly toward them, pushing his gun ahead as he goes.

This is a very laborious and slow mode of progressing and often takes one or two hours to come within shooting distance, as the hunter only moves while the animals are eating, stopping the moment their attention is directed toward him. In the snow it is a very cold business, and in the summer difficult on account of the cactus, but they are obliged to do it frequently in both seasons on these level plains. Great precaution is needed to approach buffalo or antelope on a level plain. The hunter covers his head with sage bushes, and sticks the same or grass in his belt; at other times a wolf skin covers his head and back—he lying flat, no form of the man can be perceived—and the animals being accustomed to these objects do not affright so easily. When by any of these means he has arrived within shooting distance he fires without rising, elevating his piece by support of the elbows. After firing he remains motionless a few minutes during which the buffalo, after recoiling a few paces, and seeing nothing on the move, commence grazing. He now turns over on his

back and reloads his gun (lying in this position) by putting the butt against his foot—and when ready will turn over on his belly and fire again, and so on, sometimes killing six or eight without changing his place, or with very little movement.

As soon as he rises the herd runs off and he commences skinning. Some hunters mimic the bleating of a calf and thus decoy the buffalo to them, but this is a rare talent, and only practiced by a few good performers; in hilly places or where there are gullies and bushes to hide the hunter, neither buffalo nor antelope are difficult to kill, but on the barren and level plain it requires great exertion, time and patience.

Another method by which great numbers of both buffalo and antelope are slain is, when the snow has drifted in the gullies, forming banks 10 to 15 feet deep. The animals are pursued on foot, with raquettes and snowshoes. The hunter goes over the snow, but the animals become embedded and are killed with ease. In the summer if several animals are killed, the meat is placed in a pile covered with the hides, and a portion of the hunter's clothing left on it, the scent of which prevents the wolves from coming to it. Occasionally the bladder of the animal is inflated, small pebbles put in, which being tied to a stick and stirred by the wind, will keep off the wolves and foxes.

But in the winter the usual way is to bury the meat in the snow, which effectually prevents the wolves from eating it, as they have no power of smell through a foot of snow. Meat can be left in this way in perfect security for a month or more, but they usually return with their dogs and take it away the next day. If the hunter goes out on horseback he leaves his horse near the buffalo, and after having killed in the manner stated, packs him home with the meat and hide, but in the deep snow horses can not travel, the dogs do not sink much in the snow and the men and women go over it on snowshoes.

Antelope are hunted in the same way as the preceding, also sometimes decoyed by tying some portion of clothing to a pole, the man lying down and raising and lowering the pole at intervals, or by kicking up his heels, one after the other. They have great curiosity to see the strange object, and after making many circles will come near enough to get a shot, though as soon as they make out the man they are off. A wolf skin is decidedly the best disguise when hunting any of the animals on foot.

It may as well be recorded here that all young hunters sacrifice the first game they kill by cutting it up and giving it to the crows, magpies and wolves, saying to each, "I give you this that I may always be able to kill and feed the wolves, that I may be successful in war."

The bull's head is often painted and bound round with scarlet cloth, with painted feathers or sticks stuck in, and an address made to it announcing that it is done by the hunter to prevent the animal from goring him. Likewise the Assiniboin, when they undertake to swim the Missouri, will tie to a stick some dried buffalo guts, grease, and bladder, and stick the same in the water, say to it, "This is to enable me to cross without accident, let no wind blow, nor pain take me in crossing." They are not expert swimmers like the Crow Indians, and the fear of the undertaking causes the sacrifice. In all these things they are very particular and superstitious, asserting that if these ceremonies are neglected some accident will certainly happen to the person who despises these powers.

Deer Hunting.—A good deer hunter must use the rifle. Shotguns do not shoot with certainty. This is the reason why all these Indians are poor deer hunters. They use the northwest shotgun altogether except a few of the Sioux, who hunt antelope and bighorn with the rifle. The art of deer hunting may be thus divided: Finding the deer, approaching it, shooting it, cutting it up, and carrying it home. They are hunted in the timber by a man alone and on foot. He must be well acquainted with the habits of the animal, where it is to be found at different hours in the day, what it feeds upon at different seasons, to know by the tracks if it is traveling, grazing, running, retiring to rest, or going to water; he must be quick sighted, a good walker, and go cautiously through the bush when near the game. The morning and evening are the best times to hunt them, as they are then on the edge or borders of the woods where grass is found, or in open places in the bottoms; returning into the thick bushes for a few hours in the middle of the day. The hunter travels fast until he comes near the place where he judges a deer is to be found, then proceeds very slowly and silently, looking in every direction, always keeping the wind in his favor until the animal is seen. He then approaches it stepping from tree to tree, bush to bush, crawling and creeping, hiding himself entirely from its view, by every means, and making no noise. When he thinks he is within range he rises and fires quickly and the deer falls. It is then skinned and cut up, the meat packed in the hide, and it tied in a bundle by the skin of the legs, in such a way as to form a collar, which is drawn over his forehead, by lying or sitting down, and slipping it over, then rising up with the weight between his shoulders he starts homeward. If more than one is wanted he hangs the first on a tree thus cut up, and proceeds in quest of others, sometimes killing three or four in a day, which he returns for with his horse or dogs the next day.

Whistles made of wood like the mouthpiece of a clarinet are used to call both deer and elk in hunting seasons, and are then a useful decoy. They do not catch them in traps or pits.

Elk Hunting.—This is done on foot, with the gun, but by parties of men. Elk go in droves of from 100 to 300 each and are found in the large timbered bottoms of the Missouri and Yellowstone. There is some ceremony required in hunting this animal. In the first place some divining woman who is said to be an "elk dreamer" states she has had a favorable dream for hunting them. The woman is then stripped to the waist and also barelegged, the body and face painted a bright yellow, and a wreath of bushes with leaves on projecting two or three feet on each side is placed on her head in imitation of the horns of the elk. Thus decorated she starts at the head of a party of 15 to 25 men. When in the vicinity of the place, where, according to her dream, the elk are to be found, she stops and commences her incantation song, while the others continue in quest of the game. As soon as the herd is discovered the party separate, and outflanking them on either side, commence firing and running toward them, loading and firing while running, in quick succession, when the elk become confused, scatter and turn in different directions, presenting at times a mark for each of the hunters.

Every shot bewilders them the more, and instead of running in any one direction they keep turning every way until a great many are killed.

They are then skinned, cut up, and the meat and hides packed home on horses brought for the purpose, which having been left behind in charge of some women and boys, are brought up during the fixing. The skins are used for clothing and the meat, though eaten, is not relished much by most of the Indians.

Elk are also approached singly and at those times the same precautions are used as stated under the head of deer hunting, though they are not so shy and timid an animal as deer.

Grizzly Bears.—This animal is not hunted but often found when not desired, and mostly passed by unmolested by a single Indian when on foot, though on occasions they do kill them in this way, which exploit ranks in bravery next to killing an enemy, but the thickets and mauvaise terre which they inhabit makes the pursuit too dangerous for ordinary hunters. They are more frequently killed in their dens in winter.

The grizzly bear in the beginning of cold weather and snow seeks some hole in the side of a hill in some solitary place, and carries in a quantity of grass and brush to make his nest, lies all winter apparently asleep and eats nothing, though they are said to derive

some nourishment by sucking their paws. The nest or wash is always within a few feet of the entrance and they can easily be seen from the outside. Generally a den contains two to four bears, or one large male and two yearling cubs, or one large female and two yearlings. Sometimes, however, they are found singly. When a den is discovered six or eight Indians go to attack it, approaching the hole so close as to see the foremost bear, when three of them fire, the others reserving their shots. They all run off some distance and if the animal, or any others pursue them, the rest fire. If the first one has been killed and there are others the smoke of the guns drives them out, when they receive a volley from the hunters. If they see nothing after waiting a sufficient time for the smoke to escape from the hole they again approach as before and see if the animal be dead. If so, they make a smoke within the entrance with the view of driving out any other that may be within. Should nothing appear they conclude there is but one, enter, and drag him out.

Frequently two or three bears are killed in the same hole at the same time, and at others some of the hunters get dreadfully mangled. Bears are also run on horseback, when found on the plains, and shot with arrows. This is the least dangerous manner of killing them. No pits or traps are used, though we have known forked sticks to be placed before the hole so that when they came out they were caught by the hind part and detained a short time. When a bear is killed he is skinned, all except the head, which is covered with scarlet cloth, the hair smeared over with vermilion, handsome feathers stuck around it, and new kettles and tobacco laid before it. It is presented with the pipe to smoke and a long ceremony of invocation takes place, purporting that they give him this property and pay this attention to have pity upon their wives and children and not tear them when they are hunting after fruit and berries. They say if this is not done the bear will certainly sooner or later devour some of them or their children.

Beaver.—None of these Indians trap the beaver to any extent except the Crow and Cree Indians. The steel trap is used by them, set under the water, and a stick dipped in the musk or oilstone of the beaver, placed behind the trap, though above the surface. The animal, smelling the bait, will come to see what it is, and in swimming around is caught by the foot. Oils of cinnamon, cloves, and rhodium are also used for bait by white trappers.

Wolves and Foxes.—Wolves and foxes are caught in deadfall traps made by planting sticks in the ground with a crosspiece supporting a heavy roof of stone laid on sticks. The whole is propped up with a stick, and the wolf going in to eat the meat displaces the prop and the whole weight falls upon him and breaks his back. The Cree

catch them in a pit or hole dug for the purpose—covering it with a revolving trap door with a bait of meat on each end above and beneath. The animal in endeavoring to reach the bait is turned in by the revolving of the door under its weight, which brings the other bait on top. A second revolution turns up the first bait and turns down the second wolf.

In this way they will catch as many as the pit will hold, especially as when a few are turned in they commence fighting; and the noise attracts others. Wolves are also sacrificed to and small presents given them, with the view of avoiding their being bitten by them when mad, or as the Gods of War.

The chase does not vary much at any season, except that in the summer, no skins being seasonable but deer in the red, only enough animals are killed to suffice for food, clothing, lodges, etc. From the middle of September to the middle of March the hair and fur of all animals become merchantable. They are then hunted for the hide, though all prime furs are taken off in the middle of the winter. Pelts are judged by the thickness of their skin and fur. In the warm months all animals shed their hair. A little observation enables a person to determine to a certainty in what month the animal has been killed.

Hunting parties not decided on by council in the soldiers' lodge are formed by any respectable hunter sending invitations to those he wishes should accompany him.

The spoils of smaller game belong to him who killed it but they share the meat with all who are there, and but little difficulty occurs on this point. When but few animals are killed it is always known who killed them, and when many are slaughtered all have enough. Disputes arise occasionally, however, but it is not a matter of sufficient importance to proceed to extreme measures, and one of the party usually relinquishes his claim.

The morning and evening are the best hours for approaching small game, as at those times they are found feeding, but buffalo can be easier approached in the middle of the day when they lie down for an hour or two, and if not asleep their range of vision is much diminished by that position and intervening grass. Light and shade are not of much consequence in approaching game. The object of the hunter is to keep out of sight entirely until the moment of firing, and when that is not possible to make use of some skin, branches, grass, etc., to deceive the animal, move very slowly, and keep the wind in his favor.

The manner in which animals are decoyed has been pointed out, but is not always successful, and only resorted to by those who are adepts in the art of mimicry, as in the rutting season. This is the

reason why he who leads the buffalo into the parks is supposed by the mass to be possessed with some supernatural power which forces the buffalo to follow him, when in fact it is nothing more than a correct imitation of the bleating of a calf or a noise as though a calf was being devoured by a wolf and crying for help. The buffalo never get near enough to the man to make him out, as he is covered with his robe, the hair turned outward, and he always keeps the wind in his favor. It is, however, a rare talent.

The hide of the buffalo, to make a robe, is taken off in two halves, by slitting the animal down the middle of the back and the middle of the belly. The first process it undergoes afterwards is taking off the portions of meat and membrane adhering to it, so that it will present the smooth clear skin. This is done with a tool made from the shin bone of an elk. (Fig. 33.) The lower end is cut to an edge and small teeth made therein. The skin is hung up at one corner to a pole and the meat is dug off by hoeing down with the instrument, which is held firmly at the upper end. A woman will finish this operation on two whole skins or four halves in one day. Next the skin is stretched to dry. Holes are cut through it near the edge. In summer it is pinned to the ground by wooden pegs, or in winter when the ground is frozen, stretched on a frame of four poles tied together, and a small fire built to dry it. When dry the next thing to be done is to scrape it, that is, to hoe off about one-third of the thickness of the hide. This is done with an iron tool about 3½ inches long, 1½ inches wide, and ⅛-inch thick. Formerly a flint stone was used for this purpose, but the iron tool answering better, is now substituted. This piece of iron being sharpened at one edge is tied on a handle made of elk's horn (fig. 34), cut off at one of the forks, so as to afford a projection to fasten it, being held in both hands. The hide is laid on the ground, the woman stands upon it, and, stooping, digs off the hide in shavings, until of the proper thickness.

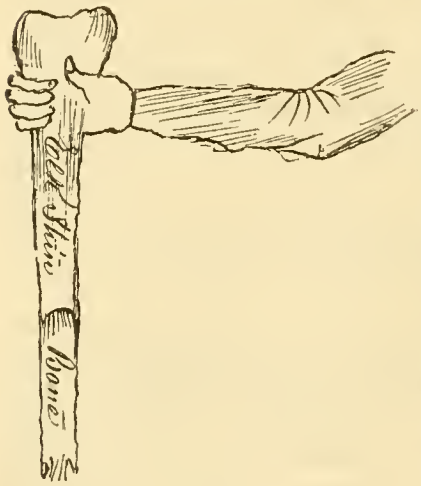


FIGURE 33.—Tool for fleshing the hide

This occupies about half a day to each whole hide and is a very fatiguing employment. Grease is then melted, sprinkled sparingly over the skin, and it is suspended over a small fire for a few hours

that the grease may penetrate; then taken down and smeared over with the brains or livers of some animals boiled in water, being soaked thoroughly and left all night in this state. In the morning it is again stretched on the frame, the liver scraped off, clean water thrown on and scraped off until the hide becomes white. A fire is then made near and the skin slowly heated and rubbed with pummice stone or porous bone until it is about half dry, then taken out of the frame and drawn backward and forward round a strong cord of sinew which is tied at each end to the lodge pole. Every few minutes the skin is held a short time to the fire, then rubbed, and this operation continued until it becomes perfectly dry and soft. This is also hard work. A good hand will rub two whole skins or four halves in a day. The skin is now dressed. The holes made for stretching it around the edges are cut off and it is sewed up along the back with an awl and sinew, which takes about half an hour to each two halves of the buffalo.

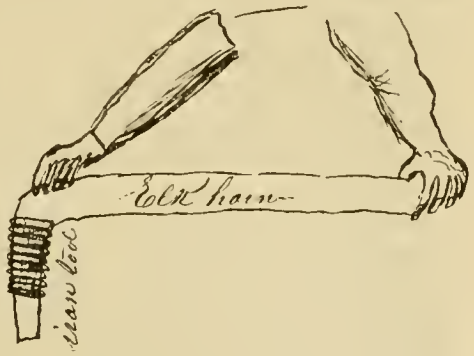


FIGURE 34.—Tool for scraping hides or shaving the skin

The robe is now fit for sale and is packed away. Deer and elk skins undergo the same operations, and in addition the hair is scraped off with the same tool that the hide is shaved with, though they are skinned whole and not in halves like the buffalo hides. It will thus be seen that at least three days are required to prepare one buffalo robe for market, but by their division of time in attending to several skins in different stages of advancement the labor would be about equal to two days for each buffalo skin. Twenty-five to thirty-five robes is considered an excellent winter's work for one woman. The average is about 18 to 20 each. Wolf, bear, fox, rabbit, beaver, hare, ermine, lynx, otter, rat, mink, etc., are not dressed for market, and all these are skinned, stretched and dried by the men and boys. A wolf or fox skin is now and then dressed for the use of a woman or hunter to wear round his head, and undergoes the preceding operations, though the skin being small and light not much labor is required. Robes and skins are packed up in small bundles, the hair side out, each bundle weighing 30 or 35 pounds, and when a sufficient number are collected for supplies, one of these bundles is tied on each dog travaille and they go to the trading house to dispose of them.

Instruction in Hunting.—As stated in a former place, boys commence with archery as soon as they can run about after birds and rabbits, enlarging the size of the bow to suit their strength, until they attain the age of 16 years, when the full-sized bow is used. About this time they are taught by their father or other relations the use of firearms and the different modes of approaching game. At this age they may be considered fit to engage in the active labors of the chase on foot, but seldom run buffalo on horseback so early. About 18, however, they can hunt in every way, though before this age they can and do assist in supporting their parents. Even when much younger they follow to the hunt and aid in skinning and packing home meat. They are perhaps of more service in this way when young than at a riper age, when the pursuit of war and the possession of women occupy the greater part of their time. Women are never known to practice any part of the hunter's art when left alone. They generally find some relative to remain with them when deserted by their husbands, and their labor always secures them a home.

When they desert the camp on account of some quarrel they travel alone for days, subsisting on roots, berries, or fruit, if the season affords them, shaping their course toward the fort or some other band of their own people.

The bow and arrow is used altogether by all these tribes when hunting buffalo on horseback and the Northwest shotgun is the only arm employed in killing any and all game on foot. A few Sioux, perhaps a dozen in the whole nation, use rifles in hunting antelope, bighorn, and other small game. A warrior has if possible both gun and bow. Ammunition is sold at the rate of 3 pounds of powder and 1 pound of balls for one buffalo robe, which is enough for a month's hunting by any Indian. Traps, metallic instruments, arms, or anything they want, also persons to repair their guns, kettles, and axes and to make tools to dress robes, etc., can be furnished them at any time; but they will not pay for these things. We have kept in constant employment, mostly for their benefit, a blacksmith, a gunsmith, and a tinsmith at all the forts for 20 years past and are heartily tired of the business, as no profit arises from their labor.

It is not designed hereby to produce an impression that these labors have been performed by us from charitable motives, but thereby to put the Indians in a position to hunt and collect skins for the trade. Every Indian without a horse or gun, or only with his bow and arrows is an idler; his time is a loss to us. We therefore lend him a gun and furnish him with ammunition free of charge. He commences hunting and realizes to us from $60 to $80 in skins that would otherwise have remained upon the backs of the animals. True he never returns or pays for the gun, but he has it, or some other has, and it is in our active service. As long as the buffalo are as

numerous as they now are these tribes will have no difficulty in maintaining themselves by the chase. Traders are too observant of their own interests to let them suffer for the means of hunting, but should the buffalo fail the very reverse would be the case. In that event the trade not being of sufficient profit would be discontinued, and the Indians thrown upon their own resources, which are extremely deficient.

They are no deer hunters, and besides only a small portion of their country along the rivers is stocked with deer and elk and the greatest famine and distress imaginable would follow, as they are entirely unacquainted with agricultural pursuits.

There appears to be an anxiety exhibited on this point in many of the queries, viz, whether the chase is sufficient for the support of the Indians, and whether they would not be benefited by the introduction of agriculture. It does not admit of a doubt; neither are any arguments required to prove this. Having witnessed their eating their own children during a temporary absence of buffalo in 1845–46 is enough to satisfy any person on this head. Any railroad or emigration of whites through their country would ruin it at once as a buffalo country, and the misery above alluded to would as surely follow as night succeeds day.

We think, however, that attention on the part of white friends is not enough directed to pastoral pursuits instead of agricultural and mechanical. It appears to us that the former occupation would suit the Indian better to commence with. He would thereby gradually emerge from his savage state into another which would lead to agriculture in the end. The tilling necessary for the support of his stock would be increased in proportion as he saw the advantages arising therefrom. It would be expecting too much of the Indian to suppose that he would suddenly change his indolent life for one of hard and constant labor, but it seems reasonable that the raising of horses, cattle, hogs, and sheep, for which their country is admirably adapted, would be to them both interesting and profitable employment, particularly as they could unite these operations with the chase when game came near. This state would be but the chrysalis in the present generation, to merge into agriculture, mechanical arts, and civilization in the next.

Another argument in favor of this is that they are accustomed to animal food entirely, therefore grain of any kind could not replace this; but domestic animals, fowls, eggs, etc., would—and in the meantime a relish would be formed for breadstuff and vegetables, the want of which is not now felt. The course to be pursued (that is if any be in contemplation) by persons in high stations appears to us to be very plain, and must be apparent to any one who makes himself acquainted with their real character as set forth in these pages.

Fishing

These tribes take no fish in quantity by any means whatever.

War

The raising of a war party is always a subject of discussion in the soldiers' lodge, not to choose the persons, but whether the time is suitable; if men, arms, and ammunition can be spared from camp, or if they are required for defense; if it is advisable to keep up the war; how they are situated with regard to their enemies as to locality, numbers, and general prospects of success as presented at the time. It being determined in favor of hostilities, the partisan soldier or chief who intends leading the expedition proceeds to fast, sacrifice, and dream in the manner before pointed out in these pages, and having had favorable visions makes a feast of dog in his own lodge, and invites thereto the persons he wishes to accompany him, opening to them the object and plan of the expedition, after the feast has been concluded. Should he not be able to obtain a sufficient number of recruits in this way he sends runners with tobacco to other camps conveying an invitation to join within a given time.

War is made either to steal horses from their enemies or to take their scalps. For the first object but few people are required, as concealment and avoiding battle is aimed at, and parties for this purpose are comprised of from 10 to 30 men, whereas a party starting expressly for battle often contains two, three, or four hundred warriors. We will endeavor to follow up the first description of parties, supposing stealing horses to be the object, which is the most common kind of war excursions. The partisan or captain, as has been stated, after dreaming, sacrificing, etc., to Wakoñda, the Sun, and Thunder, makes his last offering, consisting of some scarlet cloth and tobacco, to the Wolves, which are considered the war fetishes, and viewed in the light of the special Gods of War. The day for starting being appointed, all his followers are assembled the night before, when the business is again considered, and they consent to follow him as the leader during the time they are out, obey his instructions, without, however, acknowledging any right in him to punish in case of disobedience, also reserving to themselves the privilege of leaving him at any time and under any circumstances they think proper.

It is a voluntary action and those who will not obey or are dissatisfied leave and return home at any stage of the march, but do not separate and remain to thwart the intentions of the others. No harm being done by their desertion, no punishment follows. At all events he is obliged to be contented with these precarious terms of enlistment. The night previous to their departure they assemble

(say 20 men) in the soldiers' lodge, where a dance called the Crow dance is performed by them, and the next morning they all start together, singing the Wolf Song as they leave, their faces usually being painted with vermilion at all times and particularly at this time. All go on foot; no order or file of march is taken up; neither is it necessary. Each one has six or eight pairs of good strong-soled moccasins on his back. Some are armed with bows and arrows, some with guns, and some with lances and war clubs. Battle not being sought, a profusion of arms is not desired and might prove cumbersome. Every man furnishes his own ammunition and war implements.

Though guns are sometimes borrowed and ammunition begged of their friends and relatives, yet there is no tax laid on the camp for supplies nor any public arrangement whatever for providing arms, etc. No provisions are taken; they hunt it on their way. The partisan takes his fetish Wolf Skin, which is an entire skin of that animal dressed with the head, ears, legs, etc., complete, so that by lying down or standing on his hands and knees and covering himself with the skin, drawing it over his head, he might easily be passed as a wolf by any person within a short distance. His other charm or fetish is also secured about his person. A good many, and sometimes the whole party, have wolf skins of the above description on their backs.

During their march through their own country but little precaution is used. They stray along at random and toward evening look around for some game for supper, kill whatever presents itself, take enough for the night and the next day and encamp.

They proceed in this way, if no signs of enemies appear, until entirely out of their usual hunting grounds, the leader in the meantime consulting his dreams, smoking to his fetish wolf skin. A bad dream, or any unpropitious omen, such as the howling of a single wolf in a peculiar manner, breaking his pipe, letting fall his fetish, very severe thunder and lightning, would suffice to turn back the expedition. When large parties start we find two or three returning almost every day from the time of leaving until the attack, caused by dissensions, omens, or other dissatisfaction, but no disgrace or remarkable comments are attached to this fact, though the excuses some of them give look very much like fear.

Having arrived at their enemy's country, the greatest possible precaution and vigilance are now exercised.

According to the orders of their leader they proceed slowly, scatter in different directions for miles around, lie about on the tops of the hills covered with their wolf skins, or headdresses made of bunches of wild sage, examining the country in every direction for hours

before they move. If nothing is seen they signal to each other the result by imitating the howling of wolves, the barking of foxes, or the hooting of owls, as the signals agreed upon require. Assembling in some hollow, they compare notes, receive new directions, and proceeding a few miles, separate again and reconnoiter as before. They now shoot very seldom, and only when meat is absolutely wanted, and the wind blows in a direction to carry the report away from their enemies, or toward that part of the country already explored. By observing the movements of crows and wolves, in which direction they travel, where they stop and light, they will find out the carcass of some animal killed by the hunters of the camp. The state of its decay, tracks, and other signs around will determine the probable direction of their enemies, and they steer for that point.

When advanced thus far—that is, to know they are in the vicinity of a camp—the real science of their manner of warfare exhibits itself. Night marches commence, and separating as before about daylight they occupy the hills, lying motionless all day, watching in every direction some signs of their enemies. They are placed so as to be within call of each other, and the signals for different discoveries being agreed upon by imitating the howling of wolves, etc., as has been stated, they can communicate with each other all the time without rising to their feet. They never expose their persons to view on a hill. If necessary to assemble they crawl down and meet in some ravine well covered with thick bushes. They now never shoot, make no fire, eat nothing, keep very quiet, and travel in the night. Of course, by these measures they must soon perceive some one belonging to the camp, and by observing his direction will find where it is.

Having discovered the camp, the last rendezvous takes place prior to the attempt upon the horses, and here several things are determined—a place is agreed upon where they will all assemble after the attack, a direction for the return chosen in case of separation, smoking, and invoking the different fetishes are performed, and general directions given by their leader as to the manner of approaching the camp.

There can be no plan of operations laid down, as they are as yet unaware of the position of the camp, how their horses are kept, what surrounding objects afford concealment, etc. In the night they approach the camp in a body under cover of the hills and bushes, and when near enough to see the horses, and judge of the opportunities of getting to them unobserved they again separate, and each pursues his own way of proceeding from different points, as the nature of the ground affords. The best horses of the Crows and Blackfeet are usually picketed near the lodge of their several

owners and the rest grazing near. Sometimes pens are made around the lodges, the horses driven in at dark, and cottonwood bark thrown in for them to eat. The risk of extracting horses from the interior of a camp is very great, as young men are moving about from lodge to lodge all night in their various prosecutions of schemes on women; but the horses must be had, and the venture must be made.

Near daylight, when all the people of the camp are supposed to be asleep, but when yet dark (and the darkest kind of nights are chosen) each warrior creeps slowly and silently toward that portion of horses apparently the best situated to be taken off unperceived. Should he in this way be so fortunate as to reach them without discovery he cuts the cords with which they are tied and works them gradually into the shade or darkness, then mounting one, drives the whole to the appointed place of rendezvous. But owing to the many obstacles in the way of each, the probability of some one being observed is great, and in that case the whole camp is alarmed on the instant, each rushing toward his horses. Shots are fired and the warriors seek safety in flight, with or without horses as it happens. If there be snow to show their tracks the enemy pursues them the next day, but if no trail can be found to follow they abandon it. In either case the warriors shape their course individually toward the appointed place of meeting, and if all are not assembled, leave some token for those not arrived to know they have passed, and continue their flight.

The horses are put to full speed day and night for several days in succession until entirely out of reach of pursuit, and now begins a series of quarrels as to the right of possession of the animals. Some who have been disappointed and drove none off take from those who have. The leader takes several, combinations of two or three to rob another are entered into, horses are killed in the quarrel, or stolen from each other, and unless a great haul has been made very little satisfaction appears. These differences are mostly gotten through with before reaching home and they make known their approach by setting the prairie on fire. When arrived in the outskirts they shoot and sing, but do not black themselves for stealing horses, unless they have brought a scalp also, which occasionally happens. If any of their party have been killed they arrive uttering loud lamentations.

The whole camp turns out to meet them. The old women cry over their sons, rubbing the hand down their face, a great deal of flattery is used by some of the elderly men, shouting the name of some one of the warriors in a loud voice, stating his bravery, greatness of heart, etc., until overwhelmed by glory, he presents him with one of the horses. Great is the joy and tumult, and it frequently

happens before the warrior has arrived at his own lodge, that all his horses are given away, and he retains nothing but the glory of the action. In this event, however, his name is sung around the camp by the persons who have received these gifts, accompanied with the song of thanks, and loud and prolonged praises of his bravery and strength of heart.

War parties for battle are a long time in contemplation, frequently occupying a whole winter in preparing for the campaign, and in counseling regarding it. Usually large parties are led by some chief of a band, and invitations are sent by him to different chiefs of other bands of the same nation and to those of another nation with whom they are at peace.

In the beginning of the summer they all assemble with their lodges at the place appointed, and a great deal of debate, feasting, and private consultation takes place, with sacrifices by the chiefs and soldiers, and also by many of the warriors to the several supernatural powers before referred to. It appears to be the misfortune of these large expeditions to fail in executing anything like what is anticipated at the start. Here also, the cause of their failure appears to be due to their insubordination. There is no one man to lead, no one source of authority in carrying out any plan decided upon. The nominal leader as chief is only chief of his band, and even among these there are others who are his equals in war. There are several chiefs of bands, and also many other chiefs; every one's advice, although asked, can not be taken, which produces dissatisfaction. The soldiers of one band will not be commanded by those of another, rank on every side is interfered with, old grudges renewed by meeting with old delinquents, in short though all looks pretty fair on starting, yet difficulties and disputes from various causes take place every day after, which results in their leaving and returning home in detached parties.

When, however, the ranks have by these means become purged of the most turbulent and unruly characters the others proceed in the following order: Chiefs, warriors of note and soldiers, dressed in deerskin shirts and leggings trimmed with ermine, horse, or scalp hair. A war eagle feather cap is on his head, a shield of bull's hide covers his arm, a bow and quiver of arrows is carried on his back, a short gun stuck in his belt with pouch and horn across his shoulders and scalping knife in its sheath, the powder horn and ball pouch are carried on the middle of the back, the connecting strap reaching across his breast and the upper parts of both arms. These are the mounted men, and the most distinguished for their former deeds. The footmen consist of young warriors and new recruits without any peculiar insignia, but well armed if possible. The soldiers are

men holding that rank in whichever camp they reside, and their duty is to ride on the outside of the main body to keep any person from straying away and prevent any useless noise or manner of travel.

The scouts are appointed by the leader and changed daily; their duty being to separate and keep 5 or 6 miles ahead of the main body. These scouts or discoverers are footmen and use the same precautions as before stated. The main body moves slowly forward after reconnoitering has commenced, without any order, and only passing whatever ground has been rendered secure by the reconnoiterers. During the time before arriving in their enemies' country, or at least before any signs of enemies have been perceived, they run buffalo with horses, kill enough meat for present use and dry and pound more to be used when hunting is not advisable. When signs of the camp are perceived, sentinels are posted every night, who lie down around the camp within 200 or 300 yards of the main body, and 50 or 60 steps from each other. All the horses belonging to the expedition are picketed within this circle and near the place where their several owners sleep. These sentinels are changed every night.

When by means of scouts and other observations they have discovered the camp it is approached in the night and the several advantageous positions which the ground affords around it are occupied by different detachments of the party, who are to attack from various quarters as nearly as possible at the same time. About daybreak a rush is made by the mounted men, shouting the war whoop and firing into the lodges as they pass through. The attention of the horsemen is directed toward driving off every horse found in camp. These, although picketed, take fright at the noise, snap their cords and are driven away. This rush only passes through the camp, and the enemy being raised and armed turn out and pursue and a battle now takes place near the camp. Indian fighting is individual fighting, each one for himself, without any military order, line, or file. Orders are given by any of the chiefs or soldiers in a loud voice when some advantage presents itself. Both parties endeavor to cover their bodies by any objects which are in the way. A thicket is much desired, small trees, stones, bunches of grass, or hollows made by the rain are all occupied, and those who cannot find any shelter jump from side to side, never standing still a moment to avoid any certain aim for their enemy's fire.

The whole is accompanied with a terrible yelling on both sides. When one falls on either side the war whoop is sent forth by the party who killed and a simultaneous rush is made by the enemy to obtain the scalp and the friends of the fallen man to rescue the body. In these mêlées of small parties take place the terrible savage strug-

gles for which they are remarkable. It is hand-to-hand fighting by a few on each side over the body of the fallen man.[23] Knives, lances, and war clubs are the arms then used and frequently several fall on each side before one party recoils. These scenes are going on over several parts of the field at the same time. The war whoop is sounded from either side whenever any success is visible, and when any disproportionate loss takes place the flight of that party is the consequence. This is the great aim of either party, as a massacre of the scattered fugitives then takes place. It should be remembered that when the contending parties are nearly equal very little damage is done.

The firing is at such a distance that only a random shot takes effect, and after abusing each other and firing hundreds of shots all day, perhaps only three or four are killed. There must be a great superiority of numbers and position on one side where there is any great destruction. The greatest loss of life happens when some 200 to 400 warriors surprise a camp of 20 or 30 lodges, or when the war party is too large to effect concealment for stealing horses, and too small for defense. In this case when pursued by the whole camp they are brought to a stand. If on the prairie they take up a position on the top of some hill covered with stones with which they make a barricade or seek a gully or cluster of bushes. Here they fight as long as one of them is living, but being surrounded by a superior force are all killed in the end. Three years since 52 Assiniboin who were discovered in an attempt to steal horses from the Blackfeet were pursued and brought to bay in a sink hole, or gully, where they were surrounded by about 800 men of the latter nation and fired upon until all were killed.

Their enemies, however, lost 34 men before they succeeded. A retreat is ordered in words to that effect and the movement being perceived is followed by all, which generally ends in downright flight. A very common exhibition of individual bravery is, when the parties are equally divided, and slow skirmishing going forward, each party having good positions, a single warrior rides forth near the place where the other party is stationed, and riding slowly within reach of their fire along their front, sings his war song and calls out his name, presenting a mark for the whole of his enemies to fire at. Either he or his horse is generally killed, or if he escapes he is considered a brave man ever afterwards. In either case he is followed by one of the opposite side in the same manner, and in this way often three or four are killed. They eat no root supposed to have the power of deadening pain or inspiring courage.

[23] Such fierce struggles over fallen heroes recall similar combats engaged in by the stalwart figures in Homer's Iliad.

The divining men are consulted as to the nature of their dreams before they set out, and on the march, but not in regard to their operations in battle.

Battles are planned as soon as they can determine the position of the enemy, which plans are changed according to circumstances afterwards, but the fighting is done at random, each loading and firing when he chooses, and using any measures of concealment of his person.

No general orders are conveyed or aids employed, although whenever a cluster of men occupy a position some soldier or chief being there gives orders to the others, individually or collectively, as the danger is apparent. The chiefs and soldiers retreating would be a signal for all to run. The leader gives advice occasionally as to dislodging the enemy, etc., but all his orders partake of the nature of requests. They rally often during a retreat if the party be large, and keep up a running fight for 10 or 15 miles.

A favorite device to decoy enemies is to send but few to make an attack on their camp and drive off the horses. The camp, following, are led to where the main body lies in ambush.

The war whoop is the signal of advance and also of encouragement during the fight. It is also a cry of joy when any of the enemy fall, and at all times a defiance, but never used in retreat or under any humiliating circumstances. They speak to and abuse each other during the fight, adding their former deeds to exasperate the enemy and induce some one of them to step forth that he may be killed.

They never quit a masked wood and take the level plain unless their party is greatly superior in numbers and no danger of pursuit is apprehended; but if they are few they remain in the wood until burnt out, which is done by setting fire to the grass on the prairie, which in a wind will communicate with the undergrowth of the woods. If this can not be done by the surrounding party the besieged party defend their position until night and then make their escape under cover of the darkness.

The Gros Ventres and Crows are the only nations who take women and children prisoners and spare their lives, though they kill all males able to bear arms.

All the wounded left on the field are tortured to death in every possible way, mostly by mutilation, are seldom burned, perhaps for the reason that death would be too soon produced by that manner of proceeding. The Assiniboin burn children prisoners.

The Crow Indians a few years since, after killing all the men and large boys of 50 lodges of the Blackfeet, took prisoners upward of 200 women and children. One of our gentlemen now in charge of that nation was with the Crow camp when the battle took place,

and for two or three months afterwards, during which time he sought occasions to liberate about 50 women and send them home to their people. Most of these prisoners, it appears, are treated well, particularly the children, who are adopted into families who have lost their own. When a child is thus adopted it is painted and dressed very gaily, a horse given to it to ride, and to all appearances treated as affectionately as their own.

A grown woman, however, is not adopted. They are retained to work, or if young and handsome are kept as one of the wives of their owners, though not abused or made to bear any unusual hardships. It is singular that when these women prisoners have remained a few years with the Crow Indians they will not return to their own people, even if liberty be given them. Indeed, after the first few months they are not watched and have it in their power to leave at any time, and many do during the first year of their captivity, but after having learned to speak the language, mostly remain, which proves that nation to be much more lenient toward their women than the Blackfeet and others. The children prisoners become identified with them and never desire to leave when grown.

Every male fit to bear arms is put to death by the tribes. The Assiniboin, Blackfeet, Sioux, Cree, and Arikara also kill women and children and sing and dance as much for their scalps as for those of men. The horrid manner in which they put the small children to death exceeds description. Some are stuck through with wooden skewers, like a rabbit, while alive, and roasted before the fire.

There is but little subordination in all large war parties of Indians. There appear to be jealousies on every side between soldiers and chiefs or between the warriors and soldiers. No penalties being attached to disobedience, it has no limit, and they are often in as much danger from each other as from their enemies. Once in a century a chief arises who can lead large parties to war, but it is only when his success and capacity as a warrior is accompanied by his art as a prophet and he has gained entire ascendancy over all his people. Small parties succeed better—say from 80 to 100 men. These an ordinary chief can command tolerably well, because they are for the most part chosen from his own band and composed of his own relations. This kind of party always proves most successful, as the leader only attacks when success is certain from the numbers on each side. All Indians carry off their wounded if possible, and the dead also if not scalped, interring the latter in some secure place not likely to be discovered by their enemies.

As stated, no grown male prisoners are retained alive by any of these tribes, and only two preserve the lives of the women and

children. These, of course, are obliged to work, though not exactly in the character of slaves. All the women work and these pursue the same labors, though no doubt a greater share falls upon them than upon others. No description of labor, such as carrying burdens, drying hides, cooking, or procuring fuel, etc., is considered disgraceful or menial. They all do it, even the wives of the chiefs, and the prisoners would be compelled to employ their time to the advantage of their owners; or if young and handsome would be kept as wives, yet still be made to work as the rest. They are not beaten nor brutally treated, but forfeit their lives by an attempt to run away. Female chastity is always violated on prisoners[24] if they are even tolerably young and good looking, and often in such a degree as exceeds the possibility of description or belief, but we are not aware that any superstitious opinions are connected with the act.

Costume of a Warrior.—The ordinary costume of a mounted warrior of known bravery has already been described. The headdress, however, differs in form according to the fancy and standing of the individual. The tail feathers of the war eagle are the only mark of rank. These are attached to scarlet cloth or otter skin in many ways, sometimes merely encircling the head, at others extending in a ridge along the back, reaching below the horse's belly when mounted. The shirt and leggings are made of clean white dressed deerskin, antelope, or bighorn skin, with black stripes painted around the arms and legs and fringed with the hair of the scalps taken by him, occasionally also with ermine skins, or horsehair. The horse's head and tail are adorned with the same kind of feathers, as also his lance and shield. The latter is a piece of dried raw bull's hide, very thick, round, and about 18 inches in diameter. The feathers are sewed or tied on around near the edge, and two or three in the center. Frequently this is painted with the figure of some animal, either real or imaginary, and is impervious to arrows, though a ball will perforate within the distance of 100 yards if it be held steadily.

The manner in which it is slung on the left arm and being bowed in the middle the ball is apt to glance off to one side and often in this way his life is saved. Arrows will stick in but not go through, and he can with it cover most of the vital parts, at the same time using his arms with ease. A good many of the renowned warriors wear necklaces made of the claws of the grizzly bear, worked or tied on a strip of otter skin, and chiefs wear their medals if they have any. These fine dresses are not worn on the march, but packed on

[24] It appears that the violation of the chastity of female prisoners was unusual among other tribes who were highly organized socially. It was repugnant to the Iroquois.

their horses in bundles, and put on when the attack is about to be made.

The faces of most of them on starting or in battle are painted with vermilion, the entire face being a bright red, though no orders are given to this effect. Indians generally paint on all public occasions, but no other parts of the body are painted at this time.

The costume of those on foot does not differ from that of a hunter, except he has both gun and bow, if possible, sometimes adding a shield, and a bundle of moccasins on his back, which, with a blanket, or skin capot, leggings of the same and breech flap, completes the dress.

No great display of dress can be made on foot and is not often seen except among the Blackfeet, when it is the same or nearly the same as the mounted warriors. The hair of the young warriors is dressed out and adorned in many ways, sometimes enclosing small portions in front with beads, shell, or wampum, which hangs down on each side of the face. The Crows have small portions combed up in front and the whole of the rest tied in a queue behind, which is spread out and stiffened with patches of gum, spotted with white clay, and looks like turkey feathers. The elder warriors generally tie up their hair in a knot in front, which projects out from the forehead like a thick short horn. During the march not much attention is paid either to painting or ornaments, but on the eve of battle, if possible, it is done. Nothing uniform appears, however, in their costume, ornaments, or hair dressing, each one suiting his fancy in these particulars, except the acknowledged marks of warriors are not worn by untried and inexperienced recruits.

The back dress, if not a continuance of the headdress, is mostly a wolf skin thrown over his robe, the tail trailing on the ground and the snout on his shoulder. Crow-skin headdresses are also worn by young warriors, and owl feathers are worn by new beginners. No portion of their war dress is constructed so as to emit jingling sounds, though such are worn on other occasions. Every Indian has either a blanket, buffalo robe, or dressed skin of some kind covering the whole person, and these are painted with their battle scenes or garnished with beads and porcupine quills in many ways. His robe is his bed by night and his cloak in the day, under which in the winter is worn a blanket capot, made with a hood to cover the head. In the large summer war parties, portions of lodges of two to four skins each are taken along with which they make cabins to protect themselves from the rain, but in the winter no shelter is made. When parties are too small to admit of proceeding without fear of night attacks from their enemies while in their country, they make small forts every night of dry timber along some stream, or of rocks when timber is not to be had.

Weapons.—Firearms are certainly much valued by warriors. Indeed, they are the principal arms, but bows and arrows are used fully as much by mounted men. The difficulty appears to be the loading of the gun on horseback. If possible they carry both on their war expeditions, also some are armed with lances, war clubs, and battle axes. The last three instruments are used only in mêlées at close quarters. Indians are often so situated in battle that neither gun nor bow can be used, and in these emergencies the tools last mentioned stand them in great need. Guns are therefore only additional weapons, aiding and facilitating their mutual destruction, but have by no means been substituted altogether for the bow and arrow. The metal arrow point is superior to the flint one formerly used, and more easily procured. The arrows for battle are barbed and tied on loosely, so that an attempt to withdraw the arrow invariably leaves the iron in the wound, which makes many of their wounds dangerous that would not be so if the metal could be extracted.

The stone war club is the most efficient weapon in battle of any we know of. A drawing of one is shown in Plate 65. The weight of the stone is about 5 pounds. The handle is made of elastic sinew and can not be broken. Any attempt to ward off the blow must be attended with a broken arm, and if the stroke is not fended the strongest man must fall beneath it. Tomahawk and battle axes are not thrown at their enemies, as generally represented, but are secured to the wrist by a strong cord, and only used at close quarters; as also the lance and knife. The scalping knife is of English manufacture, a logwood or Brazil wood handle, and soft steel blade about 8 inches long and 1½ inches wide, sharp on one edge, and with the point turned like a butcher knife. These are the kinds of knives mostly used by all Indians for hunting and all purposes, though Willson's butcher, Cartouche, eye dagues, and other knives can be had. Most Indians at all times carry knives of some kind and scalps are taken off with whatever knife they happen to be in possession of at the time.

In loading the gun in battle it is first primed from the horn, then a charge of powder put in, and a few balls being held in the mouth of each man, one is dropped in wet on top of the powder, without any wad between or on top. In this way they load and fire very quickly, four or five times in a minute, but not with a very certain aim.

When scalps are taken without loss on their side the whole party on their way back paint their faces a jet black with a mixture of grease and charcoal. This is the symbol of joy, and on arrival in camp the scalp song is raised. The whole population turns out to meet them. Whichever person the warrior touches also blacks himself

and commences singing. If the party has had any one killed, the relatives of the deceased smear their faces and clothes with white clay, the symbol of mourning, wear old, ragged skins on their backs, go barefooted, cut their hair, arms and legs, and cry in loud howlings.

In this event the camp presents a scene of mingled rejoicings and lamentations, which are kept up for many days and nights in succession. If the loss on the part of the warriors is greater than the gain—that is, if they have lost two or three men and taken but one scalp—no faces are blackened, no dancing is done, and the scalp song is sung throughout the camp, at the end of which all set up a howling cry.

It often happens that the party have all, except a few, been killed, and should the partisan in that case have escaped he does not return immediately to his own camp but remains in another for some time, until the grief for the dead has in a manner passed, for should he come home with the report of a general massacre of his party he would run great risk of being put to death by the relatives of the persons who fell while under his charge.

Dancing and Amusements

Dancing must be considered as a characteristic mode of expressing popular opinion on most, if not on all, occasions and is generally done with the view of swaying the multitude, and conforming their actions to certain measures. It is also one of their principal means of publishing and handing down to posterity the remembrance of their gallant actions, of inspiring the young with a desire for distinction, and of awarding the praise due all brave warriors. Dances are usually performed by the different kins, such as the Wolf-pups, Braves, Bulls, Foxes, Mice, Comrades, Ducks, and Crows. All these are societies, formed by different young men, some of which we have had occasion to mention in a former answer, and all have for their object combination in love or war. There is also the Soldier's Dance in which none but these officers act, and several dances in which all promiscuously take part, or in which the distinction of the different clubs named is not recognized. Of this nature are the scalp dance, dance in the diviners' lodge, and others got up for begging purposes.

Most Indians after having passed the degree of soldier and emerged into that of chief or councillor seldom perform in any dances, though they encourage it by their presence. There are but two dances in which the women join the men, which are that in the diviners' lodge and on the occasion of taking a scalp. There is also another in which women alone perform, aided by a few young men, say, five or six. The principles of all these are imbibed by the

youths, from their being always publicly exhibited, and from their natural talent of imitation, but they do not join in the circle until at the age of maturity, except a few girls in the scalp dance. Each one of these performances has some motive independent of amusement, as will perhaps appear from the different descriptions of them which follow, and are to them often matters of deep interest and importance.

Scalp Dance (Waii-kittai Wache).—When a scalp is taken it is during the return stretched on a small hoop, and left in this manner; the hoop is attached to the end of a rod about 5 feet long. These are handed by the warriors on arrival to those in camp who have recently had some of their relatives killed by enemies and is an intimation that revenge for the dead having been taken, their mourning must be laid aside, their faces blackened, and they to rejoice with the others in the dance, which is always done. Moreover, this mark of politeness on the part of the warrior to those in mourning is always remunerated by a suitable present—a gun, a blanket, or some other piece of property. Often a horse is bestowed in the excitement of the moment. The dance is then called by an old man going round the camp singing the song and beating a drum, calling on all who feel disposed to join in celebrating their triumph by a dance, and each one makes the necessary preparations. (Pl. 71.)

Both men and women paint their faces entirely black, except the tip end of the nose, which is not touched, dress in the gaudiest and best style they can afford, and at a signal by the yelling and drumming of the music assemble in the area or public square with which most villages are furnished, being an open space in the center of the camp, near the soldiers' lodge. In this dance the men carry no arms of any kind. Some of them have in their hands a rattle with which they keep time, but most of the women hold in their right hand some weapon, such as a tomahawk, bow, pakamāgan, lance, or stick. The scalps also are held by the females. Being attached to the rod, they are shaken up and down to the taps of the drums. When ready they form nearly a circle. Old men with drums come first, next all the rest of the male dancers, and afterwards the women, the whole ring standing so close as to press a little against each other, and the scalp rods, and other things held in the hand, are extended out a little in front.

The scalp song is now struck up by the music, and joined in by the whole circle, the women singing only in the second part of the tune. In this song the name of the warrior who has killed the enemy is introduced, with a few words alluding to the circumstances, though without any violation of the tune or time. The part of the tune at which the women commence is when the names or words are

sung. The rest consists in a loud chant by all the ring. After swinging to and fro a moment they all move round in a circle by short side steps, lifting their feet together and keeping the exact time with the drums, and after describing one or two circles by these movements the song concludes with a general shout from the men, the scalp is forcibly shaken, and some warrior stepping forth from the ring recounts in a loud voice either his share in the present glory or some of his former brave deeds. This is received with a loud shout of approbation, the drums beat up, the song commences and another round or two is performed.

Then some other makes a speech of a like nature, either in praise of himself or of those who brought the scalps, and in this way it continues for several hours. Occasionally some old woman will take the scalp in her teeth and shake it like a dog, or throw it on the ground and trample on and abuse it as though it were a living enemy, concluding with a short speech in praise of the warriors, and the dance proceeds as before, the music going round with the dancers.

During the night, or rather all night, nothing but the same dancing and song is heard. They make small fires outside the lodges and a dozen or so of young men and women, with a drum or two, sing and dance around each fire, with or without the scalp, and without public speaking. Sometimes 20 or 30 of such dances are going on in different parts of the camp at the same time, all night and nearly all day, for weeks in succession, until they grow tired of it, or some new excitement supersedes. Their faces are blackened all this time and the color left to wear off but never washed off.

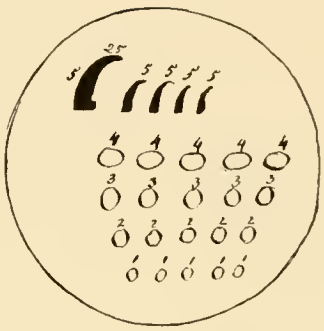
The opportunity is not lost by the young men during these night dances to make love, in all the various ways that passion is susceptible, and many runaway matches are concluded at these times, when the young warriors having the advantage of the battle glory are most likely to be successful. Portions of the scalp are also sent by runners to the different camps, with the news of the battle. The tenor of the song includes the names of the warriors who struck the enemy, and if any of their names have been changed on this occasion it is also mentioned, so that the new name by the time the dancing is concluded in the different camps is thoroughly known by all the nation. This dance is not attended with any violent gesticulation or eccentric motions, as has been represented, but is an orderly affair, and seriously performed. Unless a scalp has been brought no singing or dancing can take place. Even if many enemies were seen to fall, yet the enemy must be struck, which is the coup, and the hair produced, which is the proof.

Brave's Dance (Nappaishene).—This is performed by the group or club of Indians bearing this title, who are tolerably numerous

Scalp Dance.

Drawn by an Assiniboin at Fort Union

Dec. 10. 1833.



One large crow's claw, red on one side and black on the other, being the only one that will occasionally stand on end, in which case 25 for it is counted besides its value of 5 when on its side.

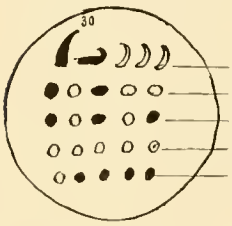
Four small crow's claws, painted the same as the large one, which count 5 each if the red side turns up; if the black side, it counts nothing.

Five plum stones burned black on one side and scraped white on the other; the black sides turned up are valued at 4 each; the white, nothing.

Five small round pieces of blue china, one-half inch in diameter, which count 3 each for the blue side; the white side, nothing.

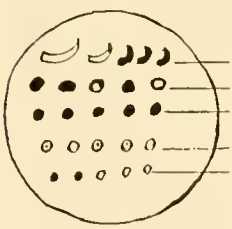
Five vest buttons, the eyes filed off; the eye side turned up counts 2 each; the smooth side, nothing.

Five heads of brass tacks, the concave side turning up counts 1 each; the convex side, nothing.



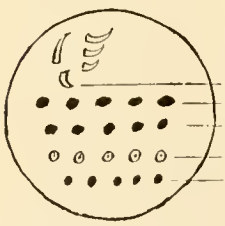
FIRST THROW

The big claw on end, 30, and 3 red claws, 15	45
Two burnt sides up, nothing	0
Three blue sides up, 3 each	9
One eye side up, nothing	0
Four concaves up, 1 each	4
	58



SECOND THROW

Two red, none on end, nothing by claw	0
Three burnt sides up, 4 each	12
Five blue sides up, 3 each	15
Three eye sides up, 2 each	6
Two concaves, nothing by tacks	0
	33



THIRD THROW

The big claw on end, 30, all the rest red, 20	50
Five burnt sides, 4 each	20
Five blue sides, 3 each	15
Five eye sides up, 2 each	10
Five concave tacks, 1 each	5
	100

NOTA BENE.—This is the best throw that can be made and takes all the stakes when the game does not exceed 100.

COS-SOO', OR GAME OF THE BOWL

and composed of men from 20 to 30 years of age, whose organization has already been alluded to in these pages. No one is admitted in the ring but those who belong. The women, say 8 or 10, stand behind as many drummers and join in the chant but take no part in the dance. All sing, both dancers and musicians. The men form in a ring completely naked.[25] Their bodies are painted in various ways. Yellow and red stripes from head to foot is a favorite manner of painting, red face and yellow body, or red face and body striped with white. Sometimes the face is dotted with white, yellow, or red spots, and to their moccasins are attached skunks' or foxes' tails. Guns, spears, bows, and other implements of war are held in their hands and some have rattles with which they keep time to the taps on the drums.

The step is done by jumping off both feet and striking them forcibly on the ground, one a moment sooner than the other, always keeping the exact time. No words are used in the song, and when the round is about half finished it suddenly ceases, though the drumming and dancing is continued, accompanied by a low simultaneous grunt by all at each step. They commence the dance in the form of a ring but do not go round. Dancing for the space of a minute in the same position, they bend their bodies forward and press all to the center of the circle, turning and looking in every direction without any order, and when all are huddled very close, and that part of the song arrives where the chorus is discontinued, all except the tune on the drums, they keep it up for the space of about a minute afterwards, when a sudden and general yell by all finishes that round, and the form of the ring is resumed.

This is the principal occasion taken by those concerned to recount their former deeds of valor or coups. The whole camp being spectators, and the bravest of them present, also many in whose company the acts now about to be published had been performed, makes it indispensable that the boasts of the warriors should be confined to the limits of truth. After one round has been danced a warrior (one of the dancers) steps forth in the middle of the ring and speaks in a loud voice to this effect, using his gun or lance in gesticulation: "One or two years since, he, in company with 15 others, went upon the Blackfeet and succeeded in bringing away 40 of their enemies' horses" [here the drum is tapped once]. "On another occasion in a battle with the Crow Indians six years since he struck an enemy the first" [here follows two taps on the drum]. "At another time he struck two enemies the second, took a gun and a tomahawk from the dead enemies" [four taps on the drum].

[25] The prepuce of the penis is drawn forward and tied with a sinew, to the end of which floats a war eagle feather. Others not sufficiently advanced as to merit that mark of distinction tie the same with some grass.

"Also that in battle he took an enemy's horse" [one tap]. "That he fired fifteen shots" [one tap]. "Four years since, being near the Blackfeet camp with six others in quest of horses, they were discovered and pursued but succeeded in making their escape" [one tap on the drum]. "Alone and on foot he, three years since [naming the place] killed and brought to camp a full-grown grizzly bear" [one tap on the drum]. "Behold where one of the balls of the Blackfeet broke my arm" [one tap]. "Here an arrow pierced my thigh" [another sound of the drum], etc., until he has run through the catalogue of his meritorious acts, when he is honored with a general shout of approbation, the music strikes up, the song commences, and another round or two being performed, another warrior recounts his coups in the same manner. In this way they continue until all who wish have had an opportunity of renewing the remembrance of their past deeds, and reestablishing their importance as braves in the eyes of their countrymen. It takes some hours to prepare for and perform this dance and it is only done twice or thrice a year. Although the performers are naked, yet there is no idea of indecency[26] attached to this fact. They are in a manner obliged to appear in this state so that they may publicly expose and point out any wound they may have received in battle.

Wounds behind are fully as honorable as those before. Running away where success is impossible is more commended than death or defeat by remaining. The number of shots a man has fired during the fight, if over 10, counts a coup, inasmuch as it shows he has stood his ground long enough to fire that many.

Killing an enemy counts nothing unless his person is touched or struck. The first who strikes the dead foe counts the best coup, although each succeeding one counts as far as the fourth.

Scalping does not count more than striking. Taking an enemy's gun or horse or bow by any means counts a coup, likewise killing a grizzly bear alone and on foot. Scalps are very little valued by him who takes them. They are mostly cut up in small pieces and sent to the different camps. The hair seen on the warrior's leggings is sometimes really the hair of the enemies slain by him, and at others his own, or horsehair. In either case it is the symbol of having killed.

If he has struck even one enemy he is entitled to wear hair on his shirt and leggings, but it is not absolutely necessary that it should be the same hair as that which he took from his enemy's head. Any human hair or black horsehair will answer the purpose fully as well if he has a right to wear it.

[26] This viewing of the nude human figure without a feeling of a sense of indecency is confirmed by the Swiss artist, Frederick Kurz, in his Journal, already cited in the preface.

Fox Dance (To-kah-nah Wah-che).—This is done by those who belong to the band called Foxes, who are pretty numerous among several nations. It is got up with the view of publishing their feats as in the preceding one, and also to display themselves as a body. Their costume consists of a deer or antelope skin, shirt, and leggings painted a bright yellow, and their faces painted with yellow stripes, besides other forms. A dressed fox skin being slit in the middle, the head of the man is thrust through, the skin spread out on his shoulders, the head of which lies on his breast, and the tail hangs down his back, the whole skin being fringed round with colored garnishing of porcupine quills, bells, and polished buttons placed in the eyeholes of the animal in the skin.

A headdress of foxes' teeth, bored and strung, is stretched across the middle of the head from ear to ear, a lock of their hair is tied in front, which projects out several inches, and the rest, combed straight down behind, to which at about the middle is attached four war eagle feathers. Their lances are wrapped with fox skins cut in strips, and the tails of that animal sewed on the handle every 12 inches or so. Some also carry their bows and quivers of arrows at their side during the performance.

After having been warned of the meeting, and preparing in the above manner, they assemble at the sound of several drums and whistles at the spot appointed, being generally near the center of the camp. Here they form in line during the drumming and singing, which is kept up by five or six men and women who are invited for the purpose (this music) taking their stand to one side, the women as usual behind the drums, who sing, but take no part in the dance.

When ready they all start off at a swift pace and describe the movement of the coiling of a snake, and when wound up in this form, all commence jumping up and down, striking one foot immediately after the other on the ground, keeping exact time, and all singing with the music for the space of about a minute, when a general flourish on the drums and a shout or yell from the dancers concludes that round, and their places in line are resumed.

Some one of them now steps forward and counts his coups in the same manner as pointed out in the Brave Dance, which is succeeded by another movement in dancing, which is again followed by another speaking, and so on until all who wished have spoken, the drum denoting by taps the value and number of coups thus counted by each.

The whole concludes by a feast given by one or more of the most distinguished members of this club, during which their professions of amity and assistance are renewed, and presents often exchanged; the musicians also partake of the repast.

This club is composed of men from 20 to 25 or 28 years of age.

Duck Dance (Pakhan'tah Wah-che).—This is done by the band who bear that name and are not so numerous as the others. The same principles govern their proceedings, being to seek this occasion to publish and perpetuate the memory of their past deeds on the battle fields. The dancers are all naked except the breechcloth, which hangs down before and behind one or two yards. Their bodies are painted in various ways, principally striped, according to the fancy of the individuals. No arms are carried in the dance, but they hold in their hand a flat striped painted stick about 2 feet long, with which they keep the time. Women are excluded from the ring but form a portion of the music. All sing, both dancers and drummers. The evolutions are: Commencing in a ring, they mingle together for a few minutes and conclude with a general shout, after which coups are counted by those who wish, or who are able, as in the preceding. The time, step, and figure of every dance differ, but we can not describe them so as to be understood.

Bulls' Dance (Tah-tun-gah Wah-che).—The kin called Bulls is perhaps the most numerous among them, and a good many middle-aged men and chiefs are found in this dance who do not figure in the others. Their headdress is the skin of a buffalo bull taken off as low as the shoulders of that animal, and dressed with the head, horns, hair and snout complete. Around the holes where the eyes were and in the nostrils and mouth are sewed pieces of scarlet cloth. The skin is then sewed up along the back of the neck. The head of the man is thrust in this, and the rest of his body being naked except the breechcloth and moccasins, is painted with black and red stripes. They carry guns and powder horns in the dance, moving without any order, jumping about, snorting, and shaking their horns at each other, and firing among their feet with powder. The song is the Bull Song. They usually are attended by six or eight drummers and singers, all males, who are not dressed in any remarkable manner.

No speeches are made by the Bulls during the dance, but they seek the occasion of other dances, such as the Braves or Soldiers to which most of them belong, to perpetuate the remembrance of their chivalrous deeds. This kin give a good many feasts to each other and are said to be remarkably faithful in the observance of their promises of mutual aid and protection.

Soldiers' Dance (Ahkitchetah Wah-che).—This body of men having already been fully described in these pages it will, of course, be understood that their dance must include the most important personages in camp. They seldom perform, and only with a view

of exhibiting their force as a body; and in the presence of strangers or visitors to count their coups or when a war party is in contemplation, with the intent of stimulating the ardor of the young to follow them to battle. They must have some object to dance for, as they are not men to expend much time merely for the sake of amusement and display; besides their characters and acts are so well known as to need no repetition.

Their costume is as nearly as possible that of warriors equipped for battle. From the nose up their faces are painted a bright red, and from thence down to the neck a jet black. The dancers form the ring on foot but are attended by a guard of mounted soldiers, dressed in very gay battle array, who ride round outside the ring all the time, striking, and keeping at a respectful distance either man or beast that is found in the way. A select band of drummers and female singers is chosen and placed apart, who having struck up the song, the dance is led off by a soldier alone, who moves out by short steps toward the center of the circle, is soon joined by all the rest, jumping and keeping the time, which round concludes with a loud yell and discharge of firearms, and the one who led off the dance counts his coups on his enemies in the manner before related. This is also accompanied by taps on the drum denoting the number and value of the coups and the speech, honored with a general shout of approbation.

The warrior resumes his place, another leads off, and the same behavior is repeated until all get through, the whole ending with a feast of dog meat given by the chief of the soldiers in the Soldiers' Lodge, to which the strangers, if any in the camp, are invited. This is the most imposing and warlike dance they have, and is well calculated to inspire the young with a desire for glory. Their dresses and appointments are very gay and complete according to their rank, their gesticulation and oratory fierce and bold.

White Crane Dance (Pai-hun-ghe-nah Wah-che).—There is no band of this name, but the dance is got up by some divining man, most probably for some begging purposes. He is the principal figure, being painted yellow and wearing a dressed elk-skin robe on which a large two-headed crane is painted. The costume of the others is whatever their fancy dictates, and, of course, they put on the gayest attire they can afford. The dancers are young men of any and all kins who choose to take part, except women, who join the chorus. The evolutions are different from any of the rest, as also the song, but can not be described so as to be understood. The only one who speaks during the performance is the divining man, and the tenor of his speeches differs according to his object in introducing the dance.

Crow Dance (Cong-ghai Wah-che).—This dance is performed by the kin called Crows. Neck and head dresses of crow skins taken off the bird entire with wings and head on are worn by all, and crow feathers adorn their lances, shields, and other war implements. For the rest, it proceeds much in the same way as the others. These are mostly young warriors.

Dance of the Mice Comrades or Provision Stealers (Wok-e-po maun noomp-pe).—This is done by a band of young men bearing the above name. The dance is kept up all night and during it some of them take by stealth the provision bales from the rest of the camp who are asleep, on which they feast all night.

The dance is performed in a large lodge, or rather several lodges thrown into one for the purpose. The bales or other property thus obtained are kept until daylight, when the haranguer of the camp publishes that those who have lost anything will go and redeem it, and the several owners of the provision sacks present a piece of tobacco to the dancers, who deliver them their property. By visiting many lodges in the night a good deal of provisions, robes, etc., are secured, which often take the best part of the next day to distribute. The dress of this club, though gay, is not remarkable in any way except they hold in their hands the skins of stuffed mice or have the same attached to different parts of their attire. To describe the whole of their dances in detail with the different costumes would occupy too much space and perhaps not be required. We think enough has been written to present a general idea of these performances and their use with the Indians.

Whip Dance (Etchap-sin-tai Wah-che).—This dance is performed by as many warriors as choose to assemble with whips ornamented with eagle feathers and horse-skin wristbands tied to the whips. In this the number of horses they have stolen from their enemies at various times is boasted of.

Divining Dance (Tee-chagh-hah).—The divining dance is a complicated religious ceremony occupying a whole day and that part of it appropriated to dancing is done by men and women promiscuously, headed by some of the divining men without any distinction of kin or speeches regarding their coups. Their bodies are also scarified and pieces cut out of their shoulders.

Women's Dance (Ish-kun Wah-che).—This is a dance in which women alone perform. They are painted in many ways and very gaily dressed. The men drum and sing for them and the dancers are ranged in two parallel lines opposite, dancing forward until they meet, and then resuming their places. Besides the foregoing, there are several other dances, all of which have for their object swaying popular feeling in some way. Very little is done by Indians in any

form merely for amusement, and their dances in this respect partake of the nature of the rest of their employments.

Games

Most of these tribes, particularly the Sioux, are fond of ball playing in parties. The principal game at ball is called *Tah-cap-sce-chah*, being the same denominated shinny or bandy by the whites. It is generally got up when two different bands are camped together and a principal person in each having made a bet of a blanket or gun, they choose from their bands an equal number of young men, who are always the most active they can select, the number varying from 15 to 40 on each side. Sometimes the play is headed by the chief of each band betting, though they take no part in the game, which is usually played by men 20 to 30 years of age. Each of the players stakes something against an equivalent on the part of one on the opposite side and every bet is tied together separately, which consists of shirts, arrows, shells, feathers, blankets and almost every article of trade or their own manufacture, and as fast as the bets are taken and tied together they are laid on a pile about the center of the playground, being given in charge of three or four elderly men who are chosen as judges of the sport. After this has been concluded two posts are set up about three-quarters of a mile apart and the game consists in knocking the ball with sticks toward these posts, they being the limit for either party in different directions.

They strip naked except the breechcloth and moccasins and paint their bodies in every possible variety of manner. Each is furnished with a stick about 3½ feet long, turned up at the lower end, and they range themselves in two lines, commencing at the middle of the ground and extending some distance on either side. The ball is cast in the air in the center of the course, struck by some one as soon as it falls, and the game begins, each party endeavoring to knock the ball to the post designated as their limit. The game is played three times and whichever party succeeds in winning two courses out of the three is judged conqueror. When the players are well chosen it is often an interesting game, and some splendid specimens of foot racing can be seen, but when one of them either intentionally or by accident hurts another by a stroke with the play stick a general shindy takes place, and the sticks are employed over each other's heads, which is followed by a rush for the stakes, and a scramble. We have seen them when this was the case arm themselves and exchange some shots, when, a few being wounded, the camps would separate and move away in different directions. Supposing, however, the game proceeds in its proper spirit and humor, each bet being tied separately, the parcels are handed out to the successful

party by the judges. This game is not often played by large parties of men, or if so it is very warmly contested and very apt to break up in a disturbance.

We have seen it also played by both men and women joined, a few men aiding two parties of women. This was among the Sioux, but with the other tribes it is generally played by men only.

Another mode of playing the game is by catching the ball in a network over a small hoop a little larger than the ball attached to the end of a stick. They catch it in this net as it flies through the air, and throw it from one to the other toward either goal. The man who catches can run with the ball toward the limit until he is overtaken by one on the other side, when he throws it as far as he can on its way, which is continued by the others. The women play hand and foot ball, also slide long sticks on the snow, or billiards with flat stones on the ice. We know of no other game at ball worth mentioning being played among them.

Foot racing is often practiced by the Mandan and Crows. The former nation before they were so much reduced by smallpox had a regular race course 3 miles in length, in which any and all, who chose, could try their speed, which they did by running three times around this space, betting very high on either side.

They still practice the amusement, but not so much as formerly.

Racing

Foot races among the Crow Indians are usually contested by two persons at a time, a bet being taken by those concerned, and many more by the friends and spectators on either side, consisting of blankets, buffalo robes, or some other article of clothing. They mostly run about 300 yards and in starting endeavor to take every advantage of each other, a dozen starts being often made before the race begins. These Indians also run horse races, betting one horse against the other. The same trickery and worse is displayed in their horse races as in their foot races, and often the loser will not pay. The Sioux also have foot races in which any one may join, provided he bets, which, if they have anything to stake, they are sure to do. The name of being a fast and long runner is highly prized among them all; indeed, after being a warrior and hunter that of being a good runner is next to be desired, but the principal aim in all these amusements appears to be the winning of each other's property. They, of course, occupy and enable them to pass agreeably some of the long summer days, but we never see these things introduced without the bets or prospects of gain, and from this fact, together with the earnestness exhibited in betting, and in the contest, we conclude it to be no more than another mode of gambling, to which they are all so much addicted.

Gambling

Most of their leisure time either by night or by day among all these nations is devoted to gambling in various ways, and such is their infatuation that it is the cause of much distress and poverty in families. For this reason the name of being a desperate gambler forms a great obstacle in the way of a young man getting a wife. Many quarrels arise among them from this source, and we are well acquainted with an Indian who a few years since killed another, because after winning all he had he refused to put up his wife to be played for. Every day and night in the Soldiers' Lodge not occupied by business matters presents gambling in various ways all the time; also in many private lodges the song of hand gambling and the rattle of the bowl dice can be heard. Women are as much addicted to the practice as men, though their games are different, and, not being in possession of much property, their losses, although considerable to them, are not so distressing. The principal game played by men is that of the Bowl or Cos-soo′, which is a bowl made of wood with a flat bottom, a foot or less in diameter, the rim turned up about 2 inches, and highly polished inside and out. A drawing and description of the arithmetical principles of this game is now attached in this place. (Pl. 72.) The manner of counting therein mentioned is the manner in which we learned it from the Indians, but the value of each of the articles composing the dice can be and is changed sometimes in default of some of them being lost and again by agreement among the players in order to lengthen or shorten the game or facilitate the counting. However, the best and most experienced hands play it as it is represented. It can be played between two or four, that is, either one on each side or two against two. The game has no limit, unless it is so agreed in the commencement, but this is seldom done, it being usually understood that the players continue until one party is completely ruined.

The bowl is held by the tips of the four fingers inside the rim and the thumb underneath. The dice being put in, they are thrown up a few inches by striking the bottom of the bowl on the ground, so that each counter makes several revolutions. It is altogether a game of chance and no advantage can be taken by anyone in making the throws. The counters or dice never leave the bowl but are counted as the value turns up. One person having shaken it and the amount of his throw having been ascertained a requisite number of small sticks are placed before him, each stick counting 1. In this way the game is kept, but each keeps his adversary's game, not his own; that is, he hands him a number of sticks equal to the amount of his throw, which are laid so that all can see them. Each throws in turn unless the big claw stands on end, in which case the person

is entitled to a successive throw. By much practice they are able to count the number turned up at a glance and the principles of the game being stated on the drawing, we will now describe how it is carried on. It has been observed in these pages in reference to their gambling that it is much fairer in its nature than the same as carried on by the whites and this is worthy of attention, inasmuch as it shows how the loser is propitiated so that the game may not result in quarrel or bloodshed, as is often the case.

The game is mostly played by the soldiers and warriors, and each must feel equal to the other in courage and resolution. It is often kept up for two or three days and nights without any intermission, except to eat, until one of the parties is ruined.

Example.—A plays against B; each puts up a knife, and they throw alternately until 100 is counted by the dice; say A wins. B now puts up his shirt against the two knives, which is about equal in value; say A wins again. B then stakes his powder horn and some arrows against the whole of A's winnings. Should B now win, the game commences again at the beginning, as A would only have lost a knife; but supposing A wins. B now puts up his bow and quiver of arrows against all A has won—the stakes are never withdrawn but let lie in front of them. Say A again wins. B then stakes his blanket and leggings, which are about equal in value to all A has won, or if not, it is equalized by adding or subtracting some article. Supposing A again to be winner, he would then be in possession of 2 knives, 1 shirt, 1 blanket, 1 powder horn, 1 bow and quiver of arrows, and 1 pair leggings, the whole of which the Indians would value at 8 robes. B now stakes his gun against all the above of A's winnings. Now if A again wins he only retains the gun, and the whole of the rest of the property won by A returns to B, but he is obliged to stake it all against his gun in possession of A, and play again. If A wins the second time he retains the whole and B now puts up his horse against all of A's winnings, including the gun.

A wins, he retains only the horse, and the gun and everything else reverts again to B, he being obliged to stake them again against the horse in A's possession. If A wins this time, he keeps the whole; but if B wins, he only gets back the horse and gun, and all the rest of the property goes to A. Supposing B again loses and continues losing until all his personal property has passed into the hands of A, then B, as a last resort, stakes his wife and lodge against all his property in the hands of A. If A wins he only keeps the woman; the horse, gun, and all other property returns again to B with the understanding, however, that he stakes it all to get back his wife. Now if B loses he is ruined; but if A loses he gives up only the woman and the horse, continuing the play with the rest of the articles against the horse until one or the other is broke.

At this stage of the game the excitement is very great, the spectators crowd around and intense fierceness prevails, few words are exchanged, and no remarks made by those looking on. If the loser be completely ruined and a desperate man, it is more than likely he will by quarrel endeavor to repossess himself of some of his property, but they are generally well matched in this respect, though bloody struggles are often the consequence. We have known Indians to lose everything—horses, dogs, cooking utensils, lodge, wife, even to his wearing apparel, and be obliged to beg an old skin from some one to cover himself, and seek a shelter in the lodge of one of his relations. It is, however, considered a mark of manliness to suffer no discomposure to be perceptible on account of the loss, but in most cases we imagine this is a restraint forced upon the loser by the character of his adversary.

Suicide is never committed on these occasions. His vengeance seeks some other outlet, in war expeditions, or some way to acquire property that he may again play and retrieve his losses. There are some who invariably lose and are poor all their lives. A man may with honor stop playing with the loss of his gun; he has also a second opportunity to retire on losing his horse, and when this is so understood at the commencement they do, but when a regular set-to takes place between two soldiers, it generally ends as above described.

Ordinary gambling for small articles, such as beads, vermilion, rings, knives, arrows, kettles, etc., is carried on by playing the game of hand, which consists in shuffling a pebble from one hand to the other and guessing in which hand the pebble lies. They all sit in a ring on the ground, each with whatever stake they choose to put up before them. Both men and women join in the game and a song is kept up all the time by the whole with motions of the hands of him who holds the pebble. After singing about five minutes a guess is made by one of the parties as to which hand the pebble is in, and both hands are opened. If the guess has been correct, the one holding the pebble is obliged to pay all the rest an equivalent to the stake before them; but if the hand not containing the pebble be picked upon, all the ring forfeit their stakes to him. Either one man can thus play against the whole or he has it in his power to pass the pebble to the next, he betting like the others.

This is a very common game, and a great deal of property by it daily changes hands, though seldom such large articles as guns, horses, or women.

The usual game which women play alone, that is, without the men, is called *chun-kan-dee'*, and is performed with four sticks marked on one side and blank on the other, as described in Plate 73. The women all sit in a circle around the edge of some skin spread

upon the ground, each with her stake before her. One then gathers up the sticks and throws them down forcibly on the end, which makes them rebound and whirl aronnd. When they fall, the number of the throw is counted as herein stated. Each throws in turn against all others, and if the whole of the marked sides, or all the fair sides of the sticks are,turned up, she is entitled to a successive throw. The game is 40, and they count by small sticks as in the preceding. In fine weather many of these gambling circles can be seen outside their lodges spending the whole day at it instead of attending to their household affairs. Some men prohibit their wives from gambling, but these take the advantage of their husband's absence to play. Most of the women will gamble off everything they possess, even to the dresses of their children, and the passion appears to be as deeply rooted in them as in the men. They are frequently thrashed by their husbands for their losses and occasionally have quarrels among themselves as to the results of the game.

Another game is played by the boys and young men which consists of planting an arrow in the snow or ground and each throwing other arrows at it until struck, and he who strikes the planted arrow is winner of all the arrows then on the ground.

Death and Its Consequences

When a warrior dies the body is straightened and dressed in full war dress, as for battle, the face being painted red. It is then wrapped up in a blanket, which is again enveloped in scarlet cloth, or his flag, if he has one; then his bow, quiver, sword, gun, powder horn, battle ax, war club, tomahawk, knife, and his medicine or charm are laid alongside and the whole baled with the body in his buffalo robe, being the one on which his coups on his enemies are painted. The last covering is the raw hide of a buffalo, hair inside, which incloses all, and is strapped up tightly by strong cords passed through holes cut around the edge of the skin, the whole presenting the form of a large oblong bale. All this is done by some old men, often some of the divining men, though not those who attended him while sick; and the persons who pay this attention to the corpse know they will be well paid by the relatives of the deceased, as it is the greatest honor one Indian can confer on another and is a claim on the patronage of the relatives during their life. Before enshrouding the body some one of the persons who officiate cuts off a lock of the dead man's hair, which he retains a year. At the end of that time the nearest relatives of the deceased buy the hair from him at a very high price in horses, blankets, etc. This is another long ceremony and should be described, but our limits do not admit of it.

When the body is thus dressed and prepared for interment it is the wish of the relatives to get it out of sight as soon as possible, or in a few hours after dissolution, but it often happens that there is no suitable place in the vicinity for burial and they are obliged to carry it along for several days. Most of these tribes prefer scaffolding the corpse on trees, which is the most ancient method of disposing of them, arising from the want of tools to excavate, particularly in the winter season, when the ground is frozen to the depth of 5 feet as solid as a rock, and for the reason that they wish the dead to be placed where they can at all times feast and speak to them. Of late years, however, they prefer their being interred by the whites at the different trading forts if possible, but as this can only happen to a few the others either scaffold them or inter them, when the weather admits, on the tops of hills, covered with large stones, which being rolled on the grave after it is filled prevent the ravages of the wolves and foxes. In either case the clothing, arms, medal, or other trinkets not bequeathed are deposited with the body, and as the sanctum of the dead is never disturbed nor these articles renewed, they must present a sure criterion whereby to judge of their state of arts and arms at the time of the interment as far as it is possible to be determined by the nature of the materials thus deposited. Supposing they are near the timber, and the man has died in the night, the funeral takes place next day, or if he has died during the day it is disposed of the following morning.

At the moment life becomes extinct the relatives set up a loud howl, cut their hair and legs, and the neighbors crowd into the lodge, each endeavoring to excel the other in the violence of their lamentations, which are kept up without intermission from that time until the funeral is over, by all, and during this interval the whole of the property of the deceased, except his war horse and arms as mentioned, is given away by the relatives to those who lament. All his horses, skins, clothing, provisions, and a good part of that of his relatives (brothers, father, etc.) must pass into the hands of strangers; even the blankets off their backs, arms, and cooking utensils are seized and carried away by those who aid in mourning. If he has made a will, which occasionally happens, it is sometimes carried into effect, but usually the nearest relatives sit around the body howling, with their heads down, and pay no attention to the general pillage which then takes place, or if they do, it is only to tell each of the mourners which of their horses or other property to take away, giving the horses to those who have aided in laying out the dead man. Their custom is to make themselves as poor as they can be made on these occasions, either in property or with regard to their persons.

The body being placed on a horse travaille crosswise, it is conveyed to the spot for scaffolding by leading the horse, the whole following without any order and uttering loud howlings, both men and women. Several men now ascend the tree and draw up the corpse with strong cords attached to it, placing the feet as near toward the south as the fork of the tree will admit, and elevating the head part of the bale so that it may face in that direction, after which it is secured by the cords being tied round the limbs of the tree many times, to prevent the wind from blowing it down.

When this is finished they recommence cutting their legs and howling, calling on the deceased by the tie of relationship which bound them, thus: "My brother" or "my son," adding, "remain in peace where you are; let your spirit go to the south and not be troubled; we will feast you; do not visit us in spirit; you are happy; and we are miserable." These words are not distinguishable on account of the noise, and most probably muttered; as, having witnessed many of these funerals in every way, we have never heard any other words than lamentations; but they say they do pronounce them either mentally or very low, and that if it is neglected some more of their relatives will die; consequently we are bound to believe they utter these and other words in an audible voice. At this stage of affairs his war horse is led under the tree and shot, in addition to which, among the Crow Indians, a finger or two of each of the near relatives are chopped off and the blood smeared over their faces, left to dry there, and remain until it wears off. The deceased's shield, lance, or other implement, too long or unwieldy to be enveloped with the body, are now tied at his head on the tree, and the mourners retire. Some of the near relatives, however, often remain all day and night, naked and barefoot, exposed to cold, snow, or rain, for several days and nights without eating until they are completely exhausted, and for a year or more afterwards wear nothing but an old torn skin, which, with their bodies and faces, is smeared over with white clay, and present a miserable appearance.

This is the most general custom among all the tribes of which we write of disposing of their dead, and nine-tenths of them are scaffolded in this way. Yet occasionally some, either by request or desire of surviving relatives, or in the event of their dying where no timber can be found, are interred on the top of a hill. In either case the mourning and ceremonies are the same. When interred, the hole or grave is excavated to the depth of about 5 feet, and made large enough to contain the implements before referred to, which are all buried with the body, the grave filled up and large rocks rolled upon it. In either way no inscription or device is made to mark the spot, nor any hieroglyphics carved on trees denoting the age, name of the

person, or anything else. No consolation is offered to Indians at the time of the funeral, nor for several days afterwards. Those who wish to console must aid to mourn, but say nothing. In a few days, however, many elderly men invite the relations to feast and console them by the usual arguments the nature of the case dictates. The reason why the feet are placed southward and the face turned in that direction is that the Indian paradise is supposed to be in that quarter, and the soul is thus given to the South Wind to be carried off to that point. Very brave and formerly renowned warriors sometimes requested not to be interred in any way, in which case they are placed inside their lodge propped up, in a sitting posture, dressed and painted, the door of the lodge is closed tight, and the outside around the lodge inclosed by a hedge of thick branches and dirt to prevent the wolves from entering, and the whole is thus left on the plains.

In the course of time the lodge rots away, the wolves enter, and the bones are scattered about or carried away by them. This is the manner in which the Chief Wah-he-muzza, or The Iron Arrow Point, ordered his obsequies to be performed, giving for his reason that he wished to remain above ground in order to see and hear his children all the time and to have the spot rendered remarkable by his being there.

The death of ordinary Indians is attended with like results, though if not warriors of note they are merely enveloped in their ordinary clothing and blankets or skins with their implements, but no horse is killed over their grave. When women die their favorite dogs are killed and all their tools for scraping and dressing hides, with their pillow and porcupine quills, are enveloped with them. If she be the wife of a chief or man of importance she is also wrapped in scarlet cloth, formerly in painted skins. There is as much mourning and distress observed on the death of their children, perhaps more, than when grown. On these occasions often some one of the parents destroy themselves, and all other Indians are very attentive to them for several days until the most violent grief is over. Should anyone offend the parent during this time his death would most certainly follow, as the man, being in profound sorrow, seeks something on which to wreak his revenge, and he soon after goes to war, to kill or be killed, either of which being immaterial to him in that state.

The reason the implements are deposited in the grave is that they are supposed to be necessary to his being in the world of spirits. It is a very ancient custom, perhaps coeval with their existence.

We know of no tumulus or barrow erected either in former or later times through this country containing many bodies or possessing the character of a charnel house, but are in the knowledge of the graves of many chiefs either on scaffolds or on hills.

Bodies are never interred in a sitting posture, though that manner is sometimes observed when deposited in the lodge above ground and the posture preserved by stakes driven in around the body with forks on the end supporting the different members and equilibrium.

There are no herbs or spices placed with the corpse, neither is it submitted to any process analogous to embalming. It is enveloped, as before mentioned, in skins to which those who can afford it add scarlet cloth and blankets.

Scaffolding of corpses is the general manner of disposing of them with all the prairie tribes, and the way they are prepared has been alluded to. They would prefer having them boxed instead of baled, but have no tools to prepare timber, and even if they had can not at all times procure it, which together with their lack of means to excavate in these frozen regions were no doubt the original causes of this mode of burial. When bodies are brought to the trading houses for interment or scaffolding they are always boxed by the whites, the coffin being made large enough to contain the implements and ornaments enveloped with the corpse. This in former times was a great honor done the Indians and highly recompensed, but of later years is a great bore and expense.

This method of securing them can, however, only be embraced when death takes place near the houses, and consequently happens to few. The Mandan and Gros Ventres, being stationed at the fort with those nations, have their dead boxed by the whites and placed on a scaffold made of posts planted near their villages. The Arikara prefer interring them in the ground, and all the rest of the tribes place their dead, secured in the manner described before, in the forks of trees, which in a year or two, as soon as the cords rot off and the envelopes fall to pieces, are blown down, and the bones are found scattered beneath. Carnivorous birds, such as eagles, ravens, and magpies, often pick at the envelope until they get at the body, but if it is well strapped in rawhide it is generally secure from either birds or beasts as long as it remains in the tree.

It is the custom of the Assiniboin to put up a funeral flag over the graves of their dead, particularly children, which at this time is composed of some such fabric as red flannel or calico tied to a pole, but which was formerly made of feathers and light skins. This is a very ancient custom, arising, we are told, from the necessity of having some such object thus raised which, fluttering in the wind, frightens away the beasts and birds of prey.

The custom of collecting and reinterring the bones is very general at the present day among all these tribes; indeed, it is seldom neglected if when they visit the scaffold they find the body to have blown down and the bones exposed.

The bones are picked by any one of the party, not related, in the presence of some of the relatives of the deceased, and this time buried in the ground, with demonstrations of grief and some scarifying, though they do not go into mourning dresses further than some white clay about the face, and no property is confiscated by others, as in the case of the first funeral, but those who aid are paid with some smaller articles. On these occasions a feast is made for the dead which, being eaten, and the spirit propitiated by prayer and invocation, the whole concludes, those concerned resuming their usual dress and occupations.

There is no such thing as charnel houses or receptacles for the dead in all the district of the upper Missouri, neither are there any appearances of such things having been, each individual being buried or scaffolded separately at the most convenient place and as soon as possible after decease.

Incineration of bones is not practiced by any of them, neither do their traditions mention this custom to have ever existed among them; they have a horror of the idea.

Their symbols of mourning have been referred to, which are cutting short their hair, scarifying their legs, cutting off their fingers (Crow Indians), wearing an old tattered robe or skin on their back, the rest of the body being naked except the breech flap of the men, or body dress of the women, bare legged, bare footed, the face, hair, body, and robe smeared with white clay, often intermixed with their blood.

When the lock of hair of the deceased has been redeemed by the relative by high pay to him who took it, which is done in a year or two after demise, this relic is inclosed in a small sack and carried on the back of some of the female relatives. A piece of tobacco is wrapped with it, which is used on several occasions, as before mentioned. There are periodical visits to the grave, twice or thrice a year for the first year, and afterwards for several years whenever they happen to be in the vicinity, and on these occasions takes place the feast to the dead, so often referred to in these pages, which is one of their principal ceremonies. A repast is made of corn or pounded meat mixed with grease and sugar, sometimes a dog is cooked by some medicine man, and a crowd of people being assembled round the grave after lamenting the dead by howling, smoke, and pray to the spirit, leave a portion of the feast for it, and the rest is eaten by those who attend the ceremony. One of their prayers at these times is recorded in a former page, together with the reason of these observances. Fires are kindled near the grave or under the scaffold, but do not appear to be of further use than to light the pipe by while smoking to the dead, and are suffered to expire at their leisure.

No gravestones or posts are planted to mark the place, or any inscriptions or devices painted or carved by any of these tribes, denoting the age of the deceased or any other thing.

As has been frequently stated, there are no large mounds perceived on the upper Missouri, the work of Indians, as have been discovered in some of the western States, but were it an object or custom to bury the dead in that manner we believe there is energy and power sufficient among any of these tribes to accomplish a work of the kind, even with the rude tools they have, in a loose soil, free of rock, and in the summer season. These mounds have most probably been national or public depositories for the dead of Indians in stationary huts; and as great superstition is attached to all funeral rites, it is not improbable they were excavated in a length of time by the united efforts of the nation. Being a work in which both women and children could join, and which could be executed with the most primitive tools, they no doubt worked at it in favorable seasons, stimulated to exertion by the directions and commands of the divining men. These marks of antiquity only prove the nation to have been numerous, stationary, and unanimous in the undertaking. The materials disinterred from these receptacles must show beyond doubt the state of arts and advancement of the tribe at the time the interment was made, supposing the articles thus exhibited to be of their own manufacture and not traded from Europeans. Bones reburied are not accompanied with a new deposit of instruments.

Those articles first enveloped with the body, if found, are reinterred with it, which, having been the property of the deceased, are valuable, but to none other. It is only when the corpses fall from scaffolds or the bones of the dead by some means have become exposed that a second burial takes place; otherwise no Indians disturb the repose of the dead.

Orphans and the Aged

The care of orphan children and the aged devolves upon the nearest relatives of their deceased parents, but neither the chiefs nor any other persons not of kin pay them the least attention, unless they are adopted into their families. The aged and infirm are supported by their sons and other relatives until they become helpless and a burden, and are then left in some encampment to perish. There are no very old people without some relatives. The fact of their being old presumes that some of their lineal descendants are living, and it is with these they reside; but should there be no kin whatever acknowledged they would only the sooner die, as neither chiefs, hunters, nor any others would take the least interest in them, much less furnish them with provisions or be troubled by packing

them along in traveling. Should an aged person of this description die in camp the body would be wrapped in the skins composing its bed and stuck on a tree by some of the men, without the least symptom of mourning. The life of the aged of both sexes, even with their own children, is one of drudgery and misery, and when entirely helpless they are in a manner obliged to get rid of them in some way, as their manner of traveling and conveniences of lodging are not adapted to the infirm.

A very near and correct view of their means and disposition warrants the opinion that it is more through extreme necessity than hardness of heart that they resort to the inhuman alternative above mentioned. Age without power is never venerated even by sedentary Indians, though these can and do treat the infirm better than the roving tribes, because, being better prepared with commodious lodges and not obliged to travel, the burden of useless and aged persons is not so much felt. They are therefore tolerated for their talents in story telling and other qualifications, exciting more their laughter than their abuse or neglect. But it is always a hard fate. The others will say they have had their day, their youth, and their prime, have enjoyed much and should now die and remove the burden of their care. They all know and expect this to be their own fate if life be prolonged, and hence we find the influence of chiefs, once renowned, declining with age or debility. Their gallant acts and services are forgotten or laughed at, later incidents of the same nature replacing theirs in the memory of their friends; they are neglected, ridiculed, imposed upon, and, being helpless, submit.

It does happen with some divining men that the older and uglier they become the more they are feared for their supernatural powers, and these, as long as they can sing and drum, are well off, because they can always command property for their services and pay their way for any attention or assistance, besides their supposed supernatural powers prevent any practical jokes or petty torments from being inflicted as on ordinary aged persons.

There are but few old people of either sex. Their lives are too laborious, precarious, and exposed to secure an advanced age.[27]

Lodges

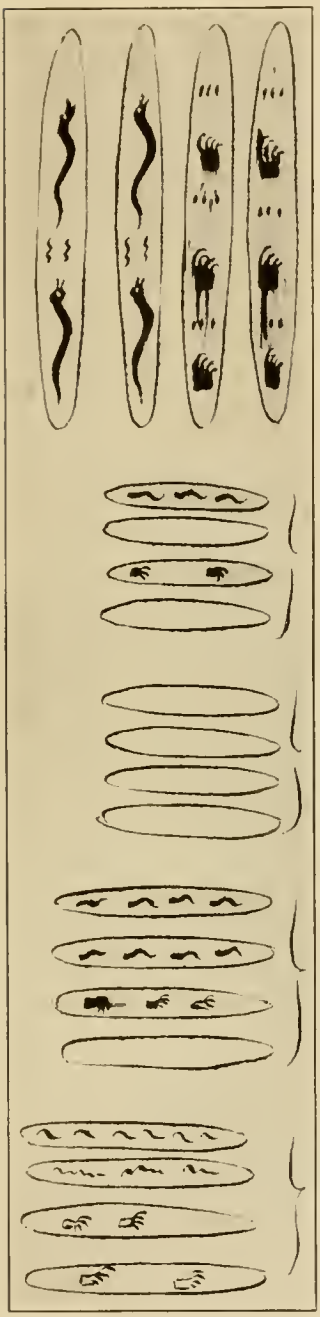
The lodges of the Sioux, Crows, Assiniboin, Cree, and Blackfeet are made of buffalo skins, hair shaved off and dressed, then sewed together in such a manner that when placed upright on poles it presents the form of an inverted funnel. The skins are dressed, cut out, and the lodge made up altogether by the women. When cut and

[27] There is some tautology in treating the foregoing subject of death and its incidents, but it could not be helped without omitting some portions of the subject.

sewed and laid on the ground it is in shape nearly three-quarters of a circle, with the two wings of skins at the small end to serve as vanes, which are changed by moving the outside poles with the wind, to prevent the lodge from smoking. The tent is stretched on poles from 12 to 20 feet in length according to the size of it, each family making one to suit the number of persons to be accommodated or their means of transporting it; therefore their sizes vary from 6 to 23 skins each, the one being the smallest, and the other the largest size in general use, the common or medium size being 12 skins, which will lodge a family of eight persons with their baggage, and also have space to entertain two or three guests. The area of a lodge of 12 skins when well pitched is a circumference of 31 feet, and the space each grown inmate requires for bed and seat would be about 3 feet in width. People seldom stand upright in a lodge. They enter in a stooping posture, and moving forward in this way to the seat opposite, sit there until they leave. (Pls. 74, 75.)

When sleeping the feet of every one is turned toward the center of the lodge, where the fire is made, the smoke escaping at the opening in the top. The material will last with some repairs about three years, not longer. They usually make new lodges every third summer and cut up their old ones for leggings and moccasins. Their lodges are always carried along when they travel with the camp, being packed on a horse in summer, or on a travaille in winter, in default of horses, and when the snow is deep they keep out wind and rain and answer all their purposes, but are cold, smoky, and confined. Families of from 2 to 10 persons, large and small, occupy tents of different dimensions, say, one of 6 skins for the former and one of 16 skins for the latter number. Lodges of 36 skins are sometimes found among the Sioux, owned by chiefs or soldiers. These when carried are taken apart in the middle in two halves and each half packed on a separate horse. When erected, the halves are again joined by wooden transverse pins, the poles are dragged on the ground, being tied together in equal-sized bundles, and slung to each side of the horses. A tent of this size will accommodate 50 to 80 people on an occasion of feast or council, as they can sit in rows three or four deep; about 30 persons, however, could sleep therein with ease, independent of the space required for baggage, provisions, and utensils. The females, young and old, aid in making them, and the eldest of them erects, removes, and arranges the locations of the interior in the manner described in a former answer.

They are never vacated and left standing, but are needed wherever they go to protect themselves and property from the weather. The skins are put up when sewed together in proper form without being smoked, as the smoke from the fire in the inside soon penetrates them



Four sticks 12 inches long, flat and rounded at the ends, about 1 inch broad and one-eighth inch thick, are used. Two of them have figures of snakes burned on one side, and two the figure of a bear's foot burned on. All the sticks are white on the sides opposite the burned sides.

THROWS

Two painted or marked sides and two white count..... 2

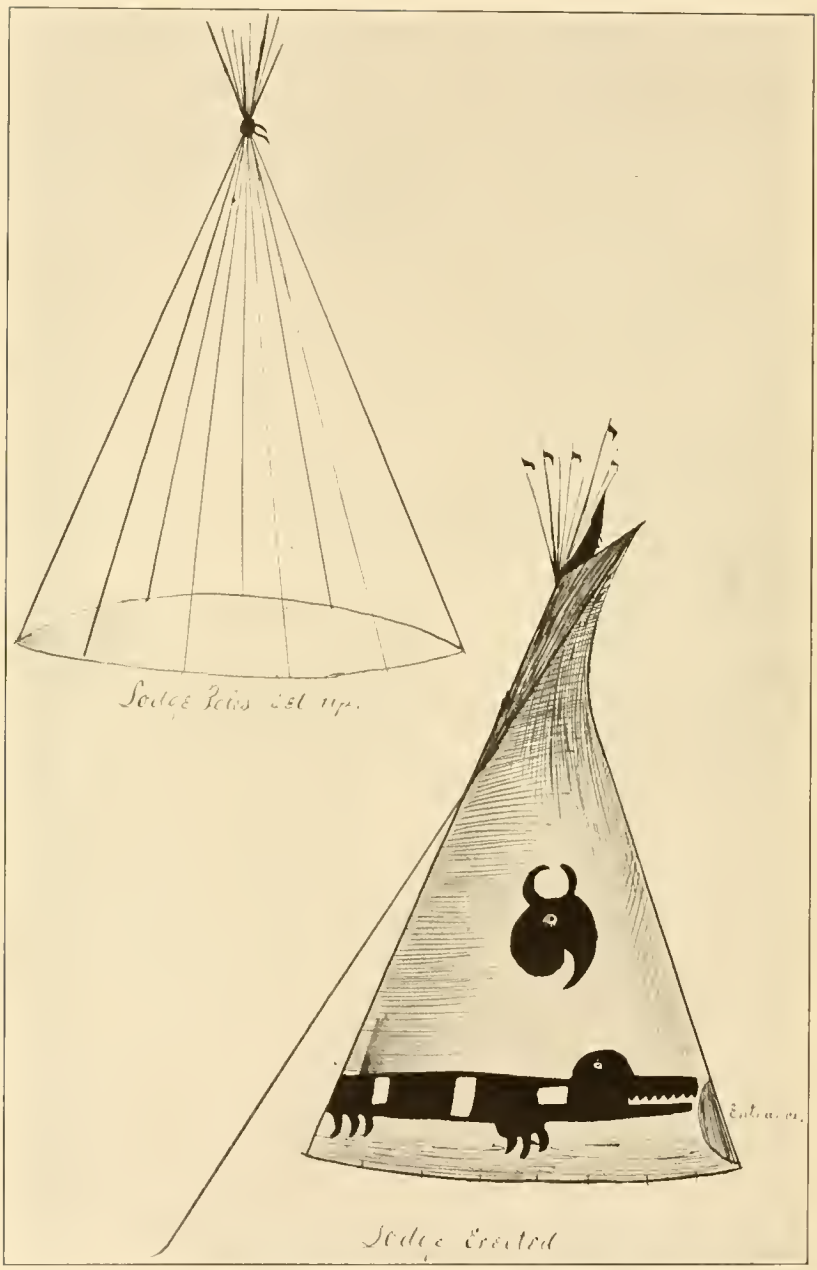
All the white sides turned up count..... 10

Three burned sides up and one white count nothing..... 0

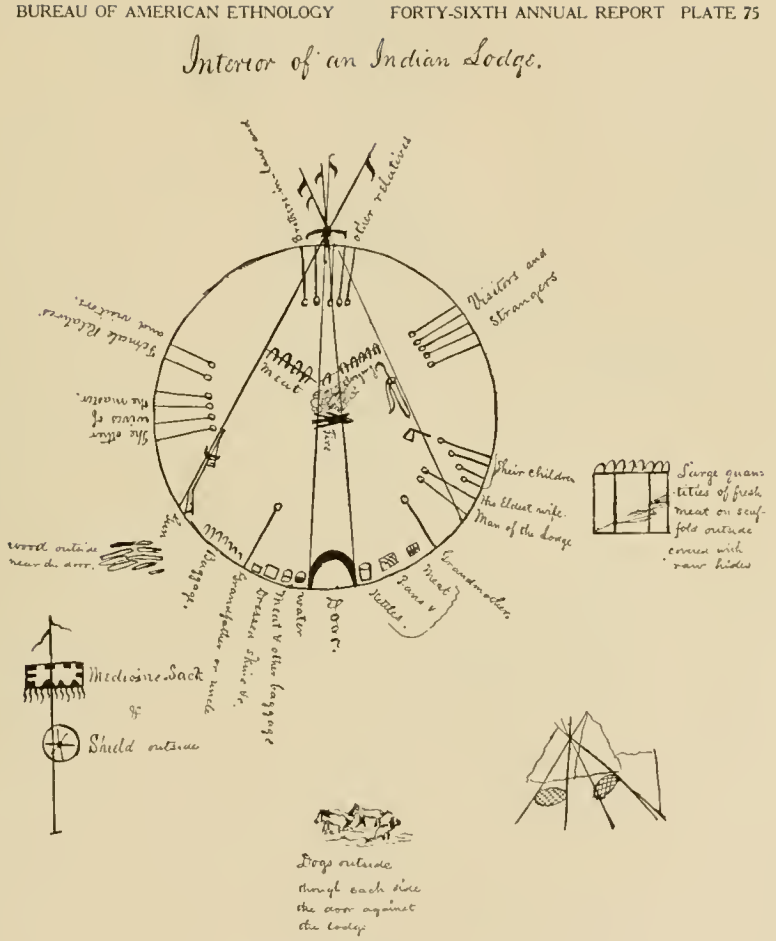
Four burned sides up count..... 10

NOTA BENE.—Three white sides up and one burned side up counts nothing.

THE CHUN-KAN-DEE' GAME



A LODGE FRAME AND A COMPLETED LODGE



THE INTERIOR OF A LODGE AND ITS SURROUNDINGS

Drawn by an Assiniboine Warrior
Fort Union Jan. 16. 1854.

An Assiniboine stabbing a Blackfoot.

and renders them impervious to rain. The men have nothing to do with the construction, erection, removal, or internal arrangement of the lodges.

The Mandan, Gros Ventres, and Arikara live in dirt cabins made by planting four posts in the ground, with joists on the top. From this square descend rafters to the ground in angular and circular shape, the interstices being filled with smaller sticks and willows; then grass is laid on, which is covered with mud, over which is thrown earth, and the whole beaten solid. An opening is left in the top for the smoke and a door in the side, which is extended into a covered passage of a few steps and will admit a man upright. These are large and roomy huts, will accommodate 30 or 40 persons each, but are generally occupied by one family, who frequently have their beds and bedsteads, corn cellar, provision room, and often a horse or two under the same roof. They are said to be damp and unhealthy.

The figures and representations of animals, etc., painted on their skin lodges are those of monsters seen by them in their dreams; also the hand is dipped in red paint mixed with grease and its impression made in many places over the tent. This denotes the master of the lodge to have struck an enemy. The same impression is also made on their naked bodies in some of their dances and has the same signification.

Canoes

Skin canoes are the only watercraft used by these tribes, and these are only to be found among the Mandan, Gros Ventres, and Arikara. They are made of the skins of one or two buffaloes with the hair on, not dressed, and stretched over a basketwork of willows. The women make, carry, and propel them with paddles, one person only paddling in front. A canoe of one buffalo skin will contain four persons and cross the Missouri, but they must sit very quiet or they will upset. The women carry these canoes on their backs along the bank to the place where they wish to cross, and on their return bring them to the village and turn them upside down to dry. A canoe of this kind is made in two or three hours and will last a year. Bark canoes are used by the Chippewa, but we are not well enough acquainted with their construction to describe them. When no skin can be found to make a boat war parties will cross any river on a raft.

Mental and Ethical Advancement

There is no doubt but most of these nations are disposed to advance from the barbaric type, though as yet they have made but little progress. Indeed, when we consider their mode of life, wants, and situation with regard to each other we can not imagine how they

can well be anything more than what they are. Harassed by internal wars, pinched by necessities that compel them to constant exertion, discouraged by the ravages of diseases, and overwhelmed by innumerable superstitious fears, their condition is not one calculated to prepare either mind or body for the arts and habits of civilization. The whole tenor of an Indian's life, and the sum and substance of all his labors is to live, to support his family, and rear his children, and he must bring them up in such a way that they in their turn can do the same. For this all is risked, and to this end the whole of their occupations, even their amusements, tend. They would be most willing to embrace any mode of life by which this main object could be realized with less risk and toil than the one they now pursue, but they must first be convinced of the certainty of success in the strange pursuit to which their formed habits must give way before they would apply themselves.

Their present manner is certainly precarious, but they would not abandon it unless some better way to live was made manifest, not by tales and speeches but by actual experiment. Indians (men) will not work. Even the slight attempt at agricultural labor by the few nations on the upper Missouri who raise corn and other vegetables devolves solely upon the women to perform them, and the men hunt as the other tribes. Meat must be had, and as yet no relish has been formed by any of them, except the Sioux, for the flesh of domestic animals. Notwithstanding all this, we see in many things a desire to change for the better, exhibiting itself in a general feature of improvement when compared with that of 20 years since. Within that time and within our acquaintance with these people the Sioux, Assiniboin, and other nations were much more savage than they now are. At the period to which we allude it was almost impossible for even the traders, much less strangers, to travel through their country without being robbed and often killed. Horses were stolen from whites on all occasions; every person outside the fort was liable to be abused, imposed upon, flogged, or pillaged, and even their dealings with each other were no better. Murders upon slight provocation, robberies, and misdemeanors of all kinds were common among them. Even whole bands armed against each other and skirmishes took place whenever they met.

All these things now, if not obsolete, are very rare. Whites move about among most of the nations with security of life and property, and the Indians are better clothed, provided for, armed and contented than formerly. For these happy results so far we are indebted to the unmitigated exertions and good counsel of a few white traders of the old stock, some good Indian agents, the entire abolishment of the liquor trade, and lately the humane endeavors on the part of the Government by the treaty at Laramie in 1851.

Medicine; Drugs

Most of them are beginning to see the superiority of drugs and treatment of the sick as exhibited to them by whites and are becoming aware that their drummings and superstitions are of no avail, but it is only a perception of truth, not as yet leading to any change in their superstitions, because no person instructs them in aught better. As it stands at present and to come to the point of this matter, we would say a disposition to emerge from barbarism is apparent among most of these tribes, though as yet no great advancement has been made. The small improvements alluded to only show the desire to exist, but their present organization, knowledge, and relative positions to each other as nations do not admit of further improvement, which must necessarily unfit them for their ordinary pursuits and successful contention with enemies.

Food

Their provisions, cooking utensils, manner of cooking, serving the meal and eating assimilates yearly more to that of the whites. Their conversation, desires, and willingness to listen to counsel for their benefit all convince of a disposition to advance toward civilization and exchange their present mode of life for one more certain in its resources, provided they could follow these employments secure from the depredations of neighboring tribes yet their enemies; but here is the difficulty, they are obliged to be always in readiness for war, also to make excursions on their foes to replace their stolen horses or revenge the death of their relatives.

They usually eat three times a day, morning, noon, and night, if meat is plenty, but the number of meals depends altogether on the supply of food, as has already been stated. Clay pots and other earthen vessels are still in use among the Mandan, Gros Ventres, and Arikara, being of their own manufacture, though they also have metallic cooking utensils.

The flesh of buffalo and other animals is cut in broad, thin slices and hung up inside the lodges on transverse poles over the fire, but high up in the lodge and in the way of the smoke, which soon penetrates it, and in a few days the meat is dried and fit to pack away. In the summer it is dried by spreading it in the sun, being cut up as above, which soon cures it. They employ no salt in curing any meat.

The parts of the buffalo eaten in a raw state are the liver, kidneys, gristle of the snout, eyes, brains, marrow, manyplies, or the omasum, testicles, feet of small calves in embryo, and glands of the calf envelope. Meat when cooked is either boiled or roasted, princi-

pally the former, and always rare in either way, not overdone. They have no salt for seasoning, but are fond of a little in the bouillon. In former times meat was boiled in the rawhide, in holes in the ground smeared with mud, and heated stones dropped in, or in pots made of clay and soft stone, but metallic cooking utensils, consisting of kettles of every size and description, have entirely replaced these. Tin cups and pans, with some frying pans, wooden bowls, and horn spoons, are yet common.

The tongues of buffalo sent to market are salted by the traders, who secure them from the Indians during the winter in the hunting season, and when frozen, salting them before the spring thaw comes on. None of these tribes preserves meat in any other way than above mentioned, some of which when dried is pounded and mixed with berries and marrowfat. It is then called pemmican, or in Cree pim-e-tai′-gan. Dried meat will keep but one year if free of wet, as afterwards the fat turns rancid and the lean tasteless.

The tail of the beaver is first turned in the blaze of a fire, the outside skin scraped off, then incisions are made each side lengthwise along the bone, and it is held in boiling water for a few minutes to extract the blood. It is then hung up in the lodge or in the sun and left to dry.

All inquiries regarding fish are inapplicable to these Indians, as they take none in quantity. The few catfish that are hooked by the Gros Ventres and Arikara are boiled in water, no salt added, and a horrid mess of bones and fish mixed together is produced, which no one but an Indian could eat. They eat but do not relish them.

All the hunter tribes rely greatly on the spontaneous roots and fruits found in the country and collect, dry, and pack them away, to be used in times of scarcity of animal food. We have known hundreds of Indians to subsist for one or two months on the buds of the wild rose boiled with the scrapings of rawhides. At all times the different kinds of roots and berries are a great resource, are used in their principal feasts and medicine ceremonies, are of great assistance when game is not to be found, are easily packed, and contain considerable nourishment. The following is a catalogue of those found among all the nations of which we treat, though there are several others whose names in English are unknown to us, and some of these now named peculiar to the most northern latitudes.

ROOTS, BERRIES, ETC., EATEN BY THE INDIANS OF THE UPPER MISSOURI

English name	Assiniboin name	Method of preparation
Prairie turnip (pomme blanche)	Teep-se-oah	Dried and pounded.
Service berries	We-pah-zoo-kah	Dried.
Bull berries (grains des boeufs)	Taque-sha-shah	Do.
Chokecherries	Cham-pah	Pounded with seeds and dried.
Red plums	Caun-tah	Stones extracted and dried.
Wild grapes	Chint-kah	Not preserved; eaten ripe.
Currants	Wecha-ge-nus-kah	Do.
Gooseberries	Chap-tah-ha-zah	Do.
Wild rhubarb	Chan-hn-no-ha	Tops eaten raw or boiled.
Fungus growing on trees	Chaun-no-ghai	Not dried; found in winter.
Artichokes	Pung-ghai	Eaten raw or boiled; not preserved.
Berries of the red willow	Chau-sha-sha	Eaten raw only in great need.
Antelope turnips	Ta-to-ka-na Teep-se-nah	Boiled and dried.
Wild garlic	Ta-poo-zint-kah	Raw; not preserved.
A berry called	Me-nun	Not dried; eaten ripe.
Acorns [27a]	Ou-tah-pe	Roasted and dried.
Strawberries	Wa-zshu-sta-cha	Not dried.
Inner bark of cottonwood	Wah-chin-cha-ha	Resorted to in time of actual famine.
Berries of the smoking weed	She-o-tak-kah	Not preserved; eaten ripe.
A root resembling artichoke	Ske-ske-chah	Dried, pounded, and boiled.
Buds of the wild rose	We-ze-zeet-kah	Found everywhere all winter on the stalk.
Red haw berries	Tas-paun	Not dried; eaten in fall and winter.

[27a] Found only along White Earth River.

ANIMALS EATEN BY INDIANS

Buffalo (wo-tacha) bull	Ta-tun-gah.	Mink	E-koo-sa.
Buffalo (wo-tacha) cow	Petai.	Beaver	Chap-pah.
Antelope	Tah-to-ka-nah.	Muskrat	Sink-pai.
Elk	Opoñ.	Glutton	Me-nag-gzshe.
Deer	Tah-chah.	Lynx	Ega-mo'.
Bear	Wah-ghuñ-kseeeha.	Mouse	Pees-pees-anah.
Wolf	Shuñkto-ka-ehah.[28]	Ground squirrel	Tah-she-ho-tah.
Foxes red	Shunga shanah	Water turtle	Kai-ah.
Foxes gray	To-kah-nah.	Terrapin	Pat-kah-shah.
Poreupine	Pah-hee.	Horns of elk in the velvet.	Tah-hai.
Badger	Kho-kah.	Horse	Shungatun-gah.
Skunk	Man-gah.	Mule	Sho-shonah.
Rabbit	Mushtinchanah.	Dog	Shunka.
Hare	Mushtineha ska.	Snake (not eaten except by Cree).	
Ermine	E-toonka sun.		
Otter	Petun.		

[28] Literally, the other kind of dog.

BIRDS EATEN

Crow	Ah-ah-nah.	Crane	Pai-hun.
Raven	Con-ghai.	Pelican	Mid-dai-ghah.
Magpie	Eh-hat-ta-ta-na.	Small bird of any sort.	Sit-kap-pe-nah.
Owl	He-hun.		
Duck	Pah-hon-tah.	Eagles are not eaten.	
Goose	Man-ghah.		

PARTS OF BUFFALOES NOT EATEN

Glands of the neck.	Bull's pizzle.
Sinews.	Horns, hoofs, and hair.

Every other part, inside and out, is eaten, even to the hide.

Sugar is made from the sap of the maple. Wild rice is gathered by the Cree and Chippewa on Red River and the adjacent lakes, but not by the upper Missouri tribes. In times of great scarcity old bones are collected by the nations of whom we write, pounded, and the grease extracted by boiling, and eaten together with any of the foregoing roots or berries that can be found. But these sad times always happen when the snow is deep, the ground frozen, and they can not be found. Then those who have not laid up a stock of some of these roots the previous summer are driven to the necessity of killing and eating their horses and dogs, which being exhausted and nothing more to be found they are compelled to eat human flesh.[29]

GARMENTS; DRESSES

In the materials of their clothing, as far as the cold climate will admit, articles of European manufacture have been substituted for their skins, but there being no fabric as yet introduced equal to or even approaching the durability and warmth of the buffalo skin, all hunters and travelers in the winter season must be clothed with the latter to preserve life or prevent mutilation by frost. Still in the summer season these are laid aside, being full of vermin and saturated with grease and dirt, and the Indian steps proudly around in his calico shirt, blanket, and cloth pantaloons. Their hair also, formerly tangled and matted, has been unraveled by the use of different kinds of combs, and the livestock, which found "a living and a home there," has, by these instruments, been torn from their comfortable abode, thus rendering useless their original method of disposing of these vermin, viz, extracting them with their fingers and masticating them in turn for revenge.

Most of the clothing used by these tribes is made of skins of their own procuring and dressing, the process of which has already met with attention. They have different dresses for different seasons, also various costumes for war, dancing, and other public occasions, some of which have been described. In the summer seasons, when comparatively idle, the clothing traded from the whites is preferred on account of its superior texture and color, but in their usual occupations, in winter, at war, in the chase, or any public ceremonies among themselves, very few articles of dress thus obtained are seen, if we except some blankets, undercoats, scarlet cloth, and ornaments.

[29] We have only witnessed one season in 21 years where they were driven to this necessity.

Their own dresses of skins fancifully arranged. adorned with feathers, beads, shells, and porcupine quills, are much more highly prized by them than any article of dress of European manufacture introduced by the traders.

We will now detail a few of the most common or everyday dresses among them, in different seasons, male and female, estimating the cost of each in buffalo robes at $3 each, their value in this country.

SUMMER AND FALL DRESS FOR MEN

No. 1

A buffalo robe, thin hair, or a dressed cowskin robe on the back	1	robe
Dressed deer or antelope skin leggings	1	robe
Cloth breech flap and moccasins	½	robe
	2½	robes at $3= $7.50

No. 2

A scarlet blanket	4	robes
Beads worked in same	10	robes
Deerskin shirt and leggings fringed and garnished with beads and porcupine quills	5	robes
Breech flap of scarlet cloth and moccasin	1	robe
Necklace of bear's claws	5	robes
Moccasins and handkerchief for the head	1	robe
	26	robes at $3=$78.00

No. 3

White blanket	3	robes
Calico shirt	1	robe
Neckerchief and cloth breech flap	1	robe
Cottonade pantaloons	1	robe
Muskrat cap	1	robe
Moccasins	0	robe
	7	robes at $3=$21.00

No. 4

White blanket	3	robes
Blanket capot	3	robes
Skin leggings, plain antelope skin	1	robe
Breechcloth and moccasins	½	robe
	7½	robes at $3=$22.50

No. 5

Scarlet or Hudson Bay blanket	4	robes
Beads worked on same	10	robes
Scarlet laced chief's coat	6	robes
Black fur hat and three cock feathers	2	robes
Silver hatband and plate	2	robes
1 pair silver arm bands	2	robes
Scarlet cloth leggings and hawk bells	1	robe
Black silk handkerchief and cloth breech flap	1	robe
Silver gorget, ear wheels and hair pipe	2	robes
Moccasins garnished with beads	½	robe
	30½	robes at $3=$91.50

Winter Dress for Men

Hunter's winter dress of the Plains

No. 7

Buffalo robe coat, hair inside	1 robe
Buffalo robe over it	1 robe
Skin cap and mittens, hair inside	½ robe
Blanket breech flap, robe, moccasins, belt knife, and fire apparatus	½ robe
Dressed cowskin leggings 1 pair snowshoes	½ robe
	3½ robes at $3=$10.50

No. 2

White blanket coat with hood	3 robes
White blanket over it	3 robes
Flannel or calico shirt	1 robe
Blanket leggings	1 robe
Soled rope moccasins Blanket breech flap Skin mittens, hair inside	1 robe
	9 robes at $3=$27.00

No. 2 is the dress of a wood hunter, ordinary warrior in winter, if we take away the blanket and substitute a buffalo robe; or it is worn in traveling, and is occasionally used by hunters in the Crow and Sioux Nations, but the Cree and Assiniboin mostly wear No. 1 winter on the plains. Other ordinary dresses are only variations of the foregoing, adding some articles and withdrawing others, but none of them are used when in full dress, on public occasions, among themselves, except sometimes No. 5. All their fancy dresses for dances, war, and feasts have their peculiar marks and distinction in rank; also the robes worn by chiefs, soldiers, or warriors in stated assemblies have their battle scenes painted on them in rude drawings, though intelligible to them. When merely designed to be ornamental the drawing consists of a representation of the sun, made by a large brilliant circle painted in the middle. Sometimes a calumet is pictured, and other devices, such as guns, bows, lances, horses, etc.

The dresses of the divining men are not distinguished from those of ordinary Indians by any marks, unless they are able and wish to renew the remembrance of their former coups on their enemies by wearing a robe on which they are drawn, but being generally old they seldom make any display in dress, though wearing a cap or piece of bearskin round the head is common with them. The rest of their clothing in summer would answer to No. 1 and in winter to No. 2, abstracting the blanket capot.

Women's Summer Dresses

No. 1

Dressed cowskin cotillion	1 robe
Leggings of same	½ robe
Dressed cow or elk-skin robe	1 robe
Moccasins	0 robe
	2½ robes at $3=$7.50

No. 2

Colored blanket	4 robes
Blue or scarlet cloth dress	3 robes
Garnishing of beads on same	5 robes
Scarlet cloth leggings ornamented with beads	2 robes
White deerskin moccasins worked with beads	1 robe
Heavy bead earrings and necklaces	4 robes
Brass-wire wristbands and rings	1 robe
	20 robes at $3=$60.00

No. 3.—Crow Indians

Fine white dressed elk-skin robe	1 robe
Fine white bighorn skin cotillion adorned with 300 elk teeth	25 robes
Neck collar of large brass wire	1 robe
Fine antelope skin leggings worked with porcupine quills	3 robes.
Brass wire wristbands and rings	1 robe.
California shell ear ornaments	3 robes.
Very heavy bead necklaces	3 robes.
Mocassins covered with beads	2 robes.
	39 robes at $3=$117.00

No. 4.—Sioux

Fine white dressed elk skin robe, painted	1 robe.
Fine white dressed antelope skin cotillion heavily ornamented with beads or shells on breast and arm	30 robes.
Leggings of same ornamented with beads	3 robes.
Bead or wire necklace	2 robes.
Garnished mocassins and brass breast plate	1 robe.
Ear bones	3 robes.
	40 robes at $3=$120.00

No. 5.—Common Sioux, Assiniboin, or Crow Dress

White blanket	3 robes.
Blue cloth cotillion or green cloth	2 robes.
Scarlet cloth leggings	1 robe.
	6 robes at $3=$18.00

No. 6.—Winter Dress

Buffalo robe	1 robe.
Dressed cowskin cotillion	1 robe.
Dressed cowskin leggings and shoes	1 robe.
	3 robes at $3=$9.00

No. 7.—Winter Dress—Crows

Buffalo robe much garnished with porcupine quills	4 robes.
Big Horn cotillion trimmed with scarlet and ornamented with porcupine quills	3 robes.
Leggings of elk skin, fringed and worked with quills	2 robes.
Wrist, ear, and neck ornaments, say	3 robes.
	12 robes at $3=$36.00

There are many other dresses worn, differing in cost according to the ornaments or labor bestowed on them, and the foregoing are varied with their fancy and means; some therefore would cost high and others merely a trifle. Those of mounted warriors, for dances, soldiers, etc., are still more valuable owing to the war eagle feathers and other decorations. It is difficult to determine the cost and durability of each costume. The cost has been stated, but every Indian can dress only according to his means, which, if sufficient, will adorn his clothing with ornaments to a great extent; but if limited, he must be contented with such materials for covering as are yielded by the skins of the animals that furnish him with food; consequently every shade and variety of dress is visible among them. Some portions of these dresses are only worn on occasions, while others are retained all the time, and wear out the sooner. As an ordinary rule, Indians, both male and female, renew their clothing of European manufacture every spring, though the portions discarded are cut up for leggings, breech flaps, hunting caps, gun wadding, etc.

It may be said to last six months if worn while hunting, or a year if only used at times, in traveling and while idle, as is comparatively the case in the summer season. A complete suit of skin will last the whole year round, its actual cost being only the labor of dressing, and as time in the summer is of no value to them it may be said to cost in reality nothing if not ornamented. Blankets and cloth are not damaged by wet but do not resist the cold. Skins are impervious to cold and wind but are destroyed by being wet, hence the necessity and advantage of wearing the one in summer and the other in winter, independent of the filthy nature of skins when long worn, and of the capability of woolens to be cleansed by washing. The dress of a mounted warrior (pl. 76), as in battle or in the dance, would be as follows, the cost being estimated as before:

MOUNTED WARRIOR'S DRESS

Buffalo robe painted with battle scenes and garnished with porcupine quills; best; 6 robes	$18.00
Skin shirt and leggings garnished with human hair and porcupine quills, valued at 1 horse or 10 robes	30.00
War-eagle feather cap, largest kind; price, 2 horses, 10 robes each	60.00
Necklace of bear's claws wrought on otter skin, 6 robes	18.00
Feathers of the war eagle on shield, lance, and horse, 10 robes	30.00
Garnished moccasins, 1 robe	3.00
Shell ear ornaments, 4 robes	12.00
Total	171.00

Another fancy dress would cost as follows:

Scarlet blanket, 4 robes, at $3	$12.00
Beads on same, 10 robes	30.00
Skin shirt and leggings garnished with porcupine quills and trimmed with ermine, 20 robes	60.00
Bear's-claw necklace, 6 robes	18.00
Soldier's cap of magpie feathers, tipped with red and fringed with ermine, 10 robes	30.00
Brass-wire arm bands, 3 robes	9.00
Eagle feathers on lance and shield, 6 robes	18.00
Shell ear ornaments and moccasins, 4 robes	12.00
Total	189.00

Both of the above dresses are principally of their own manufacture; yet if a trader wishes to purchase them he has great difficulty in doing so, even by paying the above prices in merchandise, of which they always stand in need; indeed, they seldom can be induced to part with them on any terms unless forced to sell to supply some reverse by loss of property which has happened to their families. The reason is that they are scarce, difficult to replace, and also it is the wish of the warriors to wear them during their lives on all public occasions and to be clothed with them when they die. Two tails of the war eagle of 12 feathers each would be worth two horses if wrought into a cap, or something more than a horse without. Usually the value of the tail feathers of this bird among any of the tribes of whom we write is $2 each in merchandise in this country, or 15 feathers for a horse.

Ten ermine skins will also bring a horse among the Crow Indians, and 100 elk teeth are worth as much, there being but two teeth in each elk which are suitable, and the tail feathers of the war eagle are the only ones used. The elk are not killed in great numbers by any one hunter, so that much time and bargaining are required for an individual to collect 300, the number usually wrought on a Crow woman's dress. The eagles are scarce and difficult to catch; hence the value of these two ornaments.

The men in their homes in their own country at night divest themselves of their moccasins, leggings, and blanket capot (if any), retaining only the breech flap, and covering themselves with their robe or blanket; but when traveling, at war, in the chase, or encamped on the borders of their enemy's country no portions of clothing are taken off at night; even their arms and accouterments are retained while sleeping. In the summer season the women lay aside their leggings and moccasins when going to bed, reserving only the petticoats, or cotillion, as it is called in this country, and covering themselves with the robe, but in the winter, or in traveling, no part of their clothing is taken off. Young unmarried and as yet untouched women take the precaution at night to wind around their dress a strong cord, strapping the same tightly to their body and legs. This is done by some of their female relatives, the cord being well tied and wrapped around many times to prevent the consequences of any mistakes on the part of young men as to the location of their bed, which might happen if they entered during the night, or if they were guests. It is considered a great credit to a young woman never to have slept unbound as above previous to marriage. Saddles, billets of wood, and parts of clothing taken off serve as pillows for the men. Provision bales, wooden bowls, and baggage sacks answer the same purpose for the women. Rawhides, saddle blankets, apishimos,[30] skins in hair, with grass and twigs beneath form the bed, which is seldom longer than two-thirds the sleeper, and about 3 feet wide.

Ornaments

All Indians are excessively fond of display in ornaments. Indeed, as may have been gathered from the preceding, the value of their dresses depends entirely upon the nature and extent of these decorations. Small round beads of all colors are used in adorning every portion of their dress, as also agate for their ears, hair, neck, and wrists, but these are by no means as valuable as several kinds of shells or as their ornamenting with colored porcupine quills. A shell, called by the traders Ioquois,[31] is sought after by them more eagerly than anything else of the kind. They are procured on the coast of the Pacific and find their way to our tribes across the mountains through the different nations by traffic with each other until the Crows and Blackfeet get them from some bands of the Snake and Flathead Indians with whom they are at peace.

These shells are about 2 inches long, pure white, about the size of a raven's feather at the larger end, curved, tapering, and hollow, so as to admit of being strung or worn in the ears of the women, worked on the breast and arms of their cotillions, also adorn the frontlets

[30] This appears to be a word adopted from the Cree or Chippewa language. It means anything to lie on, as a bed.

[31] Ioquois appears to be a loan word.

of young men, and are worth in this country $3 for every 10 shells. Frequently three or four hundred are seen on some of the young Crow or Blackfoot women's dresses. The large blue or pearl California shell was once very valuable and still is partially so. It is shaped like an oyster shell and handsomely tinted with blue, green, and golden colors in the inside. One of these used to be worth $20, but of late years, owing to the quantity being introduced by the traders, the price has depreciated to about half that amount. These shells they cut in triangular pieces and wear them as ear pendants. Silver is worn in the shape of arm and wrist bands. Hat bands, gorgets, brooches, ear wheels, finger rings, and ear bobs are mostly in use among the Sioux, the upper nations preferring shells. Other ornaments consist of elk teeth, colored porcupine quills, and feathers of the white plover dyed. Feathers of ravens, owls, hawks, and eagles, furs cut in strips and wrought in various parts of their dress, besides a great variety of trinkets and paints furnished by the traders, among which are brass rings, brass and iron wire, beads, brass hair and breast plates, brass and silver gorgets, wampum moons, hair pipe, St. Lawrence shells, spotted sea shells, hawk bells, horse and sleigh bells, cock and ostrich feathers, thimbles, gold and silver lace, etc.

Paints and Dyes

The principal paints sold them are Chinese vermilion, chrome yellow and verdigris. Out of all these an Indian can please himself, and either buy such as are mentioned, or use the shells, feathers, furs, etc., their own country and labor produces.

The native dyestuffs for coloring porcupine quills and feathers are as follows: For yellow, they boil the article to be colored with the moss found growing near the root of the pine or balsam fir tree. For red, they in the same way use the stalk of a root called we-sha-sha, the English name of which is unknown to us. They have also some earths and ochers, which by boiling impart a dull red, violet, and blue color, but we are unacquainted with the process and their names in any other language except the Indian. Their native dyes, however, with the exception of the yellow, are superseded by those introduced by the traders, with all but the Crow Indians, who living near and in the Rocky Mountains find several coloring herbs and mineral substances unknown to the other tribes, which produce much better colors than these mentioned. At the present day they all mostly use the clippings of different colored blankets and cloth, which by boiling with the substance to be dyed, communicates the tint of the cloth to it in some degree. Thus rose, green, pale blue, and violet colors are obtained. For black they boil the inner papers in which Chinese vermilion is enveloped.

Tattooing

Tattooing is much practiced by all these tribes, and a great variety of figures are thus painted, sometimes in spots on the forehead, stripes on the cheeks and chin, rings on the arms and wrists; often the whole of the breast as low down as the navel, with both arms, is covered with drawings in tattoo. It is a mark of rank in the men, distinguishing the warrior when elaborately executed, and as the operation is one requiring the pay of one or two horses, it proves the person's parents to have been sufficiently rich to afford that mark of distinction imprinted on their children, whether male or female. It is usually done on females at the age of 12 to 14 years, is only exhibited on them in the form of a round spot in the middle of the forehead, stripes from the corners and middle of the mouth down to the chin, occasionally transversely over the cheek, and rings around the wrist and upper parts of the arms. On them it is merely designed as ornament. Men are tattooed entire after having struck their first enemy, but smaller marks of this kind are also only ornamental. The material employed and the modus operandi are as follows: Red willow and cedar wood are burned to charcoal, pulverized, and mixed with a little water. This is the blue coloring matter. From four to six porcupine quills or needles are tied together with sinew. These are enveloped in split feathers; wrapping with sinew, until a stiff pencil about the size of a goose quill is had, with the quills or needles projecting at the end. One of the priests or divining men is then presented with a horse and requested to operate. At the same time a feast of dried berries is prepared, and a considerable number of elderly men invited to drum and sing. When all are assembled the feast is eaten with much solemnity and invocations to the supernatural powers.

The person to be tattooed is then placed on his back, being stripped naked, and the operator being informed of the extent of the design to be represented, proceeds to mark an outline with the ink, which, if correct, is punctured with the instrument above alluded to, so as to draw blood, filling up the punctures with the coloring matter as he goes along, by dipping the needles therein and applying them. The drumming and singing is kept up all the time of the operation which, with occasional stops to smoke or eat, occupies from two to two and a half days, when the whole of the breast and both arms are to be tattooed; and the price for the operation is generally a horse for each day's work.

Badges of Office

There are no badges of office that we are aware of. These marks belong to kinships and appear only in their dress in the different

dances, apart from which nothing is seen denoting official station. Rank is known by the devices drawn on their robes; that is, to a warrior who has struck an enemy and stolen horses is accorded the privilege of wearing a robe adorned with a representation of these acts; he is also entitled to make the impression of a hand dipped in red paint on his lodge or person, to wear hair on his shirt and leggings, and two war eagle's feathers on his head. After making many coups he arrives at the degree of camp soldier [32] and is known on public occasions by the addition to the above of the war-eagle cap or bear's claw necklace, which, together with the advantage of publishing his feats in the dances and other ceremonies, establishes his standing among his people.

A still further progress, so as to rank with chiefs or councillors, is not attended with any additional display or mark of distinction; indeed, in that event their coups are seldom boasted of, that being rendered unnecessary from the fact of the whole nation's being aware of the cause of his advancement, and although chiefs and councillors generally have appropriate dresses, as already described, they never wear them unless on the most important occasions, such as a battle, council with other nations, great religious assemblies, or an approaching dissolution. It is their greatest desire when arrived at the head of the ladder of fame to receive a flag or medal from some whites in power, which are worn or displayed on all ordinary convocations and councils. In like manner a sword would be the mark of a soldier in camp, but we see no other badges of office except what have already been referred to as existing in kins, which are laid aside as soon as the ceremonies which caused this display are concluded.

Beard

As has before been observed, these tribes have naturally little or no beard. What few hairs and down make their appearance on the face and other parts of the body are extracted by small wire tweezers of their own make. They have no method of killing or dyeing the hair; they cultivate it, and consider to cut it a great sacrifice. It is only clipped short or torn out by handfuls in excessive grief, but is never shaved, and until modern times but seldom combed.

Intellectual Capacity and Character

Laying aside the advantages of education, of knowledge acquired by conversation with superior men, and the increase of ideas gained in travel by the European, and drawing a comparison between the

[32] This is the term explained in footnote 10, p. 436.

ignorant white and the savage, we feel bound to award preference to the latter. In all their conversation, manners, government of families, general deportment, bargaining, and ordinary occupations they exhibit a manliness, shrewdness, earnestness, and ability far superior to the mass of illiterate Europeans. Even their superstitions and religion present a connected, grand chain of thought, having for its conclusion the existence of a Supreme Power, much more satisfactory and sublime in the aggregate than the mixture of bigotry, infidelity, enthusiasm, and profanity observed in the actions and language of the lower class of Christians. An excellent opportunity offers in this country to draw a comparison between the Indians and the engagees of the Fur Company, and what can never fail to strike the mind of the observer is the superior manliness and energy of the Indian in thought, word, and action, as evinced in their patience, contempt of death and danger, reverses of fortune, in their affection for their children, government of their families, their freedom from petty vexations, and useless bursts of impotent passion.

The Indian reverences his unknown God in his way. Though the principle be fear and the object Creation, it leads to reliance and resignation when his own resources fail, whereas the whites spoken of vent their displeasure for most trifling grievances and accidents in eternal curses on the Great Disposer, the Virgin Mary, and all other holy persons and objects they deem worthy of their execration. These Indians are capable of pursuing a logical train of reasoning to a just conclusion. If the subject be one with which by experience they have become acquainted, they can argue it point by point with any person. Even the Assiniboin, who are the most ignorant of all these tribes, can pursue a satisfactory mode of conversation. Clear sightedness is more observable in matters touching their own personal or national welfare, the utility and expedience of war or peace, camp regulations, or the advantage of trade. Not many years since the Cree and Assiniboin combined against the Hudson Bay Co. at Red River for the purpose of forcing that powerful house into more reasonable prices for goods and a less distressful policy of trade or to abandon the country.

The case was as follows: It was then and still is in a measure the custom of that company to make credits to those Indians in the fall for nearly the entire amount of their winter hunts, taking advantage of their necessities in putting exorbitant prices on the supplies thus advanced, so that when an Indian came to pay he found himself with nothing left to clothe his family or meet his wants; in fact, as poor as before, and consequently obliged to contract other debts on the ensuing year, being in this way kept always poor, more especially so if by some accident his hunt should fail.

Even those who were not indebted bought supplies at such enormous rates as with difficulty to support themselves. In order, therefore, to reform these proceedings they assembled in council at various places, sent runners to all the camps in the two nations, and decided to convene at the Hudson Bay Co.'s fort and make known to them their determination, which was to hunt no more at such prices, or if they did hunt, to seek some other market for their furs on the Mississippi or Missouri. The company being aware of their proceedings and knowing the inexpedience of being forced into measures, besides dreading the effect such a large body of discontented Indians might have on the settlers and property, sent their half-breed runners to the different camps on the advance toward the fort with orders to turn them back with stories that the smallpox had appeared in the settlement. The fear of this terrible infection disbanded the expedition, the Indians traveling in haste the contrary direction, which gave the company time to alter in detail their manner of dealing with them, apparently of their own accord. Things of this kind prove the Indians to be capable of looking into their own interests, also of acting in a body when they are concerned, in cases where rank is not interfered with nor subordination required, while gain is the object and public opinion unanimous.

On subjects in which their actual experience and observation are at fault, even if supported with good arguments, they are suspicious and incredulous. They listen, doubt, but say little. On all such topics their minds receive a bias from their superstitions and lack of appreciation of motive. They can not conceive of any efforts made through motives of charity, benevolence, or pity, nor realize any other disinterested action, even if it be for their benefit, because all they do is in expectation of reward, and being destitute of the above principles of actions are disposed to attribute interested views to everyone else. In reviewing such subjects with them, and supporting the moral principle by argument, they are silenced, though not convinced; they do not grasp it, but will not contradict, for the thing may be so. Hence their thoughtfulness and apparent apathy, also their uninterrupted deliberations in councils and conversation, all arising from a desire to hear the subject in all its bearings, either with the view of forming an opinion or of the propriety of expressing it.

Regarding their temperament, it is peculiar and general. We see none of those great differences in disposition observed among the European races.

There appears to be a uniformity of individual feeling and action among them. Being all the same on like occasions, it would seem a national and natural feature, calling forth corresponding feelings

and actions with circumstances as they arise, exhibited in overwhelming demonstrations of grief or joy, in seriousness in business, ceremonies, and worship, excessive gayety in their amusements and lighter conversation, with earnestness in matters of personal interest. They have strong powers of memory and forecast, are of a reflective habit, their physical propensities predominating over the moral, in their general conduct grave, can be and are very gay on occasions, but upon the whole are rather of a cold than a fervid temperament. We are unable to say whether their reasoning powers are brought out or strengthened by education, never having witnessed its application to any of these tribes, but see no reason why they should not be as capable of improvement in these respects as any other race of people. Their ideas are by no means groveling, nor is their form of government to be derided. Neither can we conscientiously assign to them a lower place in the scale of creation; perhaps not so low as any other race of uneducated sentient beings.

We are not well enough acquainted with the capacity and history of the oriental stock to say whether these assimilate in any great degree; most likely the inference can be drawn from what has been written in these pages.

We may state that as yet no person has appeared among them noted for his natural or acquired powers as a real physician, though many have risen to eminence in this department from their supposed supernatural powers in curing the sick. Neither does their history produce any person who has evinced ability as a linguist,[33] moralist, or in the cultivation of any of the exact or moral sciences.

They use no studied maxims of expression in conversation, nor are there observed any compositions partaking of the nature of laments, unless the speeches made to departed spirits and the universal monotonous mourning chant [34] would be construed in that light. Their ordinary talk is pretty much the same as that of other men, though perhaps the Indians use fewer words in conversation, selecting only those which have a direct reference to the subject. They do not evince a quickness in repartee, even in their jokes, and all conversation, except the obscene, is carried on more deliberately and concisely than among other races. The effect of their oratory is a great deal enhanced by the position, bearing, and gesticulation of the speaker, yet it is not without its merits; simplicity, clearness, and strength of language are its distinguishing traits. We have heard and understood some hundreds of speeches on every subject of interest among the Sioux, Assiniboin, and Cree Nations, and must confess we can not

[33] Denig seems to refer here to grammatic analyses rather than to the mere learning of languages.

[34] The song for the dead contains a few words suitable to the occasion.

discern the figures and tropes attributed to their oratory by fiction writers. Metaphor is sometimes used, but not often. Their eloquence lies in the few words, bold assertions, and pointed questions with which they clothe their ideas, added to fierce expression of countenance and earnestness of gesticulation.

Everything they say in a speech has a tendency to gain their object if they have any, and Indians seldom speak otherwise. No set forms are followed, their thoughts finding utterance as they arise, or rather according to their feelings, and consequently make an impression on their auditors. The principal aims of the Indian speeches we have heard were to gain something or to impress the mass with the spirit of emulation, a desire for war or peace, and for the better regulation of their national affairs. One or two addresses of this kind have already been inserted and now follow two more, both heard and interpreted by myself and copied from our records. We fear in reading them a woeful disappointment on the part of novel writers and romantic authors of Indian tales, but such as they are they exhibit true samples of Indian eloquence at the present day, however much it may differ from that in the time of the celebrated Logan and others. In interpreting these speeches, the exact and entire ideas of the Indians are preserved, though the words chosen to express them are not always the same. We have had occasion to remark on this head before that no Indian language admits of being translated word for word; to do so, the purport desired by the Indian would fail, injustice be done to his ideas as realized by him, and a futility of words presented so devoid of order as to make no impression on the person for whom they are intended.

Nevertheless it is not to be inferred that the ideas have been improved upon. They are entire, and only so because clothed in the only kind of words sufficient to convey the real extent of their signification.

The occasion which produced the following speech by the Crazy Bear was this: In the summer of 1837 the Assiniboin, with other nations, were invited to attend the treaty at Laramie. It was with great difficulty any of them could be persuaded to go, as the road along the Yellowstone was beset with Blackfeet war parties; but this man with three others went in company with A. Culbertson, Esq., who was authorized to conduct them. The Crazy Bear was, while at the treaty, made chief of the Assiniboin Nation by Col. D. D. Mitchell, the United States commissioner, and on his return to his people repeated to the nation the stipulations of the treaty, together with the "talk" held at the rendezvous, but, as usual with Indians, was not believed. It also happened that in the ensuing spring, by some delay, the merchandise intended for the Indians and promised them

at the treaty did not arrive in the West in time to be forwarded, so that summer passed and the Missouri froze over without any appearance of presents forthcoming. The Indians became dissatisfied, thought they had been trifled with, abused Crazy Bear and me for deceiving them, raised war parties, and bid fair to break the treaty and become more troublesome to whites than ever.

Amidst all this clamor and disturbance the chief stood firm and, being supported in office by the fort, all hostile demonstrations were for the time averted. At this juncture, in January, 1853, Mr. Culbertson arrived from St. Louis with orders from the superintendent to supply the amount due the Indians as per treaty from the merchandise of the fur company in this country. The nation therefore being called together and placed in order in the interior of the fort, the goods as per invoice laid in front of them, the Crazy Bear rose and said:

"My children and friends: The clouds that have hitherto obscured the sky are brushed away and a fine day appears before you. The time has arrived when all the turbulent and discontented must be convinced that the whites have but one tongue; that our great father, the President, is rich and powerful. But a few days since most of you were violent in your reproaches against myself and the whites. If you have any more abuse left, heap it on now, disburden your hearts at once of all complaint, make the pile of your abuse as large as the pile of goods before you. The whites have kept their word and your heads should hang in shame.

"When you were invited to the treaty you were afraid to go, some to leave their wives, others their children, others to cross the warpath of the Blackfeet. I went. I appeared among nations in your name and am the cause of the present smiling pile of goods being laid before you.

"When I returned from the treaty after an absence of three moons and repeated to you the words of our Great Father, what was my reception? How was I listened to? When, by some accident the goods promised did not arrive, how did you act? What now do you think of yourselves?

"I hold in my hands the words of our Great Father. They are scored on my heart, were poured into my ears, did not run out, and now is the most fitting time to repeat what I have so often told you without being believed. Your Great Father does not want your lands; he seeks your welfare. You are a few poor miserable beings; he is rich, his people are numerous as the leaves of the cottonwood. He desires to stop the bloody wars heretofore existing between Indian tribes, to make all one people, to enable all to hunt and visit together in peace and friendship. He wishes you to refrain from all

depredations on whites, respect your chief as a chief, and listen to his words. For this he sends you these presents which will be repeated every year for 15 years, unless by your misconduct you incur his displeasure. I have heard the words; they are true. I have seen his soldiers and know he has the power to punish those who have no ears.

"A great deal of what you do and say is foolishness, the work and talk of children, not of men. Last fall in despite, you raised war parties, made threats against myself and the whites, gave me trouble. You now see the rashness of your proceedings. Who gives you these goods?

"Do you pay for them? Have you traded them? Do you intend to recompense your Great Father in any way? If so, listen to his words. It has been said I have sold you to the whites—bartered for your lands. I now tell you it is no such thing. There are no stipulations made for your lands in these papers. They were not even mentioned in the treaty. They are too cold for any persons except Indians, or any animals other than those with heavy hair.

"The Blackfeet are yet your enemies, but are to be spoken to by our Great Father; therefore let us refrain from war upon them to advance the views of our Great Father. Since the treaty I have had a son and a son-in-law killed by these people, and all my horses stolen twice. I can count seven times damage they have done me and my nation, but still I am disposed to remain quiet so that our Great Father may be pleased. All of you do the same. The day is coming when the Blackfeet will have ears given them.

"There are many poor people in this assembly that will be greatly benefited by this distribution of goods. Indians are born poor; they are always poor. Whatever they get for nothing is a great help and they should be thankful.

"I now appoint you six men, soldiers, for the equal distribution of these goods. Let all have a fair share. Your duty as soldiers does not end here. In the camp when you hear of war parties being assembled, stop them.

"If any one breaks the treaty stipulations with regard to the whites or other nations I desire you to punish them. If you are not able to do so you are no soldiers, and such disturbers shall be taken down by the whites in irons.

"The President of the United States has thought fit to appoint me your chief. Here is my medal; there are my papers. This makes some of you jealous. You should have thought of it before and plucked up courage enough to be seen at the treaty, that he could have chosen a better man than I, if there be one. As it is, as long as I

can stand and my voice holds good I shall never agree to what is wrong nor be deterred from doing what is right.[35] I have spoken."

It is the custom of most of the upper Missouri tribes when at the fort for trading purposes for the principal men to make what are called presents; that is, a portion of the buffalo robes are brought into the office and with much ceremony laid at the feet of the gentleman in charge of the fort, which action is followed by a speech. To a spectator only viewing the act as a gift, and only understanding the literal meaning of their speeches on the occasion, they would appear to be the most liberal people in the world, as often 100 to 150 buffalo robes are laid down and carried out to the store without any merchandise being produced in payment at the time, besides each Indian distinctly states many times in his speech that it is absolutely for nothing he makes the present.

But unfortunately for this generous appearance it has quite the contrary signification. The trader during the course of this harangue receives hints enough as to the compensation for the present and the Indian fully expects both the honor done to the trader and the skins given to be paid for; in fact, requiring in return nearly double the amount in value had the skins been handed, as is usual by the mass of the Indians, to the clerk of the store without any ceremony. It is at these times that the principal men make the speeches, such as the one which follows, which, though not distinguished for beauty of allegory or force of argument, may serve to show their shrewdness and cunning, also their reliance on flattery to gain their ends. It was necessary to premise this much so that the speech could be understood in all its bearings.

SPEECH OF LE CHEF DU TONNERRE TO THE GENTLEMAN IN CHARGE OF FORT UNION, JANUARY, 1850

"My friend, my Father, look at me. You see standing before you one of the poorest of his nation, but one who has a good heart and open hand. Our Great Grandfather, the Earth, is the parent of us all—Indians and whites. When Wakoñda created man he made two sorts; one clothed, comfortable, rich, plenty to eat, and endowed with wisdom; these were the white men. The other he produced naked, in a cold climate, poor, ignorant, obliged to hunt for their meat, to labor, to starve, to suffer, to die; these were the red men.

"Who receives the profits of their labor? The whites. Who protects them from their enemies? Themselves. When your Great Grandfather across the sea sent you to reside with Indians, what did he say? Did he pour no good words into your ears? Did he not

[35] Literally "my road shall be in a straight line with my talk and not frightened to one side."

tell you, you will behold a poor, naked, starved nation, have pity on them? I believe he did, he was a chief, a man of sense, a rich man, and no doubt said, 'Give away a portion of your good things to the Indian, let him feel something soft on his back. He is not an animal, his body is not covered with hair like the buffalo, but he is a man like yourself and requires clothing to protect himself from the cold. Are you not aware Indians freeze to death?' [36]

"When this big fort was built, when the first whites opened the road up the Missouri, they found us with bone knives, stone axes, clay pots, stone arrow points, bone awls, and nothing but the bow and arrow to kill game; they had pity on us, and exchanged for our skins iron arms and utensils.[37] In this they did well; they bettered the Indian; they made themselves rich. They had sense. They also gave us good words, and I have recollected them; they have been handed down to us when children, and all good Indians remember. I was told if you meet a white man give him your hand, take him to your lodge, give him to eat, let him have lodging, show him the road. I have done so.

"If you meet him while on the warpath, do not steal his horse or rob him of his property. If others steal his horses, bring them back; if any of the fort property is damaged, pay for it. I have done so. I was told to hunt, make robes, trade the skins for blankets, arms, and ammunition. All this I have continued to do from my youth to the present time. My part has been fulfilled. Yet you see me before you still a poor man. I stand nearly alone in the village, like an aged tree whose tops are dead. The bones of my friends and relatives are piled around the fort or scattered over the plains. All the good, all the wise, all the handsome, all the brave were rubbed out by the smallpox. Young men are growing, but they are not like those of the old stock.

"The road to the fort gates has been swept free of grass by the feet of my people in coming to trade. Each year we have loaded your boats with the skins of our animals, and I now bring a few more. The 10 robes laid before you are a present, for which I desire nothing. I wish to make your heart glad and to have my name remembered on the large books.[38] I know very well you are a chief and will have pity on me. Let me feel something soft over my shoulders.[39] Bestow some glittering mark on my back,[40] cover my

[36] Four Indians had at this time been frozen to death near his camp in a snowstorm.

[37] When the trade of the Missouri was opened the Assiniboin were the poorest of all nations, and have remained so to this day.

[38] It is customary to keep a list of men who behave well and make large trades.

[39] A blanket is wanted.

[40] Hint for a chief's coat.

bare head [41] and let something gay [42] appear there, that my young men may know that I am respected at the fort.

"My leggings [43] are worn out and the cold enters, and my breech flap no more covers what is beneath. My body [44] and neck [44] are laid bare in hunting skins in this cold weather. I lack some mark [45] of my standing with the fort to make my young men listen to my words to be good to the whites and hunt. If you wish many robes, recollect the young men are hunters and can not kill buffalo without ammunition.[46] The women have hard work dressing skins; their arms are sore; some beads and vermilion [47] would give them strength; and the tobacco [48] you will no doubt furnish me will be smoked by all my people in talking over matters for the good of the fort and in the councils for hunting. I know you are a chief and good father to your red children and will never refuse them what they ask. Remember our hardships, dangers, and exposures in hunting for you. Open your heart and lengthen your measure and reduce,[49] if ever so little, on the prices of trade. Indians suffer for everything; even the tobacco chewed and spit out by the whites is picked up and smoked by them. Your store is large; let your heart be so also. Let me be able to sing your praise;[50] your name is in the clouds; your father was a chief; you will be greater than he. Listen to the words of your poor friend. I have spoken."

The Sioux make better speeches and use more figures than the Assiniboin, but none of the many we have heard among both and other nations are as replete with metaphor as is represented by fiction writers. Either the Indians treated of by them were of a superior order or the speeches have been liberally interpreted. The foregoing presents their style as it now exists among all the upper Missouri tribes, though subjects of more importance, such as war, peace, or religious rites, are accompanied by a proportionate earnestness of oratory and boldness of gesture. They do not pride themselves on making fine or flowery speeches, but bold, pointed, and sensible ones, and, if begging be the object, will descend to the grossest flattering of their auditor, and vainness of their own merits.

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[41] Hat desired.

[42] Feathers desired.

[43] Leggings wanted.

[44] Shirt and neck handkerchief desired.

[45] Medal or gorget.

[46] Hint for general present of ammunition to the party.

[47] Some to each woman.

[48] An intimation that tobacco is not only wanted but plenty of it.

[49] This is an invariable request, and would be so no difference how long the prices were.

[50] Whoever makes a liberal present to Indians has his name sung around the camp or fort in a song of thanks.

Picture Writing

Picture writing can not be said to be much practiced by any of these tribes, though it is to some extent by all, principally by the Crow and Sioux Indians. The former of these nations are incessant in the war expeditions against the Blackfeet, and in the absence of the warriors the camp from which they departed moves in quest of game, but pursue a direction made known to the warriors before they leave. It often happens that the trail made by the camp is effaced by rain or covered with snow before their return, also that they (the camp) are obliged to diverge from the route agreed upon, and in these cases leave intelligence in pictorial devices in some of their encampments as guides to the returning absentees, who, if they find them, can not fail to reach their friends by following the instructions

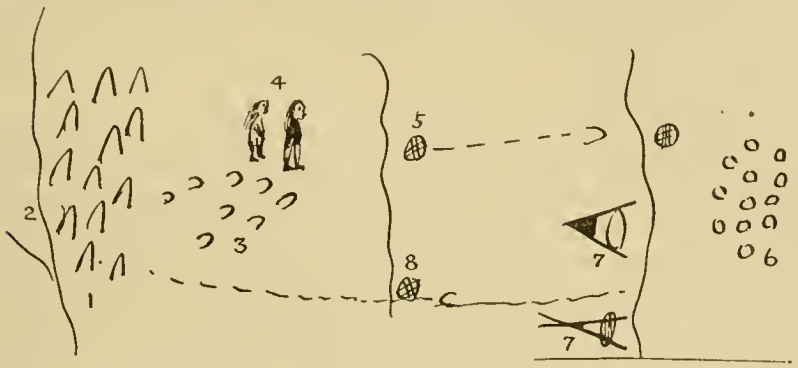


Figure 35.—Picture writing. Key: "We are a camp of 13 lodges (1); encamped on a creek above the forks (2); started hunting with eight horsemen (3) and two women on foot (4); slept two nights out (5); found buffalo beyond the second creek from the camp (6); killed some, and made travails (7); and slept but one night on our return home (8)

pointed out by these means. (Fig. 35.) Another occasion where it is useful is where a war party, after having made an attack, whether successful or not, have reason to believe more of their own people are out for like purposes, wish to convey to them the intelligence that their enemies are on the alert, and prevent if possible their falling into their hands, as would happen if they attempted to steal the horses before the late excitement caused by their own appearance had subsided. The information, together with the success or failure of their own expedition and any other matters they wish their friends to know, are pictured in some place likely to be found by those for whom it is intended.

There is, however, this danger in these records, that if they are stumbled upon by their enemies in their war excursions they are as certain a guide to them as to their own people, and this is one of the reasons why it is so seldom done. But the Crow Indians, who rove through the spurs of the Rocky Mountains, frequently making

long and rapid marches, are compelled to leave such marks behind, or some of their warriors would ramble about for months searching for their homes, which would be extremely inconvenient should they be driving before them a herd of their enemies' horses. The information conveyed by this system of writing is complete as far as it is intended, which is only to represent leading and general facts, and is not nor could it be applied to minute details. All warriors read and understand the devices of their enemies and most of them practice it when necessary, but the direction to war pursued by the Cree and Assiniboin in the summer, being over plains, there are no places noted as their usual encampments, and timber is seldom found; they therefore practice this manner of writing less than the others, owing to the probable uncertainty of their being found by their friends. In the winter, however, it is occasionally done by them when their way lies along some river, and their encampments are found by the small forts in which they have slept every night being left standing.

The same species of intelligence is sometimes left in hunting grounds with the view of announcing to any of their own nation who are supposed to pass the same way that the game, as denoted by the carcasses round, has been killed by friends, not war parties of enemies, intimating to them the direction and situation of their camp, that meat may be had there, that a juncture of forces is desirable, etc. The number and kind of game taken are not painted as the heads of the animals around would show that, but it, too, could be explained if wished.

These devices are generally drawn on some dry tree without the bark, the characters being cut in the wood and filled up with vermilion mixed with grease to prevent it being washed off by rain. Pieces of bark and portions of skins are used, and in default of either soft stone will answer. Powder dissolved in water is used to mark on the skin, the impression being made with a pointed stick, inked and pressed forcibly on the skin.

The meaning of every mark is fixed and exact, understood by the mass of warriors of all tribes, not confined to or practiced by the priests unless their situation in traveling be the same as the warriors or hunters and they desire in like manner to convey some information to the nation. The foregoing purposes in different forms are the only ones to which we have had the opportunity of witnessing the application of these devices. Perhaps they are the only cases as yet necessary for their present operations, but there would be no difficulty in their picturing the passage of whites or other nations through their country should it be required, and the same be intelligible to them.

Another form, and the one in which this manner of writing appears to be of more importance among them, is the devices drawn on the robes, exhibiting their standing as warriors whenever they appear. The height of distinction in an Indian, and his greatest ambition, is to impress upon his own people or strangers the idea of his being brave, of his having done acts that entitle him to appear among men, of his superiority in this respect over others in the crowd; therefore the actions which lead to these impressions are pictured on his robe; his biography is carried on his back so that "he who runs may read." It insures him respect through life, an honorable shroud at his death, and is believed to merit reward in futurity. A further use these devices are made to serve is the representation of monsters said to be seen by them in dreams, and supposed to have the effect when painted on their lodges of averting strokes of lightning, disease, etc.

In like manner buffalo heads are pictured to bring those animals in the direction of the camp, besides a great variety of smaller devices are seen on their shields, drums, medicine sacks, and envelopes of their amulets, to all of which appropriate and general meanings are attached corresponding with their superstitious belief or to insure success in domestic affairs. In conversation with most elderly Indians regarding locations, travels, or to explain battles and other events, resort is had by them to drawing maps on the ground, on bark with charcoal, or on paper if they can get it, to illustrate more clearly the affair in question. In this way the chief of the Crow Nation three years since made and left with us a map (pl. 77) of his intended travels during the entire fall and winter succeeding, embracing a circumference of 1,500 miles, with the different encampments to be made by that nation in that time, and so correct was the drawing that we had no difficulty in finding their camp the following winter in deep snow, one month's travel from this place. It is regretted that those Indians are not now in this neighborhood, as in that case some specimens of their charts and devices could be inserted, but in default of better we present in this place some Assiniboin drawings, with their explanations, which will serve to give a general idea how they are managed, and other pictorial devices are attached in several parts of this work.

These are the only forms the pictorial art of the Indians takes. It is more largely applied to the designs represented on their robes and mythological subjects when appearing on their lodges, fetish envelopes, etc., as has been stated. Songs can not be recorded in this or any other form. The value it may be to a people who are without letters is mostly apparent in the instances where it denotes the rank and standing of individuals when painted on their robes. The in-

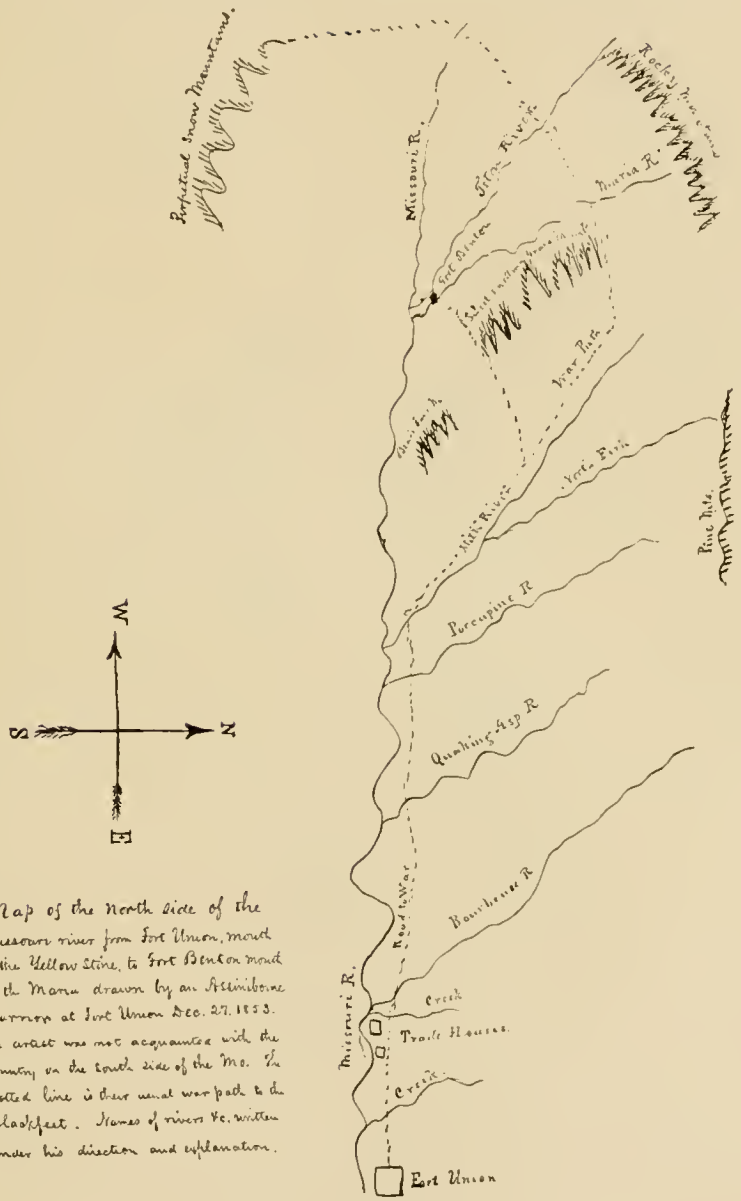
formation intended only for their friends when cut on trees is liable to be interpreted to their disadvantage by enemies, which would consequently be a bar to its general practice. None of their drawings are executed with neatness, but occasionally have some pretensions to proportion. It appears to be the meaning only that is desired, for paintings done by whites correctly are not more appreciated as work of art, perhaps not so much, as their own rude representations, but are looked upon with more superstitious dread.

The explanation of the drawing (pl. 78) would be as follows: "We were a party of 20 men (1) and stole 39 horses (2) from the Blackfeet" (see the 29 horse tracks so marked going away from the camp). "The camp turned out, killed one of us" (see the picture of a hand pointing toward their enemy's camp (3) and a scalped man drawn) "and recaptured from us 14 horses (4)" (see the 14 tracks going back to camp, each track always standing for a horse). "We forted and fought with them" (see (1) representing a brush fort and the men therein; the guns pointing toward the fort (5) are those of their enemies and the others signify the firing kept up by themselves).

"In the battle three of us were wounded and six horses killed" (see 6 representing a wounded man, and six horses stationary, seven; that is, going neither way, proving them to be unable to travel). "We got off with 19 horses" (8) (this being the tracks of horses leaving the fort); "the first night we encamped on the plains near a spring" (9) (the dotted line shows the path, and 9 is intended to represent a small fort or sleeping place, with another dotted line to the left where the spring (10) is marked). "In the encampment we left a wounded man (6); we made two more encampments after that, when we now leave this painting and intend pursuing our course home to the right. A band of buffalo (11) was seen on the opposite side of the river on a creek while the battle was going on, which are all we have yet seen." (These marks mean buffalo tracks.)

The end of the dotted line is as far as they have then gone, and other marks show the road they intend to pursue, but if they expect to get home without sleeping the dotted line is made as far as the lodges.

Explanation of Plate 79.—"We are a party of 10 men (1), have stolen 21 horses (2) from the Blackfeet and taken a scalp (3), but lost one of our own party. The first night we forted on a creek (4), the second night we slept on the prairie in a small fort at the foot of some timbered hills (5), the third night we slept at a lake (6), the fourth at a spring (7) where we are now. We intend to make three more encampments to get to our lodges, which are on the head of the next river (8). These figures (9) represent the lodges of their enemies, and the horses' tracks going from the lodges, indicating



Map of the North side of the Missouri river from Fort Union, mouth of the Yellow Stone, to Fort Benton mouth of the Marias drawn by an Assiniboine Warrior at Fort Union Dec. 27. 1853. The artist was not acquainted with the country on the South side of the Mo. The dotted line is their usual war path to the Blackfeet. Names of rivers &c. written under his direction and explanation.

MAP OF REGION ABOVE FORT UNION

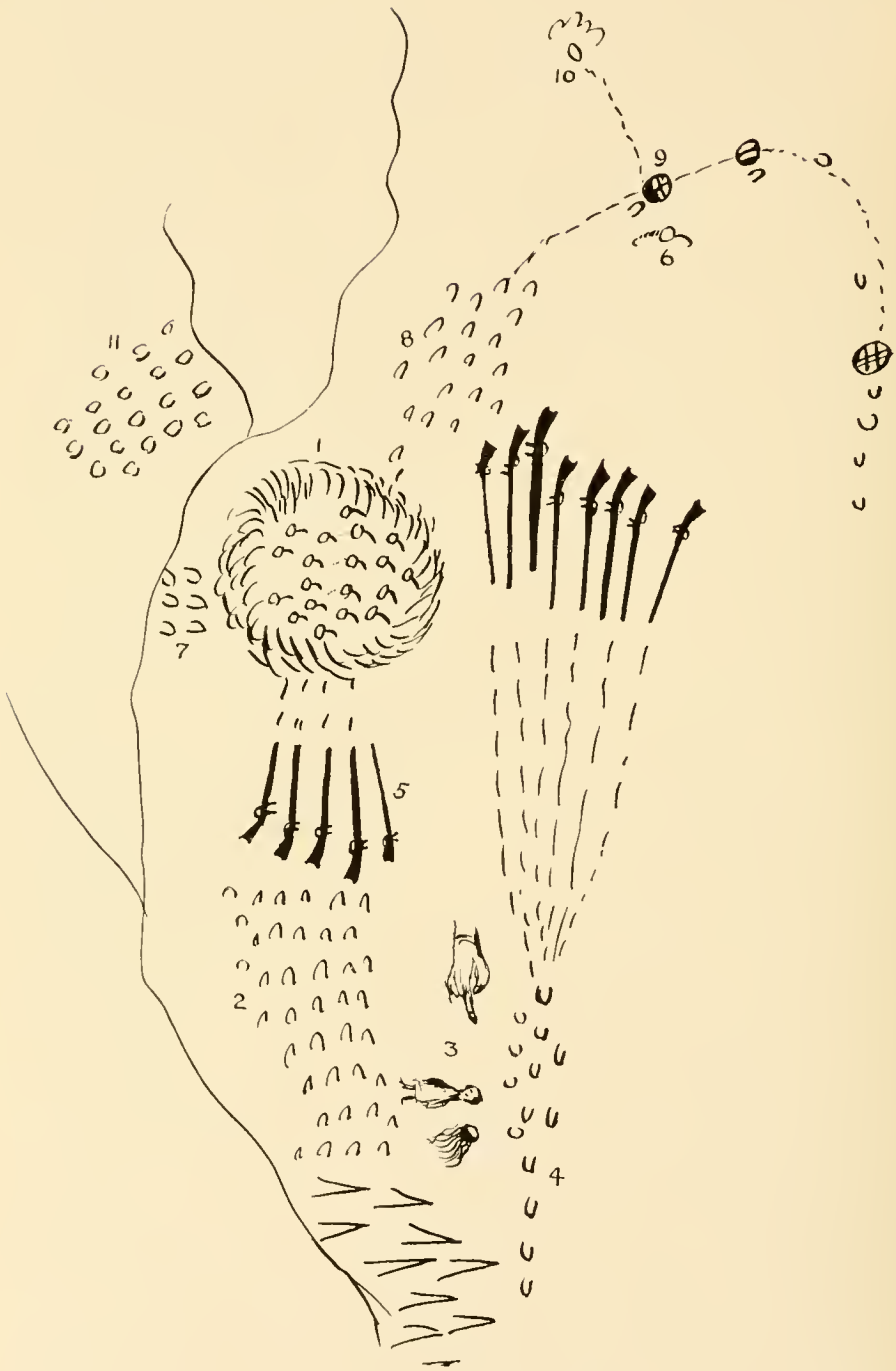
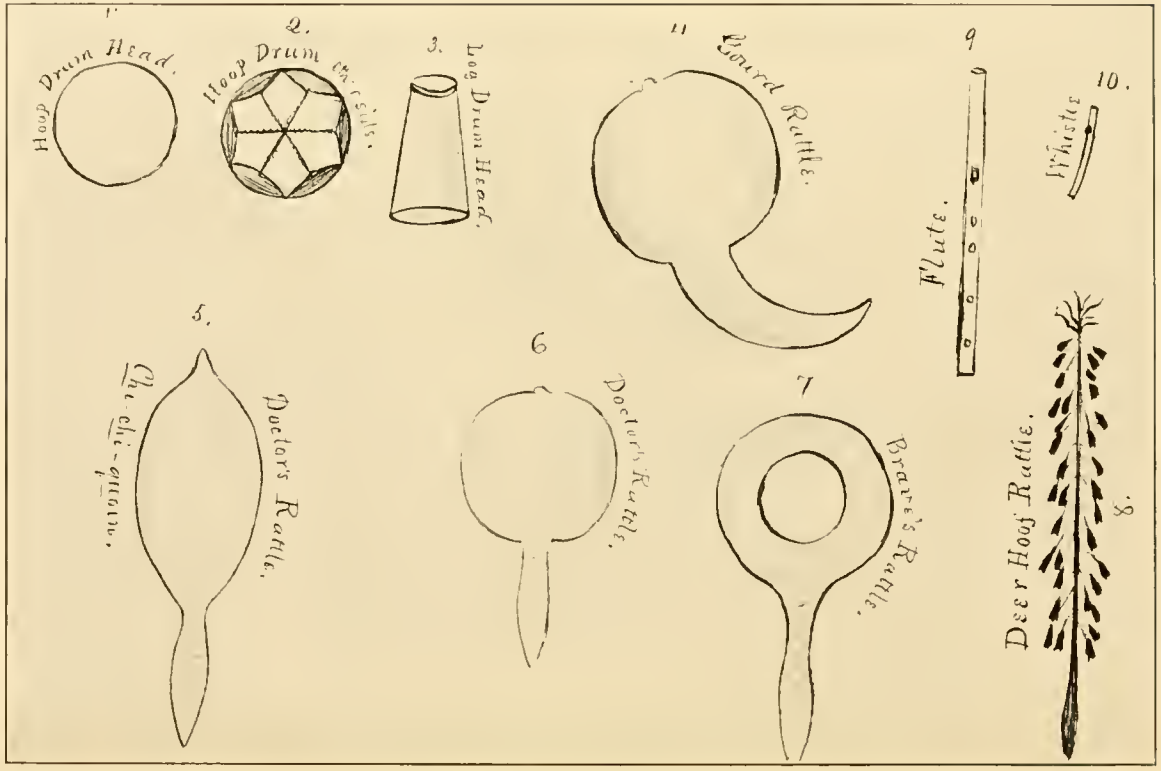


DIAGRAM OF A BATTLE FIELD

DIAGRAM OF A BATTLE FIELD



MUSICAL INSTRUMENTS

them to have been stolen, each single mark (10) counting a horse. The guns, bows, and lances show the party to be 10 (1). The hand pointing the direction in which they are traveling and toward a scalp (11) intimates that they have killed an enemy. The hand pointing the other way with the scalp (12) explains they have lost one of their party. The dotted line is their path home along a river and only extends as far as they have traveled to the place where the painting was left. The number of days they expect yet to travel to reach home are indicated by these characters (8, 10), the one a brush fort, signifies the number of encampments, and the horse track with it means it is the road they intend to travel."

Myth Telling

As has been several times mentioned in these pages, one of the principal ways of passing time at night in an Indian camp is the recital of fables for their amusement. Most old men and women can recount these stories, but there are some particularly famed for their talents in this respect, and these are compensated for their trouble by feasting, smoking, and small presents. At night, when all work is over, a kettle is put on containing some choice meat, tobacco mixed with weed prepared, the lodge put in order, the family collected, and the story-teller invited, who often prolongs his narrations the greater part of the night. Some of the tales are of a frightful kind, and to their impression on young minds is no doubt mainly to be attributed the fear of ghost monsters and other imaginary supernatural powers exhibited by most Indians when grown.

We have taken some pains to call together a few of the most famed and sensible story-tellers and listened with much patience to a great many of their allegories, but find nothing in any of them bearing on their ideas of a future state.[51] The circumstances and actors portrayed do not reveal the actual notions of the tribe on their religion as it now exists but are founded on their ancient mythology and handed down complete in their details through successive generations, and their real signficance, if they ever had any further than amusement, is now lost or absorbed in their manner of worship as referred to in these pages.

Nevertheless, we can discern in them a probability of their being the real belief of their ancestors in their primitive ignorance, before their superstitions and religions had assumed a systematic form and tangible shape. This much may be inferred by the tacit acknowledgment of their truth apparent in the auditors and the unwilling-

[51] This inference on the part of Denig indicates that he was not cognizant of the facts, poetically expressed, conveyed by native Indian myths, and so he reached the false conclusion that all myths are no more nor less than simple fictions, when, in fact, except in their verbal dress, they are true. He failed to interpret rightly the metaphorical diction.

ness evinced by all to hear them ridiculed or contradicted. We think the truth of the matter is these tales were believed and formed a portion if not the greater part of the religion of their ancestors, are reverenced for their antiquity and originality, together with a lingering uncertainty as to their having actually transpired in times long passed. This may be deduced from the evident veneration with which some of them are regarded, and from the fact that there are no new fables made at the present day, nor any one who possesses or professes the character of a myth maker. These stories are not added to or diminished, for if in the telling the least circumstance be omitted the narrator is reminded of the error and corrects it. In none of them is the creation of animals or other objects, animate or inanimate, reasonably attempted, though such things are alluded to in many absurd forms and grotesque imaginings according with the general tenor of the tale. These, though often trifling in their details, present a connected chain of events and often contain a kind of moral, that is, a double meaning as observed in the one relating to the formation of the Ursa Major and Polar Star, before inserted.

None of these serve to demonstrate to the young the power and ubiquity of Wakoñda.[52] This awful principle is too much feared to be lightly introduced in common conversation or connected with amusing tales, though inferior demons and minor supernatural powers with a great variety of figures of the imagination, such as monsters, ghosts, giants, beasts with reasoning powers, transformation, and works of necromancy, are represented.

There does not appear to be much useful instruction conveyed by any of these oral tales, but they are resorted to as a source of amusement. Stories related by us to them from books, such as the fables of Æsop or those from the "Arabian Nights," are listened to with great attention and sought after as eagerly as their own fiction. Moreover, they can, when these fables are plainly narrated, not only comprehend the literal meaning but appreciate the moral when it is pointed, not in its moral sense but as a necessary conclusion arising from the circumstances related. The only objection to recording many of these tales is their interminable length, one frequently occupying two or three hours in its recital. So remarkably long are they that the auditors are apt to become sleepy, and the narrator, if not responded to occasionally to convince him of their attention, breaks off and abruptly takes his leave. We now subjoin some of these stories that may serve to show the scope of imagination involved and that others may form their own opinions regarding their interest and utility.

[52] This statement is highly questionable, since these Indians show a deep reverence for Wakoñda, the highest God of their pantheon, as may be learned from various passages in Denig's own report.

Fables

Related by "The Ear Rings of Dog's Teeth," an Old Assiniboin

A long time ago there lived a great chief of a powerful nation, but he was a fearful and desperate man. He had killed six of his wives at different times in fits of passion, and at the time of our story had separated from his people, being jealous of his wife, and placed his lodge alone on the bank of a small stream. His family consisted of his wife, a boy say 12 years old, and a girl about 10 years, both his children by the woman now with him. The man went out hunting, and the game being far off did not return for several days. In the meantime the woman continued her domestic duties at home. Being in the timber in quest of wood, she struck her ax on a hollow tree and a great many snakes came forth, one of which [53] was large and handsome, had a fascinating eye and horns upon his head, spoke sweet words to the woman, and in the end succeeded in seducing her. Her husband returned and inquired of her "What had become of the paint on her face, which he put there before starting? She made some hesitating answer and he suspected all was not right and determined to watch. In the course of a few days he gave out that he was again going hunting and might be absent some time, as he had not yet seen game. He as usual painted his wife's face and departed. In place of going to hunt he hid in the bushes to watch his wife, who made her visits to the snake's nest, striking on the tree and calling on the horned snake in terms of endearment to come forth. The snake came out, and the husband witnessed the infidelity of his wife.

He remained a day or two near the place, and each day observed his wife to repair to the snake's den for like purposes. He then returned home. She was absent, but returned in a short time. "My wife," said he, "I have killed a deer some distance off; go and get the meat." After having received instructions as to where the meat was to be found, the woman departed with her dogs to bring it. In the meantime her husband went into the bushes, struck with his battle ax on the snake's house, saying, "My husband, come forth," imitating the voice of his wife. The reptile sallied out with all his family and the Indian destroyed them all with his battle ax. Gathering up the snakes, he carried them home and cooked them by boiling them to a jelly. His wife returned without finding any meat (as indeed there was none), and found her husband sitting down sharpening a huge flint ax. He invited her to sit down, and observing that she must be hungry after such a long travel, poured into a bowl the mess of snakes, which he handed to his wife, who, thinking it was some

[53] The Fire Dragon or Meteor—Son of the gods.

other kind of meat, ate the whole. After she had feasted, the man said, "You have eaten your beloved husband, the snake, and now you shall follow him." He rose up and cut her head off at one stroke of his sharp ax. A storm arose, the wind blew, the thunder rolled, and the man disappeared in a whirlwind of dust and was caught up in the air. The children, much frightened at all this, ran out of the lodge over the prairie, never ceasing their speed until they were at some distance.

On stopping to rest themselves they looked back and beheld the Head of their mother rolling after them, calling on them to stop.[54]

This frightened them more and they continued their flight. The Head rolling after them was now very near and the children were very tired. The boy threw his knife behind him and immediately the prairie was bristling with knives, through which the Head on endeavoring to pass was cut in a dreadful manner, and stopped in its course. The children continued their way. A fox came to where the Head lay, and the Head said, "My friend, I am in want of a husband, will you marry me?" "You are too ugly," replied the fox and disappeared into his hole. The Head followed the fox, who being afraid of it, when he arrived at the end of the burrow commenced digging farther in great haste, the Head still following and calling on the fox to stop. But the animal dug very fast, and finding he could not escape from the Head in this way came out to the surface of the earth near where the children were. The Head also came out and, perceiving them, rolled after them, coaxing them to stop, but they ran forward until they arrived at the top of a hill. The little girl said, "My brother, I am tired, throw something else behind you, the Head is close upon us." He threw his awl and up rose innumerable awls on the prairie which, pointing toward the Head, formed a barrier which it could not pass. The children continued their flight. A badger appeared alongside of the Head. The Head said to it, "My fine fellow, I wish to marry you. Will you be my husband?" "Your face is too ugly and bloody for me," said the badger, and disappeared in his hole.

The Head followed the badger, who like the fox continued digging underneath the ground, making a road underneath the awls in the direction the children were going, so that the Head came out again to where they were seated resting themselves. On seeing it they again ran forward, the Head after them calling on them to stop, but they were afraid. Again did the little girl get tired and ask her brother to save them by throwing something behind him. He threw his tinder or spunk, and immediately the prairie took fire, spreading out behind them, burning the Head to a cinder, leaving

[54] The Whirlwind that took up her husband.

nothing but the bones. The children traveled on. A wolf this time came near the Head and, as with the fox and badger, was desired by the Head to become her husband. "You are nothing but a frightful ghost," exclaimed the wolf, and ran into his hole. The Head followed, the wolf dug, and in the end the Head again came out near the children. They ran forward and arrived at the bank of a large river. Two cranes were standing on the bank. The boy requested the cranes to carry them over. One of the cranes asked the boy, "How does my breath smell?" "Very sweet," said he, "as though you had eaten service berries." "Good," replied the crane, "now both of you get on my back." They being seated, the bird flew across and landed them in safety on the opposite shore. In the interim the Head came to where the other crane was standing and commanded it to bear it over immediately, as it was in a great hurry to overtake the children. The bird proposed the same question. "How does my breath smell?" "It smells of stinking fish," replied the Head. "Good," said the crane, "now get on my back."

The Head having placed itself, the bird flew, and when about the middle of the stream shook the Head off its back in the water, which on falling cried out, "Now, I go to dwell among the fishes!"

The children perceiving they were freed from their tormentor continued their route more at leisure, and after traveling some days they arrived at a large camp very hungry and very tired. It was the camp of their father, and he was there as its chief. When he saw his children he abused them for having a bad mother, would not let any person give them food nor take them into their lodge. He brought cords, bound the children's hands, and taking them outside the camp raised them into a tree, tied them both together and to the top limb of a large tree. He then ordered the whole camp to move off and thus left his children to perish. After all had gone he again looked that his children were secure and examined the camp to see that no one remained behind, but perceived nothing but a little old dog lying on an extinguished fire, with his head in a large shell for a pillow, apparently sick. "Why do you remain behind the camp?" inquired the man. "Because I am sick and can not travel," answered the dog. The man was enraged, told the dog to begone, kicked it, but he only howled and would not raise his feet. The chief after beating the old dog so that he thought him dead left and followed his people. As soon as he departed and was out of sight the dog rose and sought the tree where the children were, commenced gnawing at the root of it, and in four days and nights it fell to the ground.

He then gnawed off their cords, which occupied two nights more, and the children found themselves free but so very weak they could

not travel. The little old dog rambled through the ground where the camp had been placed, discovered a piece of rotten wood afire, and brought it to where the children were. He gathered other branches and made them a comfortable fire, at which they warmed themselves. The little boy covered his eyes with his hands and hung his head, his sister cried, they were very hungry and very miserable. "Look, my brother, what a fine herd of elk is near!" the girl exclaimed as about 50 of those animals came walking toward them. The boy looked at them, wishing they were dead so that they might have meat, and as soon as he looked upon them they all fell dead. They went to them, and, having no knife wherewith to skin them, the boy wished them skinned, and in a moment they were so. He now began to see the power granted him, which was to look upon and wish for anything he desired. By the same means he produced the elk skins dressed and made into a large lodge, far larger than any of his people, which was erected, and the meat of the elk piled around the lodge on scaffolds outside. In the interior was an apartment for the little old dog. They were now happy.

Day after day large herds of buffalo came near the lodge, and on looking at them the boy killed them, skinned them, and placed the meat on scaffolds, cut up and dried.

When he thought he had enough he made a feast to the magpies and desired one of them to take along some fat meat and fly in the direction of the camp to endeavor, if possible, to overtake them. The bird left and after flying some days arrived at the camp. They were all starving, having had no meat for a long time. Some of the men were playing ball in the middle of the camp. The magpie advanced and dropped a large depouille among them and all scrambled to get a share. They inquired of the bird where he got the meat, and received the information, together with the news, that a great deal of meat was on scaffolds, enough to feed the whole camp. The father of the children was the chief; he called a council and determined on going back to the large supply of food, but knew it belonged to his children from the description given of them by the magpie. In due time the camp arrived at the boy's lodge and placed their tents. The boy sat in his lodge, his head down, and his eyes covered with his hands. All the camp with his father at their head came around begging him for meat. But the boy answered not a word, neither did he look up. The rest had no power to take the meat, not even to approach the scaffolds. The second day after their arrival his sister said, "Do, my brother, come out and look what a fine camp of our people are here." He went, looked, and all fell dead in their lodges, or wherever they happened to be. At this the little old dog began to cry and besought the boy to revive his (the dog's) relations, who fell with the others. "Show me them," said the boy. "They shall live."

He went with the dog through the camp, who pointed out his sisters and brothers, all lying dead. The boy revived them by looking upon them.[55] After a short time the little girl said, "My brother, it is a great pity so many fine men and women should die. Look upon them and let them live again." The boy did as desired and the whole camp was again called to life and motion.

He then made a feast, called all of them together, distributed the meat, and told them of the conduct of their father toward them. The boy was made chief of the camp, the little old dog was transformed into a man and became the first soldier, and the father was degraded to be a scullion and bearer of burdens for the whole.

By a Woman

An old woman lived in a lodge alone except her children, and raised corn in a garden. One of her little boys was shooting birds with arrows in the garden, when on a sudden appeared a sack full of rice, which, dancing up and down before the boy, sung out, "My nephew, shoot me and eat me, my nephew, shoot me and eat me." (This part is sung by the narrator.) The boy shot an arrow into the sack and all the rice spilled on the ground. Here the story ends with a general laugh.

By Tah-tun-gah-hoo-hoo-sa-chah, or "The Bull's Dry Bones," an Old and Famed Priest of the Assiniboin

The whole surface of the earth was at a time covered with water; in fact, no land existed but at the bottom of this great ocean. Seven persons were on a raft, viz, five men and two women. These were the first Gros Ventres, besides whom the only living objects visible were a Frog, a Muskrat, a Crow, and a Spider. The men, wishing for land and being informed in a dream how to act, told the Muskrat to dive to the bottom of the water and try to bring up a portion of earth. The being plunged, remained a long time under, but appeared without any. He was ordered to try again, and dived still farther, remaining under a much longer time, but reappeared with nothing. Again and again he plunged and at last disappeared for such a length of time that all thought he was drowned, but he rose to the surface, stretching out his claws to those on the raft, saying, "I have brought it," and immediately expired from exhaustion. They drew in the being and scraped from between his claws a small portion of earth which they made into a flat cake, set it on the water, and behold it spread rapidly in every direction.

[55] In Chippewa and cognate Algonquian dialects the Life God, Nanahozho (i. e., Inabi'ōzio'), was created, mythic tradition explains, by a look of the Great Father Spirit in the heavens, gazing down through the Sun as His shield. Such is the literal meaning of this illuminating designation.

They then called the Crow, gave it directions to fly as far as the earth extended. The bird departed but did not return, from which they concluded it to be so extensive that the Crow could not come back.

Being in possession of land, and seeing all was damp and cold and barren, they wished for spring to make something grow, and inquired of the frog how many moons remained until spring would come. The Frog said, "Seven," but the Spider contradicted it, called him a liar, on which a quarrel ensued, and the Spider beat the Frog to death with a stick. The latter, on dying, stretched out his legs toward the men, indicating seven by the claws thereon. The eldest of the party and head of the whole, whom they called their father, not being certain whether the Frog told the truth, started two of the others (brothers), both very brave and venturesome, with orders to travel in quest of spring. They set out eastward and in six months arrived at warm weather, where they found spring bundled up and placed on a scaffold, the packages consisting of flowers, seeds, turnips, roots, etc. Two large Cranes were standing beneath the scaffold, which the brothers loaded with the "spring season" and ordered them to fly back to their people. The birds started, and in another month arrived with their cargo safe, thus verifying the predictions of the Frog, which so enraged the men against the Spider that they put him to death, and he is to this day despised and crushed by all, while the frogs every spring sing forth the praises of their truthful ancestor.

The travelers, having accomplished their mission, bent their course westward to explore the new country, and after a long time came to the Rocky Mountains.

In one of the valleys between the mountains they perceived a motion in the earth at a certain spot as though it was boiling or as though some animal was endeavoring to get out. One of the brothers proposed shooting an arrow into it, but the other objected and requested him to let it alone. The former was, however, a very obstinate, reckless man who never would listen to good advice, and shot an arrow into the spot. A whirlwind gushed out, and rose up in the air in a round black column, bearing the two men up along with it. Higher and higher they rose until so far above the earth that they could not see it. The wind now carried them eastward for several days, when at length they descended to earth on the other side of the sea. Here they rambled about some time and found an old woman working in a cornfield from whom they begged something to eat. She gave them a mess of corn and potatoes. After having eaten they inquired of her if she could inform them how they could get back to their family. She said she could, but they must implicitly follow her directions or some harm would befall them. After they

had made the required promises she took them to the seashore, made a sacrifice of some corn to the water and invoked the appearance of the Wau-wau-kah. Immediately afar off appeared an object moving over the surface of the water, spouting it out high in the air, and, approaching with great rapidity, soon arrived at the place where the travelers stood. The being thus conjured up had the head of a man, though of monstrous size, and out of which projected two horns as large as the largest trees.

The body was that of a beast covered with long black hair, the tail was like that of a very large fish and covered with scales, and it was endowed with a spirit. To this monster the woman gave directions and made two seats in its horns like large birds' nests, one in either antler, in each of which she placed a man, in one a sack of corn and in the other a sack of potatoes. Spreading out her hands and invoking the sun, the monster at her desire departed with its cargo and in a great many days arrived at the opposite shore in safety. The old woman had instructed the travelers that immediately on landing they should sacrifice to the waters, by throwing in a little corn. One of them did so, but the obstinate brother would not. Being reproached by the monster for not following the advice of the woman he shot an arrow into it and was immediately swallowed up by the beast. The remaining brother was in great distress at this, and, recollecting the conduct of the old woman, made a sacrifice of some corn. Stretching out his hands he invoked the Sun to his aid. Immediately a dark round spot appeared in the west which came forward with terrible velocity and a whistling sound, increasing in size and speed as it approached. This was a thunder stone, which, with an awful report and bright flash, struck the monster on the back, separated it in two, and the man was liberated. A terrible storm arose, the sea rolled, and the monster disappeared.

They now bent their course westward and after many days came to a lodge inhabited by an old man and his family, from whom they begged something to eat. He showed them immense herds of buffalo, apparently tame, and all black except two, which were milk white. He told them to kill whichever they wished, but not to destroy more than they wanted for food or clothing. The good brother killed a fat cow, which, being more than they wanted, he took the rest of the meat to the old man's lodge. The other remained behind and shot arrows into a great many buffalo uselessly, for which the old man reproached him. After having feasted they were about departing when the old man showed them a great number of ducks and geese. "These," said he, "with the buffalo, are our life; treat them well." On the old man's leaving the Indian who had no ears commenced killing the birds with a club and made great havoc. The old man

returned and said, "You have done wrong, you are a bad man, evil will befall you, the Wau-wau-kah shall bar your road home to your people. But your brother is a good man, has ears, and for his sake some of my buffalo will follow him home to his people, and the white cowskin shall be his fetish to remember me by." They separated; the travelers pursued their journey and encamped on the prairie at the foot of what they supposed was a mountain, but which was the Wau-wau-kah lying across their road. In the morning they advanced to go around it, but, turn whichever way they would, the monster turned with them and obstructed their way, so that the whole day was spent in useless efforts to get forward.

The good brother proposed sacrificing some corn to appease it, but the other became very angry and would not listen to any peaceful measures. He collected immense piles of buffalo dung all around the monster and set it on fire, by which the Wau-wau-kah was roasted alive. The smell of the roast being savory he cut out a slice and ate it, offering some to his brother, who, however, would not taste thereof. In the morning they continued their way, the buffalo following at a distance. At rising the ensuing morning the one who had eaten the flesh of the monster said, "Look, my brother, what handsome fine black hair is growing from my body." The other looked and beheld the hair of the beast. On the next morning he said, "Look at my head, my brother, horns are coming out upon it," and so it was. On the third morning he said, "Look at my legs, my brother, fish scales are growing there." Each and every morning when they arose the Indian was assuming more and more the shape and apearance of the Wau-wau-kah. In the course of a few days his body was completely covered with hair, his head was furnished with horns of a monstrous size, and his legs were growing together in the form of a fish. They traveled on, the body and entire shape of the Indian rapidly increasing in size and appearance to that of the monster whose flesh he had eaten. They now proceeded slowly, owing to the difficulty the one experienced in walking by the change he was undergoing, and this impediment increasing in proportion as his extremities gradually assumed the form of a fish.

In the course of time they arrived at the mouth of the Yellowstone and encamped for the last time together. The change was now nearly completed, and when they arose in the morning behold a complete Wau-wau-kah was presented, who said to the other, "Depart, I am no more your brother; I am no more a man; I am either your friend or your enemy, according to the way you treat me. Leave. You will find your people several days' travel down on the banks of the Missouri. Take them the corn. Yonder stand the buffalo you have brought; they will follow you home. You will

become a powerful nation. Each and every year they must sacrifice some corn to me by throwing it into the Missouri, or the wind shall blow, the rain fall, the water rise and destroy your crops. As for me, I shall be separated here; my head will go up into the clouds and govern the wind, my tail fall into the water and become a monstrous fish to disturb it. My body will rove through the Rocky Mountains; my bones may be found, but my spirit will never die. Depart, you have ears and a good heart."

At the close of this speech the winds blew, the thunder rolled, the lightning flashed, and a terrible storm arose, amidst which the monster disappeared. The other returned to his people, told them the story of his travels, and to this day corn is sacrificed to the Missouri by the Gros Ventres to appease the spirit of the Wau-wau-kah.

Songs; Music[56]

The construction of the Indian flute and music produced by it have already been described, although we are not able to state in what manner, if any, it resembles the Arcadian pipe.

Most ceremonies, dances, public domonstrations of joy or grief, and other matters of general interest are accompanied by songs, which have appropriate names, but these chants are for the most part only tunes or modulations of voices in concert, with the introduction of a few words in some of them. They are in fact a continued chorus consisting chiefly in repeating the meaningless syllables "Hai-yah, hai-yah, hai-ai-ai-yah-ah-ah, hai-yah, he-e-e-ah, hai-yah," etc., fast or slow as required by the nature of the song. Where words are introduced they are composed of five or six syllables or three or four words, bearing some relation to the event which is honored with the song, but are of no consequence, so that all question regarding their rhyme or poetical compositions may be passed over in silence. The tune is generally begun by one person pitching it, who after singing a few notes, is joined by the whole choir, or sometimes, as in the scalp song, the women add their voices in the second part of the tune, where the name of the warrior who killed the enemy is mentioned. The modulations are bold and wild, by no means discordant or disagreeable, and they are remarkable for keeping very exact time either with the voice, drums, or feet, and where words are added they are so few, and the syllables so separated to accord as scarcely to be understood or distinguished from the rest of the chant.

The songs are measured, accents occur at fixed and regular intervals, being mostly the same in beats as the Scotch reel time. The effect intended is produced by action, energy of voice and motion,

[56] For the recording and interpretation of Siouan music see Miss Frances Densmore, Bull. 61, Bur. Amer. Ethn.

costume, and the wild intonations of the tune, not from words repeated. These songs are suitable to the occasion, and the whole when well got up has a decidedly unique appearance, singularly correspondent in all its component parts. These chants are very difficult for us to learn and scarcely less so to describe, but are preferred by them to any music, vocal or instrumental, of white performers yet presented to them. The length of a tune is about equal to eight bars of our common time, and the syllables to each beat vary from four to eight, but in some of the medical songs the intonation is so rapid as scarcely to admit of being counted. Songs for dancing, medicine (that is, the practice of healing), and on other assemblies are generally accompanied with drums, bells, rattles, flutes, and whistles, of all of which the drum is the principal instrument, for though on some occasions all of them and several of each kind are used, yet there are none in which the drum is not used, but several where the rest are dispensed with.

Independent of public songs, singing is a very common amusement for the young men at nights, principally to attract the attention of the females, and often intended as signals for secret assignations.

Subjoined is a list of most of their songs, in reading over which it will be observed that there are none denominated "Hunting songs," that employment not being celebrated in song in any way, either for success or failure, unless the incantative song by the Master of the Park to bring the buffalo toward it would be construed in that light. The uses of the others can be traced in their names, taken in connection with what has already been written concerning their ceremonies. The words "do-wan" attached to all means "a song."

SONGS OF THE SIOUX, CROW, AND ASSINIBOIN NATIONS

Indian name	Interpretation	Occasion, etc.
Wah-kit-tai' do-wan	Scalp song	More than ten different kinds.
Chan-du'-pah do-wan	Incantation Pipe song	Two or three varieties.
Tah-tun'-gah do-wan	Bull song	In the Bull dance; also used in the park.
Te-chagh'-ah do-wan	Incantation Lodge song	Religious.
Cong-ghai' do-wan	Crow song	In Crow dance and before starting to war.
Pai-hun-ghe-nah do-wan	White Crane song	Incantation—in the song of that name.
Nap-pai'-she-ne do-wan	Song of the Braves	In the dance of "Ceux qui sauve pas."
Ah-kitchetah do-wan	Soldiers' song	Used at the soldiers' dance.
To-kah-nah do-wan	Foxes' song	In the dance of that band.
Ah-do-wah	Diviner's song for the sick	About 20 different kinds.
At-to-do-wah	Tattooing song	Sung while performing that operation.
Opah-ghai do-wan	Gathering of the kins	Called also the thunder song (incantation).
Och-pi-e-cha-ghah do-wan	Buffalo Park song	Incantation.
Shunga-tunga do-wan	Horse song	In the whip dance.
Shunk to-ka-chah do-wan	Wolf song	Sung on starting to war.
To-shan do-wan	Drinking songs	More than ten varieties.
We do-wan	Sun song	Religious.

SONGS OF THE SIOUX, CROW, AND ASSINIBOIN NATIONS—Continued

Indian name	Interpretation	Occasion, etc.
We-chah-nange do-wan	Song to the dead	Lament.
Hoonk-o'-hon do-wan	Song of thanks	Several.
Wah-ghunh'-ksecha do-wan	Bear song	Medicine.
We-coo-ah	Love song	About 10 varieties.
Nap-pai-e-choo do-wan	Hand gambling song	
Hampah-ah-he-yah	Moccasin gambling song	
We-hhnoh'-hhnoh	Incantation song and feast	
Tsh-kun do-wan	Women's dance song	Where women only perform.
Opon do-wan	Elk song	Medicine for elk, religious.

Their drums are of two kinds. The most common is made like a tambourine without its bells, the skin forming the head being stretched over the hoop while wet and kept there by sinews being passed through it and the hoop a few inches apart. (Pl. 80, fig. 1.) The inside portions of the skin have cords made of sinew extending across from several places, meeting in the middle and forming a handle to hold it up by (2). It is held up in one hand and beaten with a stick by the other, no more beats being made than are necessary to correspond with the accents of the notes, thus preserving the time.

The other kind of drum is made of a piece of hollow dry tree about 2½ feet long, scraped to a shell and smooth inside and out, resembling in shape a staff churn (3). The head or skin is stretched on the smaller end with a hoop, which is retained in its place by sinews passed through. The other is left open. When beaten but one stick is used, the drum being set on end. Both are often painted with different devices. The rattles, wag-ga-mŏ (Sioux) or Chi-chi-quoin (Cree), were originally and in a measure still are gourds dried with the seeds in, or after being dried the seeds, etc., are taken out and pebbles put in (4). Others are made of the rawhide of elk stretched over a slight frame of woodwork while wet and dried in that shape, pebbles being put therein at holes left in the top or in the handle (5 and 6). No. 7 is the rattle used by the "braves" in their dance. It is made of rawhide like the rest, but in the form of an open ring.

No. 8 is the rattle made out of deer and antelope hoofs scraped thin and light, reduced in size, and a number of each attached to small strings, so closely that they clash together when shaken. The flute (9) is made of wood, and the whistle (10) is the wing bone of a swan. These have before been described. From what has preceded it will be understood that there are no verses in their songs evincing their patriotism, or other chants representing their triumphs; that all is chorus and tune. Their laments for the dead are of the same

description, adding a few words and calling upon the departed by stating the degree of relationship, the few mournful words to deplore their loss, and the rest of the chant is in meaningless ejaculations.

Their music is never recorded nor have they such things as music boards or bark songs. In their bacchanalian songs they often repeat catches of whatever comes into their minds at the time, adapting the words to the song, but these words or any particular expressions do not properly belong to the songs, which in their original are of the same description as the others.

Many lullabies are sung to children by their mothers, but as usual but few words introduced, consisting mostly of humming of different tunes to put them to sleep, adding sometimes, "Sleep, sleep, my pretty child," or "Red fox come here; you will get a marrow bone to eat"—this when they are 2 or 3 years old.

There is nothing in their painting or sculpture worthy of notice. All are rude drawings and carvings scarcely intelligible without explanation.

Present Condition and Future Prospects

The nations we write of are as yet in their savage state. But few steps have been taken by them in the path of knowledge. Their original manners and customs, if not entire, are but slightly changed, their superstitions the same as their ancestors, and their minds deplorably void of moral truth or useful science. Their idol worship remains undisturbed by religious teachers, and the humane efforts in this respect, extended to China and the South Seas, are withheld from the coppered brethren residing next door.

There are some points not to be overlooked, inasmuch as they have a general bearing upon the whole race, involving a subject of great interest to which the foregoing details form but the prelude. The principal of those to which we allude is this: "How far has knowledge, art, and commerce, and the progress of civilization, affected the improvement of the Indians, and changed or modified their original manners, customs, and opinions?"

As art and knowledge are yet in their infancy among them and as has been stated but little improvement in their moral condition is visible, yet great and important changes have been brought about by the commerce of trade, without which any plan for their future advancement would be retarded a century, and by correct appreciation of which views can be formed regarding contemplated measures for their prosperity.

In the foregoing pages, which present their savage life in detail, nothing speculative has been ventured upon, no conjectures hazarded, by us or by anyone well acquainted with the wild tribes, nor will any

new opinions be perceived. The whole is merely a collection of facts, thrown together in the form of answers to certain questions without further comment than necessary for their illustration and clothed in the simplest garb of verbiage to facilitate their comprehension.

When we entered the fur trade in the spring of 1833, now 21 years since, all the Indians herein treated of, from the Sioux to the Blackfeet, inclusive, were much more ignorant in everything, degrading in their habits, slovenly in appearance, and barbarous in their actions than they now are. Life was then held by a slight tenure, crime was frequent, atrocious disorder and family feuds were general, and their occupations confined to slaughtering their enemies, murdering each other, and providing for their families only in extremes of necessity.

The traders of the Columbia Fur Co. and after them those of the American Fur Co. were men of ability, honesty, and truth. In the course of their dealings, intermarriages, and conversations with the Indians, the minds of the latter were enlarged, a different train of thought and action engendered, new desires created which gave a stimulus to industry, which raised the Indian from the level of the brute to the standing of an intellectual being.

The enmities formerly existing between different bands of the same nations, arising from the petty jealousies of chiefs or private family animosities, were soldered up by the traders. To be sure their object in this was personal gain, but that is immaterial, the beneficial results arising from their traffic, etc., were consolidation of force and interest of the Indians, unity of purpose and action, entailing order in their government, a great diminution of family feuds and private quarrels, and an application of their time to the comfort and welfare of their families instead of its being spent in bloody contention or domestic idleness or discord.

The introduction of firearms, metallic cooking utensils, and other tools gave them a greater reliance on their own powers, increased their hunting operations, and with them their domestic comfort, by these means withdrawing their attention from their barbarous practices and opening a new field for their exertions. With the substituting of European instruments and clothing arose a different kind of pride than that of olden time. The distinguishing features of the original savage were fierceness, obstinate will, and bloody determination, leading to barbarous and disgusting practices. Their women were worse than slaves, the extent of their labor was more than they could bear. With the stone ax, the bone awl, the clay pot, the rib knife, and all their primitive tools, even their most pressing wants were met with great difficulty. The process of procuring fuel alone

was one of much toil, and occupied most of the time of one female to a lodge. On account of their inadequate instruments for dressing hides their clothing was wretched, often insufficient to protect from cold or to cover with decency.

Commerce has changed all this by facilitating their means, and the character of their women has risen from a state of intolerable slavery to one of ordinary labor scarcely more servile than that of European female operatives. Their persons are cleanly dressed, combed, and adorned, a desire to appear genteel is manifested, a neatness in their lodges and domestic arrangements perceptible, proving the transfer of their time and ideas to these ends from those of original filth and savage recklessness.

In former times the trade was carried on in their different camps by paying a number of desperate men (Indians) to restrain the populace from robbing the trader. This force was effective and necessary at the time, because the wants of the Indians were so numerous and pressing, their cupidity so great, that it was impossible for the trader publicly to display his goods or deal with them on anything like fair terms. And the Indians thus employed considered it an honorable station: it flattered their pride to rely for protection on their bravery, and no robberies could be committed nor the traders insulted without killing these men at the door of the lodge, which was never attempted. This gave rise to a body of men called soldiers, and the power first invested in them by the traders formed a nucleus around which collected a superior and coercive force, which, in the course of time, was applied to their own civil organization, producing order in their government, unity of action, and rendering effective the decisions by council.

The original natural authority was centered in the chiefs of small bands, supported only by their family connections, who could not or would not enforce decrees for general welfare nor interfere in any public differences not touching their private interests. Power being thus confined and circumscribed, separations into small camps took place and minor subdivisions into heads of families, resembling in this elementary form of government that of the ancient patriarchs who as their interests jarred or covetousness increased made war upon each other and were insufficient for any general purpose. But when the body of soldiers was established and their efforts united to support the chief and council, they soon collected in large bands, from two to four or six hundred lodges each, entered into effective measures of defense from the surrounding tribes, regulated their hunts to advantage, and by this consolidation of interest extinguished the principal sources of private discord. This was a great step in advancement produced by the traders and their com-

merce, for through the chief and council as the organ of public opinion and soldiers as its support the nation could be spoken to, their interest consulted, their feelings known, and the mass made to advance toward a further point of improvement.

Property by means of commerce having been acquired, rates of exchanges established, and hunting operations enlarged and facilitated, other things besides scalps became valuable in the eyes of the Indians. Each having something to lose, perceived the necessity of respecting the rights of others, giving rise to a spirit of compromise in difficulties, so that arms were less resorted to in settling disputes, payment in most cases superseding that ancient and barbarous custom; also they evinced a disposition to aid each other in times of need, which minor obligations bound still closer their hitherto feeble bonds of society.

These were some of the effects of the introduction of commerce. A still further improvement is visible in their expansion of ideas arising from association with white traders, exhibited in their amelioration of manners, desire for knowledge, doubts of their own superstitions, increase of their vocabulary and modes for expressing thought, reason supplying the place of passion, and the general usefulness of the whole, resulting in their minds having been made capable of comprehending religious or scientific instruction and their time and talents to be applied to either their moral or spiritual welfare.

This is the point to which these wild tribes are supposed by us to have arrived, but no further. Their future condition depends more upon their white allies than themselves. Traders have instilled education enough to serve their purposes and let them alone. It would be inexpedient for them to do more.

It is also apparent, if their present attainments be not improved upon by those in power, that they must recede, and in case of a discontinuance of trade or a worse influx of whites, their now to them useful organization must dissolve. In this event they must become more miserable than at first, because the desires and necessities induced by their partial elevation can not be satisfied from their original resources, these having been lost and abandoned during their advancement, consequently their present support withdrawn, their hunting ruined, distress, famine, and dissolution as nations must certainly follow.

If they are left in their present condition until the tide of emigration has reached their as yet undisturbed hunting grounds, and the green plains, now covered with multitudes of buffalo, shall be strewn with innumerable grog shops, occupied by nests of gamblers, and hordes of outlaws, bringing with their personal vices a host of in-

fectious diseases, where will the poor Indian be then? Bitter would and should be the reflections of our great national reformers that they had not in time stretched out a saving arm to the aborigines.

It may be said, point out a way, state some feasible plan. Heretofore our policy has been lame, and our efforts retarded by our being but partially informed as to their capacity of improvement, or the practicability of bettering their condition.

To all this we would answer the course to be pursued is plain and can be easily gathered from these pages, which, like other productions of the kind, most probably will be thrown aside as soon as read or disbelieved because the facts recorded do not coincide with preconceived notions of Indian character.

We do not feel ourselves called upon by the inquiry to present a plan of operations, neither do we feel capable of instructing superior men. A plain statement of facts is sought and herein presented, though more could have been done had it been requested. Extensive establishments having for their object the civilization of the Indians have already been commenced with several nations within the boundaries of the United States and have met with success. Let others be tried, adapting the means to the situation and necessities of the roving tribes. A sudden revolution of feeling, an entire change in their habits and occupations, can not immediately be expected, would not be natural, neither would it be durable, but a gradual change brought about in their present employments, by combining them with pastoral and agricultural pursuits, a judicious introduction of mechanical arts, their superstitions carefully undermined and replaced by moral truth, their temporal welfare consulted, and a certain chance of subsistence presented; these things being accomplished, the eyes of the present grown generation would close in the rising prosperity of their children.

We perceive in the closing remarks of the inquiry these words: "In all questions where the interests of the tribes clash with those of the persons whom you may consult, there is much caution required."

Now, our personal interests and those of every trader are at direct variance with any innovations in the present employments or organization of the Indians. Any improvement in their condition mentally or the introduction of other pursuits such as arts and agriculture, even the inculcation of the Christian religion, would immediately militate against the trade and unfit the Indians for being only hunters or being regarded only as a source of profit. We are perfectly aware that the policy advised in these pages, if acted upon, would effectually ruin the trade and with it our own personal interest and influence in that capacity. All these things have been well considered and had they any effect would only have led to our remain-

ing silent on the subject; but, having written, we prefer placing things in their proper light, aiming at great general good, and thus without further comment the whole is left in the hands of those for whom it is intended.

Intermarriage with Whites

The prairie tribes have not been much affected by intermarriages with Europeans except the Cree. Most of the Red River settlement of half-breeds are of Cree and Chippewa extraction, who though not generally having the advantage of education, are, however, a bold, hardy, and fearless people, invariably good-looking, active, and brave. They unite hunting with agricultural operations but prefer the former, the indisposition to work showing itself equally in the descendant as in the original stock. Their parents and the Cree Nation generally have been, if not benefited, much instructed by these people, and are superior in intellectual acquirements to any of the other tribes. The history of this settlement is no doubt well known to all, so that we need not describe it here.

As far as these other tribes are concerned the only intermixture has been of the fur traders and engagees of the fur company. Of these, all that can afford it take their children to the States to be educated, who usually make intelligent and respectable men. If it were not for the popular prejudice existing, or if it were possible, we would advise amalgamation of the races as the most efficient means for saving the remnants of the Indian tribes.

Population

Regarding the comparative population of these tribes with the years 1833 to 1854, the decrease is very great. Smallpox, cholera, measles, and influenza, together with other diseases and wars, incidental to the climate and their pursuits, have reduced the Sioux about one-third, the Mandan three-fourths, the Arikara one-fifth, the Assiniboin one-half, the Cree one-eighth, the Crows one-half, and the Blackfeet one-third less than they were at the former period. They—that is, from the Sioux up—are now slowly on the increase.

Language

To answer the queries on this head would require a volume of itself, but the Assiniboin being the same or nearly the same as the Sioux, and as the Sioux has already been translated into the English letters, books published in it, and the same taught in schools on the Mississippi, it is presumed that any and all answers to these queries can be obtained by procuring the books printed in the Sioux language

and by examining their manner of instruction. We have seen the New Testament in that language, also several letters, and believe it to be well adapted to the purpose of Christianity or general usefulness. Should, however, it be the desire of the department that extensive vocabularies be made out and explanations of their language given, or should any other information regarding these tribes be sought, we will at any time satisfy it on these topics, provided the efforts now made for their instruction regarding the prairie tribes meet with the success it is presumed to deserve.

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